FINAL ENVIRONMENTAL IMPACT REPORT

FOR

TONNER HILLS PLANNED COMMUNITY

DEIR 581
SCH 20011031137

VOLUME I

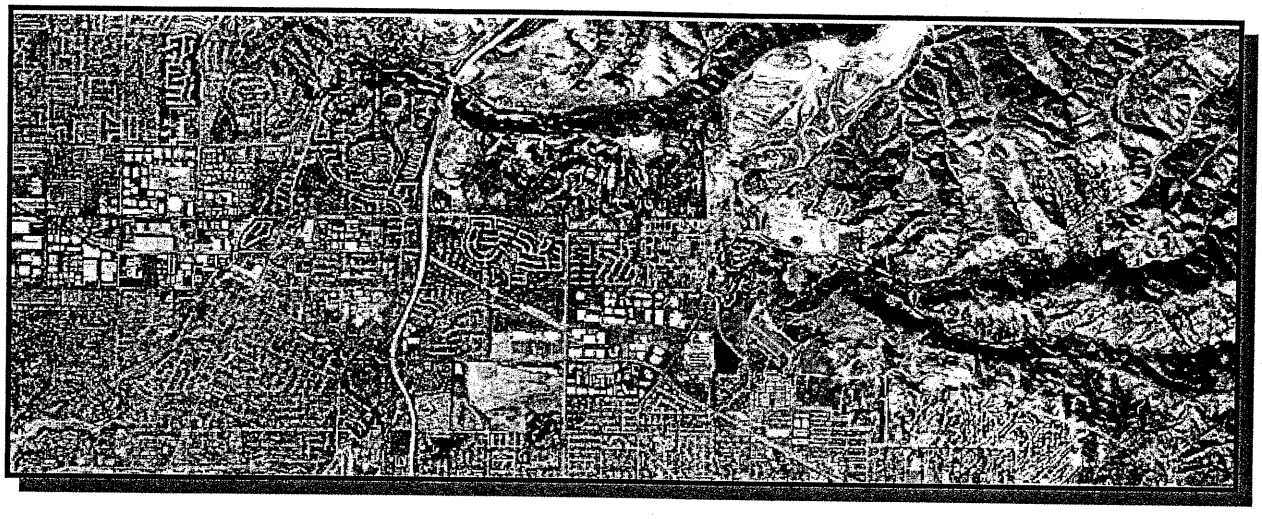
DRAFT ENVIRONMENTAL IMPACT REPORT

Tonner Hills Planned Community

Draft Environmental Impact Report

EIR No. 581

SCH No. 2001031137



Lead Agency:

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April 2002

Tonner Hills Planned Community

Zone Change ZC01-01
Planning Application PA010009

Draft Environmental Impact Report
EIR No. 581
State Clearinghouse No. 2001031137

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1. Introduction and Purpose

Pursuant to California *Public Resources Code* §21082.1, the County of Orange has independently reviewed and analyzed information contained in this Environmental Impact Report prior to its distribution as a Draft Environmental Impact Report. Conclusions and discussions contained herein reflect the independent judgment of the County of Orange as to those issues at time of publication.

1.1 Overview

This Environmental Impact Report (EIR) has been prepared to evaluate potential environmental impacts associated with the proposed Tonner Hills Planned Community. This document is an informational document to inform decision makers and the public regarding the potentially significant environmental effects of this project and possible ways those effects might be eliminated or minimized through project design features, mitigation measures, or alternatives.

It is intended that this EIR be considered in the decision-making process, along with other information presented on the project, such as the public proceedings on the various applications being sought. Pursuant to CEQA Guidelines §15200, this EIR will serve the following purposes of review:

1. Sharing expertise,
2. Disclosing agency analyses,
3. Checking for accuracy,
4. Detecting omissions,
5. Discovering public concerns, and
6. Soliciting counter-proposals.

This EIR has been prepared at the grading and construction level of detail. This document identifies and discusses every potentially significant impact associated with the project, and crafts mitigation measures and alternatives that eliminate those potential impacts or reduce them to acceptable levels. This EIR provides sufficient information for the decision makers to construct the project and an array of alternatives, even beyond those included in Chapter 6, Alternatives to the Proposed Project.

In accordance with CEQA Guidelines §15370, the mitigation measures have been structured to meet the following criteria:

- Avoiding the impact altogether by not taking a certain action or parts of an action;
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment;

- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
- Compensating for the impact by replacing or providing substitute resources or environments.

1.2 Location

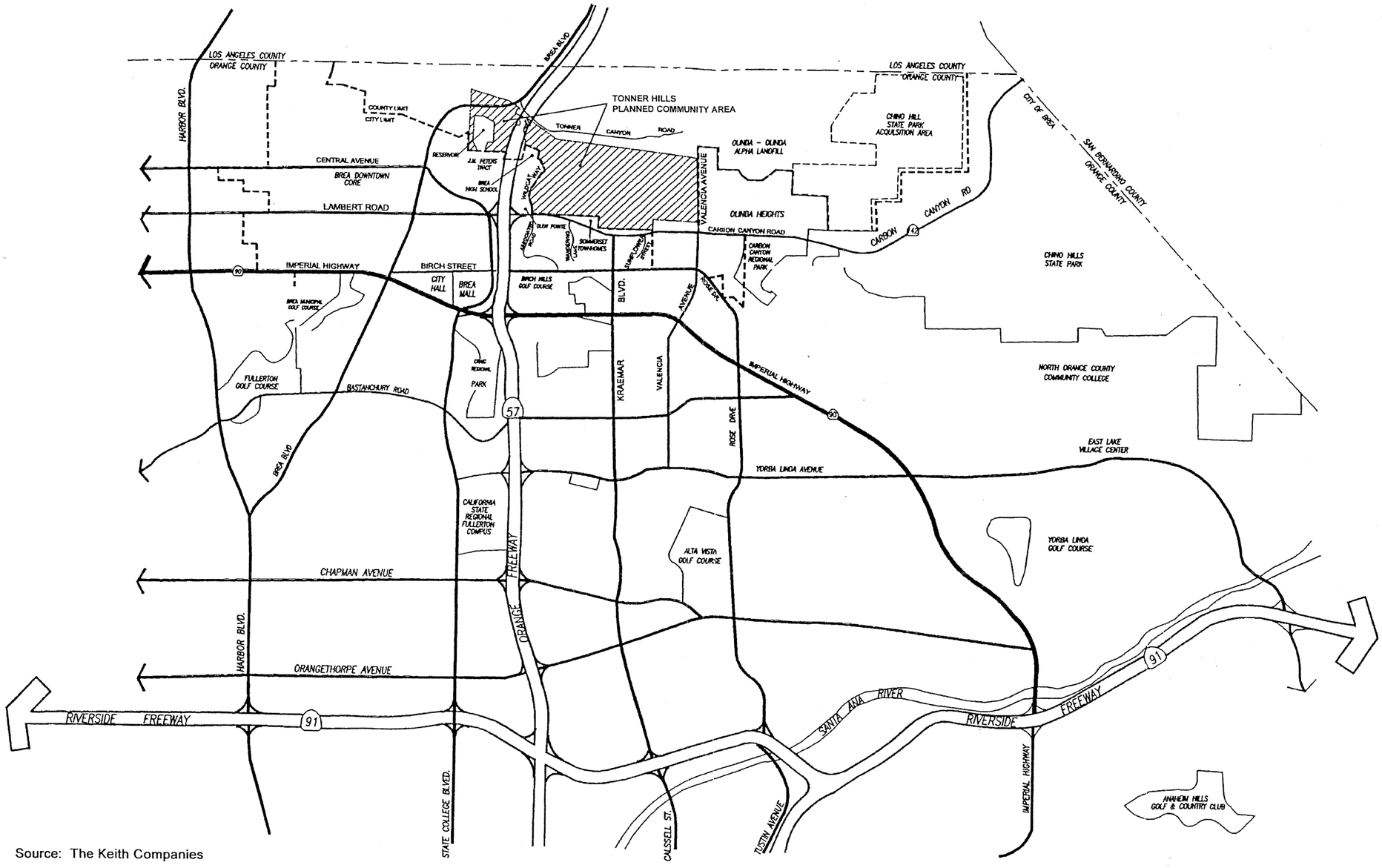
The project site consists of three large parcels of land totaling approximately 789.8 acres located in the northeastern portion of unincorporated Orange County within the City of Brea Sphere of Influence. The Orange (SR 57) Freeway bisects the site, with 681.2 acres located east of the Orange Freeway and north of Lambert Road, and 108.6 acres located west of the Orange Freeway at the southwest corner of Tonner Canyon Road and the Orange Freeway.

The regional and vicinity locations are depicted in Exhibit 1-1 and Exhibit 1-2, respectively, of this document. Exhibit 1-3 provides a USGS location map of the Tonner Hills site.

1.3 Statutory Authority

This Environmental Impact Report (EIR) has been prepared in accordance with the California Environmental Quality Act (CEQA) statutes, as amended (*Public Resources Code* §21000, et seq.), the CEQA Guidelines (*California Code of Regulations* §15000, et seq.), and County of Orange Environmental procedures. An Initial Study (Number PA01-0009) for the project and a Notice of Preparation (NOP) for an EIR were prepared and distributed to local Responsible and Trustee Agencies, the State Clearinghouse, involved local private and public organizations, and members of the public between March 27, 2001 and May 9, 2001. In addition, a public EIR Scoping Meeting was conducted on April 26, 2001 at the Brea Olinda High School.

In accordance with CEQA Guidelines §15146, the degree of specificity required in an EIR must correspond to the actions sought to be covered by the EIR. The County of Orange has determined that the degree of specificity needed for the Tonner Hills Planned Community requires details sufficient to address policy level decisions at the General Plan level and mean grading levels of detail required for subdivision maps. The County determined that the Tonner Hills Planned Community EIR should be a Program EIR.



Source: The Keith Companies

Exhibit 1-1
Regional Location Map

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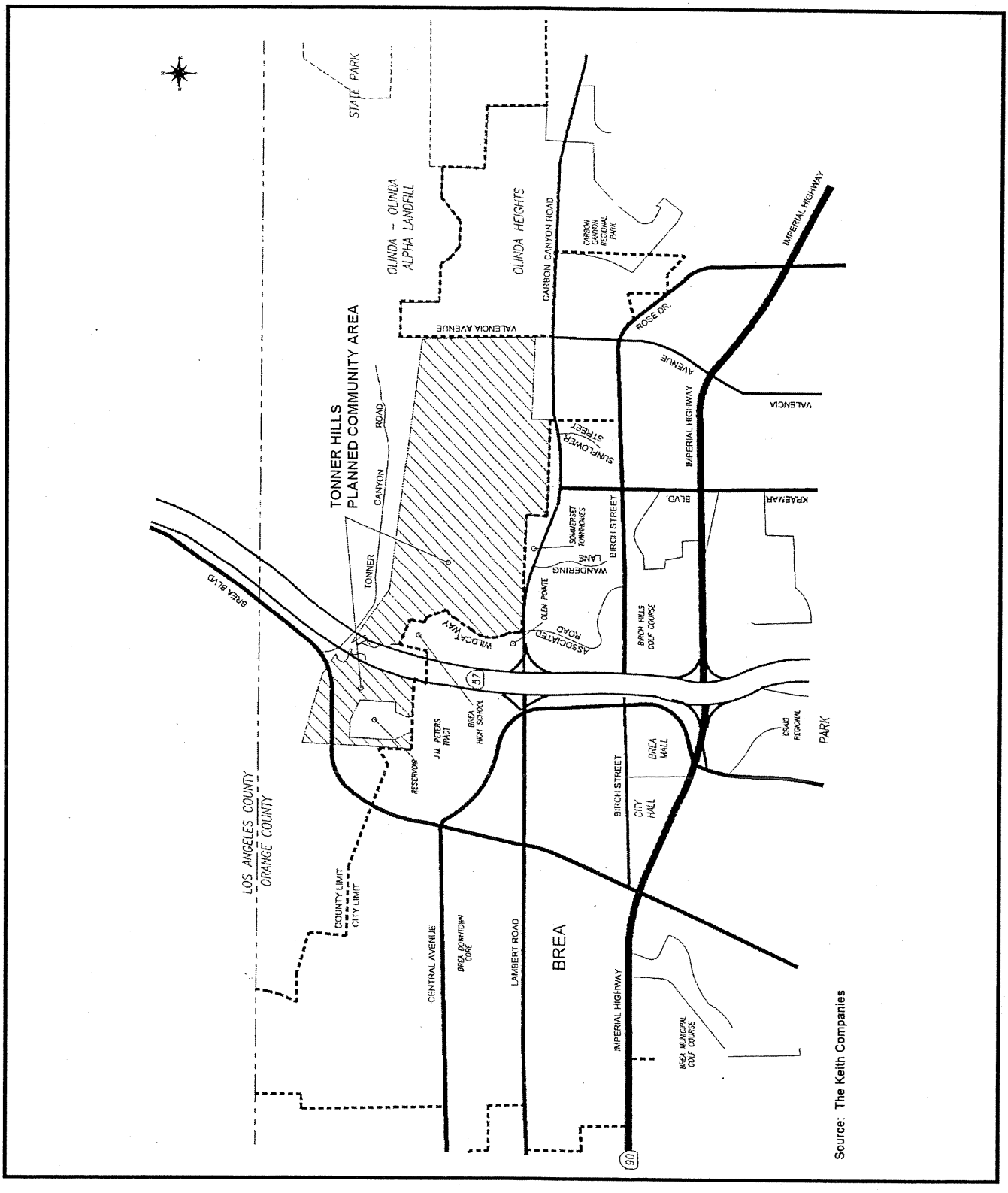

Exhibit 1-2
Vicinity Map

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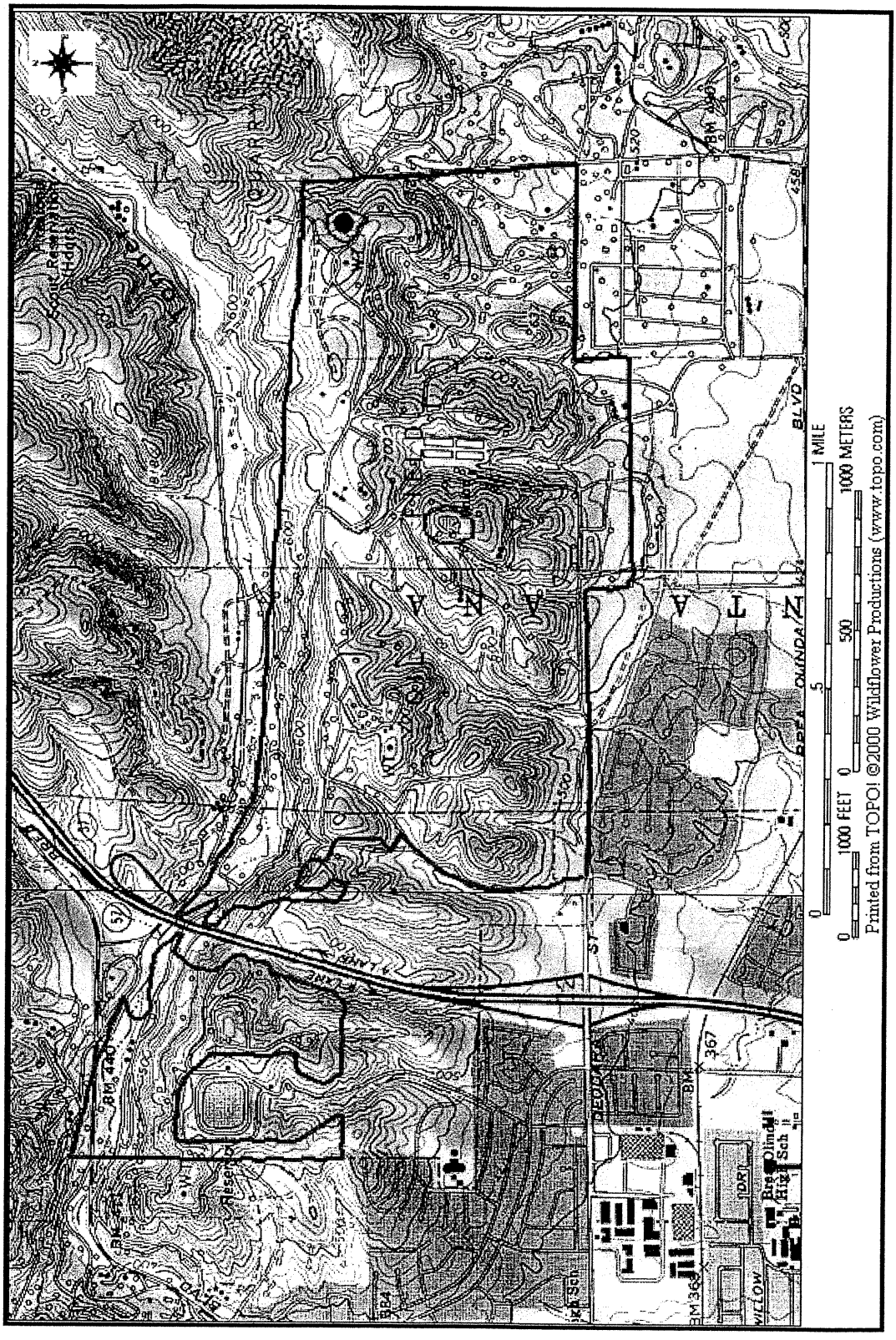

Exhibit 1-3
USGS Map

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a. Program EIR Defined

CEQA Guidelines §15146 defines a program EIR as:

> ... an EIR which may be prepared on a series of actions that can be characterized as one large project and are related:
>
> - Geographically,
> - As logical parts in the chain of contemplated actions,
> - In connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program, or
> - As individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways.

This Program EIR addresses all known potential effects associated with the implementation of the Tonner Hills project. It is an appropriate vehicle to address this project since there will be multiple and sequential discretionary approvals.

b. Scoping Procedures and Format

The objective of distributing the NOP and conducting a public EIR Scoping Meeting was to identify and determine the full range and scope of environmental issues and concerns about the proposed project in order that these could be examined fully in the EIR. The public scoping meeting for this project was held on April 26, 2001 in the City of Brea. Comments received during the NOP distribution and public Scoping Meeting process pertaining to potentially significant environmental impacts are addressed in this Draft EIR in Chapter 4 - Environmental Analysis. The Initial Study and Notice of Preparation, and comments received during the NOP/scoping process, including Summaries of Comments received, are contained in Technical Appendix A of this EIR.

1.4 Incorporation by Reference

Certain documents are to be incorporated by reference into this EIR pursuant to CEQA Guidelines §15150. Where a document is incorporated by reference, its pertinent sections will be briefly summarized and referenced in the discussions in this EIR. This EIR incorporates by reference the following documents:

- CEQA Guidelines
- CEQA Statutes
- County of Orange, Environmental Procedures

- County of Orange, General Plan Growth Management Element
- County of Orange, General Plan Housing Element
- County of Orange, General Plan Land Use Element
- County of Orange, General Plan Noise Element
- County of Orange, General Plan Public Services and Utilities Element
- County of Orange, General Plan Recreation Element
- County of Orange, General Plan Resources Element
- County of Orange, General Plan Safety Element
- County of Orange, General Plan Transportation Element
- County of Orange, Hydrology Manual
- County of Orange, Master Plan of Riding and Hiking Trails
- County of Orange, Noise Ordinance
- County of Orange, Zoning Code
- Orange County Master Plan of Arterial Highways
- Orange County OCP 2000 Census data
- Orange County Transportation Authority OCTAM 3.1 Travel Demand Model
- South Coast Air Quality Management District, CEQA Air Quality Handbook
- South Coast Air Quality Management District, 1997 Air Quality Management Plan
- Southern California Association of Governments, Regional Comprehensive Plan and Guide, March, 1996
- Tonner Hills Planned Community

Copies of all documents incorporated by reference are available for public review in the County of Orange, Planning & Development Services Department, Environmental & Project Planning Services Planning Division, 300 North Flower Street, Suite 320, Santa Ana, California.

In addition to the documents of the County of Orange, the following additional materials were used extensively in the preparation of this EIR:

- City of Brea, General Plan
- City of Brea, General Plan Environmental Impact Report
- City of Brea, Master Plan of Storm Drains
- City of Brea, Hillside Management Ordinance
- City of Brea, Zoning Code
- City of Brea, Sphere of Influence Area Vision Document
- City of Brea, Future Brea ... Revisiting the Vision

1.5 Organizations Affiliated with Project

The County of Orange is the Lead Agency for the Tonner Hills Planned Community. Contact persons for the project are as follows:

1.5.1 County of Orange

Planning & Development Services Department
300 North Flower Street
P.O. Box 4048
Santa Ana, California 92702-4048
(714) 834-2300

Bryan Speegle, Assistant Director
Tim Neely, Manager, Environmental Planning Services
George Britton, Current Planning
John Buzas, Manager, Current Planning Services
Chuck Shoemaker, Special Projects
Chad Brown, Chief, Site Planning & Consistency

1.5.2 Environmental Consultant

Culbertson, Adams & Associates, Inc.
85 Argonaut, Suite 220
Aliso Viejo, California 92656-4105
(949) 581-2888

M. Andriette Culbertson, President and Principal
Elizabeth C. Mahoney, Director of Environmental Planning
Diane Bathgate, AICP, Senior Planner
Kent Lin, Assistant Planner
Kathleen M. Crum, Assistant Planner
Jan Heppert, Resource Agency Coordinator
Jennie C. Brazel, Graphics and Multimedia Director

1.5.3 Other Organizations Affiliated with the Project

Aesthetics
Focus 360
27123 Calle Arroyo
San Juan Capistrano, California 92675

Air Quality and Noise
Mestre Greve Associates
280 Newport Center Drive, Suite 230
Newport Beach, California 92660

Geological/Hazards
Earth Consultants International
2522 N. Santiago, Ste. B
Orange, California 92867

Harding ESE
2171 Campus Dr., Ste. 100
Irvine, California 92912

Biological Resources
Chambers Group, Inc.
17671 Cowan Avenue, Suite 100
Irvine, California 92614

Engineering
The Keith Companies
2955 Red Hill Avenue
Costa Mesa, California 92626

Traffic/Circulation
Urban Crossroads
41 Corporate Park, Suite 210
Irvine, California 92606

1.6 Responsible Agencies/Agencies with Jurisdiction by Law Over Natural Resources

- U.S. Fish & Wildlife Service
- U.S. Army Corps of Engineers
- California Department of Fish & Game
- California Department of Conservation
- California Department of Toxic Substances Control
- California Regional Water Quality Control Board
- Metropolitan Water District of Southern California
- Orange County Transportation Authority
- Orange County Sanitation Districts

1.6.1 Other Governmental Jurisdictions Consulted

- Brea Olinda Unified School District
- California Department of Conservation
- California Department of Parks and Recreation
- California Integrated Waste Management Board
- California State Lands Commission
- Caltrans District 12
- County of Orange Health Care Agency, Local Enforcement Agency (LEA)

- City of Brea
- City of Chino Hills
- City of Diamond Bar
- City of Fullerton
- City of La Habra
- City of Yorba Linda
- Cleveland National Forest
- County of San Bernardino
- County of Los Angeles
- LAFCO
- Orange County Sanitation District
- South Coast Air Quality Management District
- Southern California Association of Governments
- Southern California Hazardous Waste Management Authority
- Wildlife Corridor Conservation Authority

1.6.2 Other Groups Consulted

In addition to the statutorily required consultation in the preparation of an EIR, the County of Orange made a concerted effort to involve all known environmental interest groups and homeowners associations interested in the Tonner Hills Planned Community.

a. Environmental Interest Groups

- Center for Biological Diversity
- Hills for Everyone
- Save Brea's Hills
- Sierra Club
- The Wildlife Society of Southern California

b. Homeowners Associations

- Amber Hill Homeowners Association
- Ash Street Cottages Homeowners Association
- Country Road Homeowners Association
- Birchlane Homeowners Association
- Brea Corsican Villas Homeowners Association
- Brea Sommerset Community Association
- Brea Terrace Homeowners Association
- Brea Village Homeowners Association
- Community Association of Country Hills
- Country Club Park Homeowners

- Country Hills Est Homeowners Association
- Glenbrook Homeowners Association
- North Hills Homeowners Association
- North Hills Tennis & Swim Club
- Olinda Village Homeowners Association
- Park Paseo Homeowners Association
- The Arbors Homeowners Association
- Winding Way Community Association

1.7 Disagreement Among Experts

This EIR contains substantial evidence to support all of the conclusions presented herein. That is not to say that there will not be disagreements with these conclusions. The CEQA Guidelines and, more particularly, case law clearly provide the standards for treating disagreement among experts. Where evidence and opinions of experts conflict on an issue concerning the environment, and the agency knows of these controversies in advance, the EIR must acknowledge the controversies, summarize the conflicting opinions of the experts, and include sufficient information to allow the public and decision makers to take intelligent account of the environmental consequences of their action.

It is also possible that evidence will be presented during the Draft EIR review which might create disagreement. This evidence may be considered by the decision makers during the public hearing process.

In rendering a decision on a project where there is disagreement among experts, the decision makers are not obligated to select the most conservative, environmentally protective or liberal viewpoint. They may give more weight to more than one expert than another, and need not resolve a dispute among experts. In their proceedings, they must consider the comments received and address objections but need not follow said comments or objections so long as they state the basis for their decision and that decision is supported by substantial evidence.

2. Executive Summary

2.1 Project Description Summary

The proposed project consists of a comprehensive development plan for 789.8 acres of land that has been used for oil and gas production for the past 100 years, and is still in operation. The proposed Planned Community involves the development of 914 residential units distributed in 8 distinct neighborhoods on 193.9 acres, 32.7 acres reserved for public use, 15 acres to be designated for the continuation of oil and gas production activities and facilities that will also exist through all open space areas and some residential areas, 7.7 acres to be developed as neighborhood commercial use, and 5.8 acres to be developed for private neighborhood park use.

As part of the proposed Tonner Hills Planned Community and in recognition of California's energy needs, portions of existing oil and gas production facilities and activities are schedule to either remain in place or be relocated for continued operation. Various regulatory agencies have collaborated with the remediation efforts to be implemented, with the final goal of remediation of contamination in the areas to be developed. The project applicant proposes to change the site zoning from"General Agricultural" (A1 (O)) to Tonner Hills Planned Community (PC).

The existing General Plan designation for Tonner Hills Planned Community site is 1B "Suburban Residential," which allows a development density range of 0.5 to 18 units per acre, and 2A, Community Commercial. The existing zoning of the site is A1 (O), "General Agricultural" District with an "Oil" overlay district under the County of Orange Zoning Code, which allows one dwelling unit per minimum of 4-acre site, as well as oil well operations. The Planned Community proposes a mix of housing styles and lot sizes, which will include single-family and multi-family residential uses. Residential lots will range in size between 2,600 and 8,000 minimum square feet. The project would result in an overall density of 1.2 dwelling units per acre.

The proposed Tonner Hills Planned Community also consists of a 5.8 acres neighborhood park (Wildcatters Park). The neighborhood park may include open lawn area, a basketball court, children's play areas, passive use areas, a tennis court, and a public restroom. A 32.7-acre public use area is proposed, which could accommodate sports facilities such as soccer and baseball fields or other public uses.

Disturbed open space areas within the project site comprise approximately 123.1 acres. These areas will be revegetated and reserved for open space use and continuing oil production.

Tonner Hills Planned Community project site is primarily situated in hillside areas. Remedial grading of the site is necessary as part of the project approval. Grading quantities for the entire development project will total approximately 4.5 million to 5 million cubic yards, which will be balanced on the site.

2.2 Summary of Impacts, Mitigation Measures, and Unavoidable Adverse Impacts

Provided in Table 2.1 on the following pages is a summary of potential project impacts and proposed mitigation measures associated with the development of the Tonner Hills Planned Community. These summaries also identify the residual (or remaining) impacts that remain significant after implementation of the proposed mitigation measures.

Table 2-1 - Summary of Project Impacts and Mitigation Measures

Description of Impact	Mitigation Measure Summary	Impacts
Land Use and Planning		
• Consistency with Orange County General Plan. • Consistency with Orange County Zoning ordinances. • Compatibility with surrounding land uses.	No mitigation measures are required.	Less than significant
Agriculture		
Loss of 18 acres of a former plant nursery designated as Unique Farmland will contribute incrementally on a statewide basis to the conversion of agricultural lands to urbanized uses.	No mitigation measures are available.	Significant and unavoidable
Population and Housing		
The operation of 914 housing units will add approximately 2,274 persons to the area and will provide additional housing opportunities.	No mitigation measures are required.	Less than significant
Geophysical		
The Project site is subjected to potential geological impacts associated with fault ruptures during an earthquake, seismic ground shaking, and its secondary effects of slope instability, compressible/collapsible soils, expansive and corrosive soils, tar seeps, and methane gas. The Project grading plans will balance cut and fill on-site, resulting in approximately 5,500,000 cubic yards of grading activities. An additional 3,600,000 cubic yards of remedial grading is anticipated for the stabilization of alluvium, colluvium, landslide debris, and older, uncompacted fills. The Project will contribute to cumulative land form alterations and geophysical impacts.	G-1 **Fault Investigations** - Prior to issuance of the grading permit, the project applicant shall ensure that development throughout the project area shall include geologic investigations performed by a California-licensed geologist or engineering geologist to document the location, orientation, recency of activity, and direction of anticipated offset for active or potentially active faults that impact the development area. In particular, the precise location and activity of the Tonner Fault should be determined, because of its proximity to future home sites (approximately 50 feet). Appropriate setbacks from designated active faults should be included in project planning and design, and a report should be submitted to the Manager, Subdivision and Grading.	Implementation of the recommended mitigation measures will reduce potentially significant project-related geophysical impacts to a less than significant level. With the exception of being situated in a seismically active region, the development of Tonner Hills Planned Community will not result in unavoidable adverse geophysical impacts.

Description of Impact	Mitigation Measure Summary	Impacts
	G-2 **Geotechnical Investigation and Report** - Prior to the issuance of a grading permit, the project applicant shall submit a geotechnical report to the Manager, Subdivision and Grading, for approval. The report shall be prepared by a California-registered engineering geologist and licensed civil engineer with experience in soil engineering, and shall include technical information and recommendations in the format required by the County of Orange Grading Manual.	
	G-3 **Liquefaction** - Prior to issuance of a grading permit, the project applicant shall ensure that the geotechnical investigation fully characterizes the presence and extent of liquefiable soils and shall submit a report to the Manager, Subdivision and Grading. The project is not within a state-delineated Seismic Hazard Zone for liquefaction; however, the state maps may not show all potentially liquefiable areas. Therefore, a site-specific analysis of the liquefaction potential in areas of the property underlain by alluvium should be included in future detailed geotechnical investigations. In order to assist in this analysis, the state has published specific guidelines for evaluating and mitigating liquefaction (California Division of Mines and Geology Special Publication 117, 1997). In general, the liquefaction investigation identifies the depth, thickness, and lateral extent of any liquefiable layers that would affect the project site. If such layers exist, an analysis is then performed to estimate the type and amount of ground deformation that might occur, given the seismic potential of the area. Mitigation measures generally fall into two categories: ground improvement or foundation design. Ground improvement measures include removal and recompaction of low density soils, removal of excess ground water, in-situ ground densification, and other types of ground improvement (such as grouting or surcharging). Special foundations that may be recommended range from deep piles to reinforcement of shallow foundations (such as post-tensioned slabs). The type (or combinations of types) of mitigation depends on the site conditions and on the nature of the proposed project (California Division of Mines and Geology, 1997).	

Description of Impact	Mitigation Measure Summary	Impacts
	G-4 **Slope Stability** – Prior to issuance of the grading permit, the existing slopes that will remain adjacent to development areas should be investigated and analyzed for gross stability in accordance with current soil engineering standards. Graded slopes (including cut, fill, and cut-over-fill slopes) and graded/natural slope combinations will also require investigation and analysis. Grossly unstable slopes can be stabilized by buttressing, flattening the slope gradient, lowering the height of the slope, constructing the slope with geogrid reinforcement, or by combinations of these methods. Where slopes cannot be stabilized, building setbacks will be imposed. Specific recommendations for remediation of slope instability shall be included in the geotechnical report for the project, which shall be submitted for review and approval to the Manager, Subdivision and Grading.	
	G-5 **Compressible/Collapsible Soils** - Prior to issuance of the grading permit, a geotechnical soil analysis shall be performed to characterize the presence of compressible and/or collapsible soil within the project site. The findings and specific recommendations shall be included in the geotechnical report for the project and shall be submitted for review and approval to the Manager, Subdivision and Grading. Compressible soils are routinely removed and recompacted in proposed fill areas. Where perimeter fill slopes descend into natural canyons, the compressible soils are not only removed under the fill slope, but for a specified distance beyond the toe of the fill slope. This provides support for the slope and mitigates the potential for settlement. The removal area generally extends beyond the grading design at a minimum 1:1 projection (if landslides are present, a 1.5:1 or 2:1 projection is used). A 1:1 projection means the bottom of the removal extends beyond the toe to a horizontal distance equal to the depth of the removal bottom below the toe. Consequently, this distance is primarily dependent on the thickness of the compressible soils, but is also dependent on the gradient of the natural slope below the fill (the steeper the slope, the farther the removal is extended).	

Description of Impact	Mitigation Measure Summary	Impacts
	G-6 **Expansive and Corrosive Soils** - Prior to issuance of the grading permit, and as part of the geotechnical investigation performed by a California licensed geologist and geotechnical engineer, the presence and extent of potentially expansive and corrosive soils within the project site shall be characterized. The best defense against expansive soils in new developments is to avoid placing expansive soils near the surface. If this is unavoidable, building areas with expansive soils are typically "presaturated" to a moisture content and depth specified by the soil engineer, thereby "pre-swelling" the soil prior to constructing the structural foundation or hardscape. This method is often used in conjunction with designing stronger foundations that can resist small ground movements without cracking. Good surface drainage control is essential for all types of improvements, both new and old.	
	G-7 **Tar Seeps** - The potential for naturally occurring crude oil seeps cannot be completely eliminated; however, it can be greatly reduced by the implementation of the following remedial measures. • Prior to the issuance of a grading permit, a thorough analysis and preliminary remediation plan shall be prepared by the geotechnical consultant in order to reduce impacts of future oil seepage to a level of non-significance. The plan shall be submitted for review and approval to the Manager, Subdivision and Grading. For the residential areas, remedial grading will be required to reduce the potential for future oil seepage at finished grades. This could include deeper overexcavation, thereby placing a thick fill column between the seep and finish grade; a subsurface drainage and capture system; and/or higher compaction standards. • During grading, the geotechnical consultant shall observe and map all excavations for oil seepage. The geotechnical consultant shall provide specific remedial recommendations based on the actual conditions encountered. Remedial recommendations shall include a means by which to reduce the potential for future landscape irrigation water to form a perched ground water table on the oil-bearing bedrock or fill. • During grading the location of any subsurface, utility lines shall be	

Description of Impact	Mitigation Measure Summary	Impacts
	overexcavated a minimum of 2 feet below the base of the line in bedrock or soils with naturally occurring hydrocarbon. The geotechnical consultant shall evaluate any utility line located in oil-bearing areas for its potential to provide a pathway for oil migration (i.e., via the permeable bedding sands). Oil-bearing fill materials shall not be placed as utility line backfill. • During grading, the geotechnical and/or environmental consultant shall evaluate the need for clarifiers in order to reduce the potential of water carrying crude oil to impact the site. • Prior to issuance of building permits, the geotechnical consultant shall issue an as-graded report documenting the location of naturally occurring oil and any remedial measures installed and a monitoring and maintenance plan for tar seep drainage and collection systems. The report and plan shall be submitted to the Manager, Subdivision and Grading, and the Manager, Current Planning, for approval. • The oil seep analysis and mitigation shall be performed by a California registered engineering geologist and soil engineer. All reports, work plans, and mitigation plans shall be submitted to the Manager, Subdivision and Grading, for review and approval.	
	G-8 **Reservoirs** - Prior to issuance of the grading permit, the flow directions, flow volumes, and inundation levels shall be estimated by the design civil engineer for the project and submitted to the Manager, Subdivision and Grading, for approval. If necessary, engineered devices or structures should be considered to redirect any potential flow away from residential neighborhoods. If feasible, the water tanks should be relocated outside the Alquist-Priolo Earthquake Fault Zone. The presence or absence of faults should be determined by conducting a detailed geologic investigation.	
	G-9 **Observation and Testing** – Prior to issuance of building permits, a final report summarizing the observation and testing performed during grading by the geotechnical consultant and for the project shall be submitted to the Manager, Subdivision and Grading for approval.	

Description of Impact	Mitigation Measure Summary	Impacts
	G-10 **Grading** - All grading shall be performed in accordance with the County of Orange Grading and Excavation Code, County of Orange Grading Manual and the appropriate sections of the Uniform Building Code.	
Hydrology and Drainage		
Development of the Project will result in the increase of peak runoff flows due to the increased construction of impervious surfaces, which results in shorter runoff times and greater concentration of hydrological flows. Increased erosion of sediment will result during the construction stages of the Project. Urban wastewater runoff will significantly increase as a direct result of this Project, resulting in greater impacts to hydrology and drainage.	HD-1 Prior to the recordation of a subdivision map for development (except maps for financing and conveyance purposes only) and prior to the issuance of any grading permits, the following drainage studies shall be submitted to and approved by the Manager, Subdivision and Grading and the Manager, PFRD/Program Development Division: a. A drainage study of the project including diversions, off-site areas that drain onto and/or through the project, and justification of any diversions; and b. When applicable, a drainage study evidencing that proposed drainage patterns will not overload existing storm drains; and c. Detailed drainage studies indicating how the project grading, in conjunction with the drainage conveyance systems including applicable swales, channels, street flows, catch basins, storm drains, and flood water retarding, will allow building pads to be safe from inundation from rainfall runoff that may be expected from all storms up to and including the theoretical 100-year flood.	Implementation of the recommended mitigation measures will reduce potentially significant project-related impacts to hydrology and drainage to a less than significant level. Tonner Hills Planned Community will not result in unavoidable adverse impacts to hydrology and drainage.
	HD-2 a. Prior to the recordation of a subdivision map for development (except maps for financing and conveyance purposes only) and prior to the issuance of any grading permits, the applicant shall, in a manner meeting the approval of the Manager, Subdivision and Grading, the Manager, PFRD/Program Development, and the Manager, Flood Control Program: 1) Design provisions for surface drainage; and 2) Design all necessary storm drain facilities extending to a satisfactory point of disposal for the proper control and disposal of storm runoff; and 3) Dedicate the associated easements to the County of Orange to ensure adequate maintenance access, if determined necessary.	

Description of Impact	Mitigation Measure Summary	Impacts
	b. Prior to the issuance of any certificates of use and occupancy, said improvements shall be constructed in a manner meeting the approval of the Manager, Subdivision and Grading and Manager, Construction.	
	HD-3 Prior to the recordation of a subdivision map for development or prior to the issuance of any grading permit, whichever comes first, and if determined necessary by the Manager, Subdivision and Grading, the applicant shall record a letter of consent from the upstream and/or downstream property owners permitting drainage diversions and/or unnatural concentrations. The form of the letter of consent shall be approved by the Manager, Subdivision and Grading Services, and the Manager, PFRD/Program Development Division prior to recordation of the letter.	
	HD-4 Prior to the recordation of a subdivision map for development (except maps for financing and conveyance purposes only), the subdivider shall participate in the applicable Master Plan of Drainage in a manner meeting the approval of the Manager, Subdivision and Grading, and the Manager, PFRD/Program Development, including payment of fees and the construction of the necessary facilities.	
	HD-5 a. Prior to the approval of a site development permit per Zoning Code §7-9-113, the applicant shall submit an Elevation Certificate to the Manager, Current Planning Services, identifying the base flood elevation and certifying that the planned elevation of the lowest floor, including basements, is at least one (1) foot above the Base Flood Elevation (BFE). *(Note: to eliminate FEMA requirements for flood insurance, the lowest elevation of any part of the structure, not only the lowest floor, must be above the BFE.)* b. Prior to the issuance of certificates of use and occupancy for any building, the applicant shall complete Section "E" of the Elevation Certificate, identifying the Base Flood Elevation (BFE) and certifying the as-built lower floor, including basement, as constructed, is at least one (1) foot above the BFE, in a manner meeting the approval	

Description of Impact	Mitigation Measure Summary	Impacts
	of the Manager, Building Inspection Services. *(Note: to eliminate FEMA requirements for flood insurance, the lowest elevation of any part of the structure, not only the lowest floor, must be above the BFE.)*	
	HD-6 Prior to the issuance of any certificates of use and occupancy, the applicant shall not grant any new easements over any property subject to a requirement of dedication or irrevocable offer to the County of Orange or the Orange County Flood Control District, unless such easements are expressly made subordinate to the easements to be offered for dedication to the County. Prior to granting any of said easements, the subdivider shall furnish a copy of the proposed easement to the Manager, Subdivision and Grading, and the Manager, PFRD/Program Development, for review and approval. Further, a copy of the approved easement shall be furnished to the Manager, Building Inspection Services, prior to the issuance of any certificate of use and occupancy.	
	HD-7 Prior to the recordation of a subdivision map for development (except maps for financing and conveyance purposes only), the subdivider shall not grant any development-related easements (i.e., oil production related easements are excluded) over any property subject to a requirement of dedication or irrevocable offer to the County of Orange or the Orange County Flood Control District, unless such easements are expressly made subordinate to the easements to be offered for dedication to the County. Prior to granting any of said easements, the subdivider shall furnish a copy of the proposed easement to the Manager, Subdivision and Grading, for review and approval.	
	HD-8 Prior to the issuance of any grading permits, applicant shall delineate on the grading plan the floodplain which affects the property, in a manner meeting the approval of the Manager, Subdivision and Grading.	
	HD-9 Prior to the recordation of a subdivision map for development, applicant shall delineate on the final map and the project grading plan the floodplain which affects the property, in a manner meeting the approval of the Manager, Subdivision and Grading.	

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	HD-10 Prior to the issuance of any grading permits, applicant shall submit a Runoff Management Plan (RMP) to the Manager, Subdivision and Grading, and the Manager, Flood Control Programs, for review and approval.	
	HD-11 Prior to the issuance of any grading permits for phased improvements, applicant shall submit drainage calculations indicating that the proposed drainage improvements are adequate to mitigate for project impacts as stated in the Runoff Management Plan to the Manager, Subdivision and Grading, and the Manager, Flood Control Programs, for review and approval.	
	HD-12 Prior to the recordation of a subdivision map for development (except maps for financing and conveyance purposes only), the applicant shall, in a manner meeting the approval of the Manager, Subdivision and Grading, and the Manager, PFRD/Program Development Division, initiate the formation of a Community Service Area covering the same area as the Master Homeowners Association for the purpose of maintaining the on-site drainage facilities.	
	HD-13 During grading and construction activities for the water reservoir storage tanks, all grading and site preparation shall comply with the County Grading Ordinance and the Uniform Building Code (for seismic criteria) and be approved by the Manager, Subdivision and Grading. Water storage tank design shall comply with the American Water Works Association (AWWA) Standard D-100 for structural design and seismic requirements. The design plans shall be submitted to the Manager, Building Inspection Services, for approval.	
Water Quality		
The Project will result in the increase of stormwater runoff due to the construction of impervious surfaces, which results in the increase of water quality impacts. Urban wastewater runoff typically associated with residential and mixed-use developments will increase as	WQ-1 **Runoff Management & Water Quality Plan** - Prior to the recordation of the first final map (either for conveyance or development), or prior to the issuance of any rough or precise grading permit, whichever occurs first, the land owner/applicant shall prepare, and receive approval from the Manager, Subdivision and Grading	Implementation of the recommended mitigation measures will reduce potentially significant project-related impacts to water quality to a less than significant level. The project will not result in unavoidable

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a direct result of this Project.	Services Division, in consultation with the Environmental Resources and Flood Program Sections of the PFRD Program Development Division (PDD) of, a Runoff Management Plan (RMP), including Water Quality Management Plan (WQMP) covering the subject property. The RMP shall include the location of all permanent large-scale Best Management Practices (BMPs), including filtration devices, such as water quality basins, detention basins, debris basins, grass/bio-swales, energy dissipaters, and other BMPs.	adverse impacts to water quality.
	WQ-2 **Master Infrastructure Improvements** - Prior to the recordation of the first final map (either for conveyance or development), or prior to the issuance of any rough or precise grading permit, whichever occurs first, the land owner shall design and construct all applicable master infrastructure improvements identified in the approved RMP, including debris basins, bio-swales, energy dissipaters, drainage pipes, and other improvements, and shall provide all necessary dedications, all in a manner meeting the approval of the Manager, Subdivision & Grading, and the Manager, PFRD/Program Development Division.	
	WQ-3 **NPDES** - Prior to issuance of any grading permits, the applicant shall submit evidence to the Manager, Subdivision and Grading, that the applicant has obtained coverage under the NPDES statewide General Construction Activity Stormwater Permit from the State Water Resources Control Board, which includes the preparation of a Storm Water Pollution Prevention Program and incorporates BMP to minimize stormwater runoff.	
	WQ-4 **Final Map Note for Retention Basins** - Prior to the recordation of each final map (either for conveyance or development), a note shall be placed on the applicable final map where appropriate, indicating that retention basins will be required on the property in accordance with the approved RMP, in a manner meeting the satisfaction of the Manager, Subdivision & Grading Services Division.	

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Transportation/Circulation		
The project has the potential to impact surrounding intersections. The project will include mitigation measures to improve the intersections to allowable levels of service.	T-1 Brea Boulevard (NS) at SR 57 Southbound On-Ramp (EW) **Near Term Conditions:** Prior to issuance of certificates of use and occupancy, the developer shall pay on a fair share basis for provision of a second northbound and a second southbound through lane. The proposed improvement is also part of the City of Brea proposed fee program. Any project contribution should be credited toward the project's impact fees.	Implementation of the recommended mitigation measures will reduce potentially significant project-related impacts to traffic to a less than significant level.
	T-2 Brea Boulevard (NS) at Tonner Canyon Road (EW) **Near Term Conditions:** Prior to issuance of certificates of use and occupancy, the developer shall pay on a fair share basis for provision of a second northbound and a second southbound through lane. The proposed improvement is also part of the City of Brea proposed fee program. Any project contribution/construction should be credited toward the project's impact fees. **2025 Conditions:** The developer shall pay on a fair share basis for restriping the westbound approach from an exclusive left turn lane and exclusive right turn lane to provide a shared left-right turn lane and an exclusive right turn lane. If this improvement is constructed by the project, a credit against other fees/obligations should be considered.	
	T-3 Brea Boulevard (NS) at Central Avenue (EW) **Near Term Conditions:** Prior to issuance of certificates of use and occupancy, the developer shall pay on a fair share basis for: • Construction of a second southbound left turn lane and a southbound right turn overlap (arrow). • Restriping/reconstructing the eastbound approach to provide one (additional) exclusive right turn lane. • Restriping/reconstructing the westbound approach to provide two through lanes and one exclusive right turn lane. All improvements are part of the City of Brea proposed fee program except for the eastbound exclusive right turn lane and southbound right turn overlap (arrow) which shall require fair share fees paid to the	

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	County of Orange.	
	T-4 State College Boulevard (NS) at Lambert Road (EW) **Near Term and 2025 Conditions:** Prior to issuance of certificates of use and occupancy for 70% of the project or occupancy of Planning Area 8, the developer shall pay to the County the entire amount for providing an additional (second) southbound left turn lane and converting the current shared southbound left turn-through lane to an exclusive through lane.	
	T-5 SR 57 Southbound Off-Ramp at Brea Canyon Road **Near Term Conditions:** Prior to issuance of certificates of use and occupancy, the developer shall pay to the County on a fair share basis for one of the three following alternatives: • Eliminate the left turn movement allowing channelization of the eastbound through movement on Brea Canyon Road to eliminate the need to stop at this intersection. • Allow southbound left turns and only channelize one eastbound travel lane for free flow travel. • Construct a separate slip ramp for traffic to exit the southbound Orange (SR 57) Freeway and proceed east (north) on Brea Canyon Road including an acceleration lane/merging section to achieve acceptable traffic operations.	
	T-6 SR 57 Southbound Ramps (NS) at Lambert Road (EW) **Near Term Conditions:** Prior to issuance of certificates of use and occupancy, the developer shall pay to the County on a fair share basis for restriping/reconstructing the eastbound approach to provide two exclusive through lanes, a shared through-right turn lane, and an exclusive right turn lane. (This location currently includes three exclusive through lanes and an exclusive right turn lane.)	
	T-7 Kraemer Boulevard (NS) at Lambert Road (EW) **Near Term Conditions:** Prior to issuance of certificates of use and occupancy, the developer shall pay to the County the entire amount for	

Description of Impact	Mitigation Measure Summary	Impacts
	restriping the eastbound approach to provide one exclusive through lane, a shared through-right turn lane, and an exclusive right turn lane. (This location currently includes two exclusive through lanes and an exclusive right turn lane.) **2025 Conditions:** The developer shall pay on a fair share basis for restriping the eastbound approach to provide two exclusive through lanes, a shared through-right turn lane, and an exclusive right turn lane. (This location is planned to include three exclusive through lanes and an exclusive right turn lane as part of the City of Brea proposed fee program.) If this improvement is constructed by the project, a credit against other fees/obligations should be considered.	
	T-8 Valencia Avenue (NS) at Birch Street (EW) **2025 Conditions:** The developer shall pay to the County on a fair share basis for restriping the southbound approach to eliminate the existing exclusive right turn lane and provide a second southbound left turn lane.	
	T-9 Imperial Highway (NS) at Bastanchury Road (EW) Prior to issuance of certificates of use and occupancy, the developer shall pay to the County on a fair share basis for restriping the southbound approach to eliminate the existing exclusive right turn lane and provide a second southbound left turn lane.	
	T-10 Balsa Avenue between State College Boulevard and Carmichael Drive Prior to issuance of certificates of use and occupancy for residences within Planning Area 8, the developer shall pay to the County on a fair share basis for any agreed upon traffic calming measures along Balsa Avenue.	
	T-11 City of Brea Fee Program Prior to issuance of building permits, the project shall participate in both the City of Brea currently adopted fee program and the City of Brea proposed fee program for transportation improvements. These fees shall be paid on a per unit basis.	

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Air Quality		
• Construction-related emissions of NO_X and PM10. • Generation of CO, ROG and NO_X - operational air emissions associated with the proposed project.	AQ-1 During grading and construction phases, the project shall apply measures contained in Table 1 and Table 2 of SCAQMD Rule 403. Prior to the issuance of grading permit, the applicant shall obtain appropriate permits from the SCAQMD and submit them to the Manager, Subdivision and Grading Services.	Air quality impacts cannot be completely mitigated and will exceed AQMD thresholds. The impacts are considered unavoidable and significant.
	AQ-2 During grading and construction phases, the project shall reduce construction equipment emissions by implementing the following measures, which shall be included in grading and improvement plans specifications for implementation by contractors: • Use low emissions mobile construction equipment. • Maintain construction equipment engines by keeping them tuned. • Use low sulfur fuel for stationary construction equipment. This is required by SCAQMD Rules 431.1 and 431.2. • Utilize existing power sources (i.e., power poles) when feasible. This measure would minimize the use of higher polluting gas or diesel generators. • Configure construction parking to minimize traffic interference. • Minimize construction of through-traffic lanes. When feasible, construction should be planned so that lane closures on existing streets are kept to a minimum. • Schedule construction operations affecting traffic for off-peak hours. • Develop a traffic plan to minimize traffic flow interference from construction activities (the plan may include advance public notice of routing, use of public transportation and satellite parking areas with a shuttle service.	
	AQ-3 Prior to issuance of building permits, the applicant shall obtain approval of an Air Quality Mitigation Plan by the Manager, Environmental and Project Planning. The Plan shall address each applicable control measure listed below in order to determine which control measures are feasible, recommend implementation conditions, and establish methods	

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	of applying conditions to contractors, buyers, lessees, tenants and occupants to comply with Rule 402 and Rule 403. The project applicant shall reimburse the County for costs of an independent third party peer review, if necessary, of this Plan. Specific mitigation measures could include: a. Transportation Demand Management Measures 1. Schedule truck deliveries and pickups during off-peak hour. 2. Provide adequate ingress and egress at all entrances to public facilities to minimize vehicle idling at curbsides. 3. Provide dedicated turn lanes as appropriate and provide roadway improvements at heavily congested roadways. b. Energy Efficient Measures 5. Improve thermal integrity of the buildings and reduce thermal load with automated time clocks or occupant sensors. 6. Install energy efficient street lighting. 7. Capture waste heat and re-employ it in nonresidential buildings. 8. Landscape with native drought-resistant species to reduce water consumption and to provide passive solar benefits. 9. Provide lighter color roofing and road materials and tree planning programs to comply with the AQMP Miscellaneous Sources MSC-01 measure. 10. Comply with the AQMP Miscellaneous Sources PRC-03, and Stationary Sources Operations Enhanced Inspection and Maintenance and ADV-MISC to reduce emissions of restaurant operations. 11. Provide bicycle lanes, storage areas, and amenities, and ensure efficient parking management. 12. Provide preferential parking to high occupancy vehicles and shuttle services. Also, designate additional car pool or vanpool parking. The air quality benefit cannot be quantified. 13. Employers should provide variable work hours and telecommuting to employees to comply with the AQMP	

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	Advanced Transportation Technology ATT-01 and ATT-02 measures. 14. Provide dedicated parking spaces with electrical outlets for electrical vehicles. 15. Develop a trip reduction plan to comply with SCAQMD Rule 2202. 16. Employers should provide ride-matching, guaranteed ride home, or car pool or vanpool to employees as a part of the TDM program and to comply with the AQMP Transportation Improvements TCM-01 measure. 17. Synchronize traffic signals. 18. Encourage the use of alternative fuel or low emission vehicles to comply with the AQMP On-Road Mobile M2 measure, and Off-Road Mobile Sources M9 and M10 measures. 19. Introduce window glazing, wall insulation, and efficient ventilation methods.	
Noise		
• Construction-related noise from heavy equipment. • Noise from mixed use site affecting residential dwelling units. • Noise from project-related traffic due to increased dwelling units/population.	N-1 During grading and construction activities, the project applicant shall comply with the County of Orange Noise Ordinance, including limitations on allowable construction hours.	Implementation of the recommended mitigation measures will reduce potentially significant project-related noise impacts to to a less than significant level.
	N-2 Prior to the issuance of grading permits, the project proponent shall produce evidence acceptable to the Manager, Building Permits Services, that: a. All construction vehicles or equipment, fixed or mobile, operated within 1,000 feet of a dwelling shall be equipped with properly operating and maintained mufflers. b. All operations shall comply with Orange County Codified Ordinance Division 6 (Noise Control). c. Stockpiling and/or vehicle staging areas shall be located as far as	

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	practicable from dwellings. Notations in the above format, appropriately numbered and included with other notations on the front sheet of the project's permitted grading plans will be considered as adequate evidence of compliance with this condition.	
	N-3 Prior to issuance of building permits for tenant improvements for proposed uses in the Mixed Use area, proposed uses shall be evaluated by the Manager, Planning Services, to determine if a detailed noise assessment is required to ensure that the use will not result in a violation of the noise ordinance. If a study is called for, the study shall be prepared by a County certified acoustical consultant and conform to the requirements presented in the County's Land Use/Noise Compatibility Manual.	
	N-4 The applicant shall sound attenuate all residential lots and residential dwellings against present and projected noise (which shall be the sum of all noise impacting the project) so that the composite interior standard of 45 dBA CNEL for habitable rooms and a source specific exterior standard of 65 dBA CNEL for outdoor living areas is not exceeded. The applicant shall provide a report prepared by a County-certified acoustical consultant, which demonstrates that these standards will be satisfied in a manner consistent with Zoning Code §7-9-137.5, as outlined below. At a minimum, the report shall address noise levels of above-ground retained oil production facilities and activities within 500 feet of residential areas, as well as noise generated by traffic on nearby roadways. a. Prior to the recordation of a subdivision maps or prior to the issuance of grading permits, as determined by the Manager, Building Permits Services, the applicant shall submit an acoustical analysis report to the Manager, Building Permits Services, for approval. The report shall describe in detail the exterior noise environment and preliminary mitigation measures. Acoustical design features to achieve interior noise standards may be included	

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	in the report, in which case it may also satisfy item b. below. b. Prior to the issuance of any building permits for residential construction, the applicant shall submit an acoustical report describing the acoustical design features of the structures required to satisfy the exterior and interior noise standards to the Manager, Building Permits Services, for the approval along with satisfactory evidence which indicates that the sound attenuation measures specified in the approved acoustical report have been incorporated into the design of the project. c. Prior to the issuance of any building permits, the applicant shall show all free-standing acoustical barriers on the project's plot plan illustrating height, location and construction in a manner meeting the approval of the Manager, Building Permits Services. d. Prior to the issuance of certificates of use and occupancy, field testing in accordance with the County's Noise Ordinance may be required by the Manager, Building Permits Services to verify compliance with all applicable standards. The project applicant shall reimburse the County for the costs of an independent third party peer review of this evidence.	
	N-5 Prior to the issuance of any building or grading permits, the applicant shall obtain approval of the Manager, Building Permits Services, of an acoustical analysis report and appropriate plans which demonstrate that the noise levels generated by project noise generating equipment during its operation shall be controlled in compliance with Orange County Codified Ordinance, Division 6 (Noise Control). The report shall be prepared under the supervision of a County-certified acoustical consultant and shall describe the noise generation potential of the project during its operation and the noise mitigation measures, if needed, that shall be included in the plans and specifications of the project to assure compliance with Orange County Codified Ordinance, Division 6 (Noise Control).	

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Biological Resources			
Development as proposed will impact 104.3 acres of coastal sage scrub. A mitigation plan requires the revegetation of 188.4 acres of coastal sage scrub on-site.	BR-1	Prior to the issuance of any grading, clearing, or other landform modification permit, the developer shall submit evidence to the Director or designee, Development Services Department, that appropriate federal, state, and county permits have been obtained for the biological resources on-site to be removed by development. Said permits shall specify the timing, nature, and review authority for the mitigation measures, if any, that are required in connection with these removals. No removals shall be authorized until all necessary resource agency permits have been obtained.	Implementation of the recommended mitigation measures will reduce potentially significant project-related impacts to biological resources to a less than significant level.
Walnut trees within drainage channels may be negatively impacted during grading.	BR-2	Prior to the issuance of a grading permit, walnut trees within drainage channels shall be identified on the grading plan and retained to the greatest extent feasible. Said grading shall be subject to review and approval by the Manager, Current Planning Services.	
Streambeds and U.S. designated wetlands within U.S. Army Corps of Engineers jurisdiction may be impacted by the proposed development. 0.1 acres of riparian habitat will be impacted with the installation of Tonner Hills Road. 29.3 acres of riparian habitat will be enhanced.	BR-3	Prior to the issuance of a grading permit, the property owner/developer shall obtain a §1603 Streambed Alteration Agreement, if required by the *California Fish and Game Code*; and a permit under the guidelines of §404(b)(1) of the Clean Water Act, if required by the U.S. Army Corps of Engineers. Mitigation is intended to adhere to the "no net loss" policies of the CDFG and the U.S. Army Corps of Engineers. If a §404 Permit from the ACOE is required, a §401 Water Quality Certification will also be required from the California Regional Water Quality Control Board, Santa Ana Region. Evidence shall be provided to the Manager, Subdivision and Grading.	
	BR-4	Prior to initiation of grading, and upon approval from the Manager, Environmental Planning services, the property owner/developer shall implement the Tonner Hills Habitat Mitigation and Monitoring Program (which is included in the Technical Appendices). The Program incorporates measures to: • Preserve and protect walnut and oak woodlands outside the project footprint. • Preserve and protect coastal sage scrub habitat outside the project	

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	footprint. • Preserve and protect riparian habitat outside the project footprint. • Create additional coastal sage scrub habitat prior to and during project implementation. • Create additional walnut-coast live oak woodland habitat. • Enhance preserved habitat in Cable Canyon. The mitigation plan provides for a phased-in creation of riparian, coastal sage scrub, and walnut-oak woodland habitat on-site.	
Aesthetics		
• Effects on visual quality of the site and scenic vistas. • Impacts on visual quality from continued oil operations. • Creation of light and/or glare.	AE-1 Prior to the issuance of any grading permit or recordation of a subdivision map that creates building sites, whichever occurs first, the applicant shall obtain approval of the Manager, PFRD/HBP Program Management and Coordination, of a landscape and tree preservation plan for the property. This plan shall be consistent with the revegetation plan required as set forth in Section 4.10, Biological Resources, of this EIR.	Implementation of the recommended mitigation measures will reduce potentially significant project-related impacts to aesthetics to a less than significant level.
	AE-2 Prior to the approval of a Site Development Plan, a proposed color palette for the residential building materials and color schemes shall be submitted for review and approval by the Manager, Current Planning. The color palette shall consist of colors which complement with the surrounding hillsides.	
	AE-3 Prior to issuance of grading permits for final grading plans, the applicant shall submit for review and approval by the Manager, Current Planning, grading plans that comply with the County of Orange Zoning Code §7-9-139 (Grading and Excavation) and use contour and/or landform grading techniques for slopes viewed from public rights-of-way as described below: a. Contour grading results in landforms that exhibit many of the characteristics present with natural landforms as opposed to traditional terraced grading. Contour grading techniques include: • The use of horizontal and vertical curve variations for slope banks creating a curvilinear pattern. • Post-development landforms that exhibit natural terrain	

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	characteristics (without the heavily modeling effects of landform grading). • A general rounding of slopes at slope intersections and transition zones with natural grade. b. Landform graded slopes replicate the irregular shapes of natural slopes resulting in aesthetically pleasing elevations and profiles. Landform grading techniques should be used whenever slopes are being created which will be open to view from public rights-of-way.	
	AE-4 Prior to approval of a proposed Site Plan application, the Manager, Current Planning Services, shall review detailed development plans to ensure that adequate screening is provided around existing and proposed oil facilities as well as other utility structures. Such screening for all remaining oil well equipment within the residential neighborhoods and public use area shall be consistent with the specifications included in the approved Area Plan. For above-ground oil operations equipment within visual proximity of residential or recreation areas, screening shall be provided through the use of vine covered fences, walls and/or landscape plantings.	
	AE-5 Prior to approval of certificates of use and occupancy, existing electrical above ground utilities with a capacity of 12 kV or less shall be placed underground within the individual residential or mixed use planning areas.	
	AE-6 Prior to issuance of any building permit, the applicant shall demonstrate that all exterior lighting has been designed and located so that all direct rays are confined to the property in a manner meeting the approval of the Manager, Building Permit Services. Lighting shall be designed to minimize visibility of light sources by directing lighting toward the on-site structures and not illuminating areas outside property boundaries. Lighting along Tonner Hills Road shall be designed to protect the wildlife corridor crossing. The bridge spanning Tonner Creek shall be illuminated with bollards or other in-structure fixtures to prevent glare and light spillover into the creek.	

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Cultural/Scientific Resources		
The proposed project will have a significant effect on cultural resources if its development or operation would result in the unmitigated alteration of ORA-1483H.	CR-1 A qualified archaeological monitor approved by the County of Orange and paid for by the developer/property owner shall be present to monitor all ground-disturbing activities within 250 feet of ORA-1483H.	Implementation of the recommended mitigation measures will reduce potentially significant project-related impacts to cultural/scientific resources to a less than significant level.
Buried cultural resources, such as chipped or ground stone, historic debris, building foundations, or human bone, may be uncovered during grading for the proposed project.	CR-2 If buried cultural resources, such as chipped or ground stone, significant historic debris, building foundations, or human bone, are inadvertently discovered during ground-disturbing activities, work will stop in that area and within 100 feet of the find until a qualified archaeologist monitor approved by the County and paid for by the developer/ property owner can assess the significance of the find and, if necessary, develop appropriate treatment measures in consultation with the County of Orange and other appropriate agencies. If human remains of Native American origin are discovered during project construction, it is necessary to comply with state laws relating to the disposition of Native American burials, which fall within the jurisdiction of the Native American Heritage Commission (*Public Resources Code* §5097). If any human remains are discovered or recognized in any location other than a dedicated cemetery, there will be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the coroner of the county has been informed and has determined that no investigation of the cause of death is required. Section 7050.5 of the *California Health and Safety Code* requires that construction or excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must contact the California Native American Heritage Commission.	

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	If the remains are of Native American origin: a. The descendants of the deceased Native Americans may recommend to the landowner or the person responsible for the excavation work a means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in *Public Resources Code* §5097.98, or b. And the Native American Heritage Commission was unable to identify a descendant or the descendant failed to make a recommendation within 24 hours after being notified by the commission, the landowner shall re-inter the human remains with appropriate dignity on the property in a location not subject to further subsurface disturbance. According to the *California Health and Safety Code*, six or more human burials at one location constitutes a cemetery (§8100) and disturbance of Native American cemeteries is a felony (§7052). The construction contractor and the County of Orange will ensure that work is halted until appropriate treatment measures are implemented if potentially significant cultural resources are discovered during construction activities.	
Buried cultural resources, such as chipped or ground stone, historic debris, building foundations, or human bone, may be uncovered during grading for the proposed project.	CR-3 The areas with dense vegetation but relatively level topography, such as along Tonner Creek and on ridgetops and hilltops, shall be monitored by a qualified archaeological monitor approved by the County and paid for by the developer/property owner when vegetation grubbing and clearing occur and during grading.	
Where deep excavation is necessary and where there is a possibility of encountering rocks of the Puente, Fernando, or La Habra Formations or older Quaternary alluvium and Quaternary non-marine terrace deposits, the potential for recovering fossils would be considered high.	CR-4 Prior to the issuance of a grading permit, the developer/property owner shall direct a County Certified Vertebrate Paleontologist (CCVP) to provide written evidence (letter verification) to the Manager, Subdivision and Grading, indicating that a CCVP has been retained to observe (monitor) grading activities and salvage and catalog fossils as necessary. The hiring of the CCVP will be approved by the County and paid for by	

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	the developer/property owner. The CCVP will ensure the following actions are implemented: • *Develop monitoring plan*. A paleontological resource monitoring plan shall be developed by a CCVP. This plan should include a schedule for grading monitoring to be maintained while conducted within fossiliferous geologic units, in order to further evaluate on-site fossil resources. • *Conduct salvage operations*. Salvage operations shall be initiated and coordinated with the developer and the County if significant concentrations of fossils are encountered during grading. • *Protect unearthed fossils*. Paleontological field monitors (staff paleontologists) shall be equipped to salvage fossils as they are unearthed to avoid construction delays and remove samples of sediments which are likely to contain the remains of small fossil vertebrates. Monitors must be empowered to temporarily halt or divert grading equipment to allow the removal of large specimens. If significant concentrations of fossils are encountered or separate equipment is operating at distances greater than 1/8 mile apart, additional staff paleontologists may be required during grading in order to maintain compliance with mitigation measures. • *Establish resource surveillance procedures*. The CCVP shall be present at the pre-grading conference, shall establish procedures for paleontological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit sampling, identification, and evaluation of the fossils. If major paleontological resources are discovered, which require long-term halting or redirecting of grading, the paleontologist shall report such findings to the project developer and to the County of Orange. • *Protect fossil finds*. During grading, the CCVP shall determine appropriate actions, in cooperation with the project developer, which ensure proper exploration and/or salvage of encountered paleontologic resources (fossils). Excavated significant fossil finds	

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	shall be offered to the County of Orange, or its designee, on a first-refusal basis. The project developer may retain said fossil finds if written assurance is provided that they will be properly preserved, unless said finds are of special significance, or the County of Orange indicates a desire to study and/or display them, in which case the fossils shall be immediately accessioned to the County of Orange, or designee. These actions, as well as final mitigation and disposition of the resources, shall be subject to the County of Orange guidelines and regulations. Prior to the issuance of a precise (fine) grading permit, the paleontologist shall submit a final report for approval by the County of Orange. • *Observe grading.* Paleontologic grading observation, supplemented by weekly periodic in-grading supervisory inspections by the CCVP, shall be maintained when grading in all on-site geologic units. This will enable further evaluation, protection and salvaging of any significant paleontological resources encountered on-site. Monitoring on a full-time basis is required as significant concentrations of fossils are anticipated within geologic units to be exposed during grading of the site. Monitoring schedules can only be altered during the project by the CCVP. • *Complete salvage operations quickly.* If significant concentrations of fossils are encountered, which cannot be collected during monitoring time, salvage operations must be initiated and completed as quickly as feasible at the direction of the CCVP and coordinated with the on-site grading foreman. The County of Orange, or its designee, and the property developer will be notified regarding any paleontologic salvage operation as soon as possible. • *Prepare final report.* Prior to the issuance of certificates of occupancy, or as required by the County of Orange, a final paleontological report – paid for by the developer – shall be prepared for submission, review, and approval by the appropriate lead regulatory agency. The report shall include grading dates, methodologies, an itemized inventory of specimens and analysis of	

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	the significance of encountered fossils, and information regarding curation of collected fossils to the point of identification and accession of the fossils to the County of Orange or a museum repository with a retrievable storage system. The final report and inventory, when submitted to the appropriate lead agency, signifies completion of the program to mitigate impacts on paleontologic resources.	
Recreation		
The project will generate approximately 2,274 additional residents, which will increase the demand upon existing local, county and state recreational facilities.	R-1 Prior to approval of any subdivision map that creates building sites, the applicant shall: 1. Designate public parkland for dedication or provide for payment of in lieu fees according to the requirements of the Local Park Code. The 5.8-acre Wildcatters Park has already been identified as part of the total dedication that will be required. 2. Irrevocably offer to dedicate a 16-foot-wide recreation an easement for riding and hiking trails (Tonner Ridge Trail) in a location and in a manner meeting the approval of the Manager, PFRD/Harbors, Beaches and Parks/Program Management and Coordination prior to recordation of an applicable subdivision map in compliance with county Standard Conditions of Approval Manual conditions for recreation easements. 3. Provide for Class I paved bike trails through the project on collector streets and on those pedestrian/emergency access roads. 4. Dedicate a Scenic Preservation Easement to the County of Orange over 514.1 acres of natural and enhanced open space (of the type to permit fuel modification and continued oil operation infrastructure until oil operations are phased out) to ensure its status in perpetuity. Easement dedication(s) shall be subject to the approval of the Manager, PFRD/HBP Program Management and Coordination, prior to recordation of applicable subdivisions, in compliance with County Standard Conditions of Approval Manual conditions for scenic preservation easements.	Implementation of the recommended mitigation measures will reduce potentially significant project-related impacts to recreation facilities to a less than significant level.

Description of Impact	Mitigation Measure Summary	Impacts
	5. Areas to be irrevocably offered to the County for scenic preservation easement purposes shall be landscaped and equipped for irrigation, as applicable, and approved in accordance with the County Standard Conditions of Approved Manual conditions for Public Area Landscaping, subject to the approval of the Manager, PFRD/HBP Program prior to recordation of applicable subdivision map(s).	
	R-2 Prior to approval of an applicable subdivision map, a trail and bikeway improvement plan shall be submitted subject to approval of the Manager, PFRD/HBP Program Management and Coordination. Improvement plans shall include, but not be limited to (as applicable), trail and bikeway alignments, wood rail fences, cross-sections for trail and bikeways, drainage, irrigation, and landscaping pallette.	
Mineral Resources		
No reduction in the availability or production of on-site mineral resources.	No mitigation measures required.	No impacts
Hazards		
Impacts include oil seeps, crude oil impacted soil, PCBs, VOCs, regulated metal contaminated soil, methane gas, gas, oil and utility line, well blowouts, natural gas plant, and power generation turbine.	H-1 **Document Remediation** – An experienced petroleum environmental consultant shall document the remediation efforts during all three remediation phases, overall site grading, and implementation of the project mitigation measures in accordance with the approved RAP. Site closure reports containing environmental documentation will be submitted to the OCHCA and the SARWQCB for approval. A closure letter from the OCHCA will be obtained to document the completion of remediation activities prior to the issuance of building permits.	Implementation of the recommended mitigation measures will reduce potentially significant project-related impacts to hazards to a less than significant level.
	H-2 **Adhere to Proper Health and Safety Measures** - Proper health and safety measures must be followed according to a site-specific Health and Safety Plan prepared by the environmental consultant prior to and during the remediation of all areas, including areas identified to contain elevated VOC concentrations. This includes, but is not limited to, personal protection equipment for workers and monitoring for VOCs during remediation activities. Before starting remediation activities in	

Description of Impact	Mitigation Measure Summary	Impacts
	these areas, the contractor shall obtain a permit from SCAQMD pursuant to Rule 1166. OSHA guidelines will be followed by on-site workers.	
	H-3 **Verification Sampling and Analysis** – Verification sampling will be conducted under the direction of a representative of the OCHCA during all three mediation phases. Additional analysis of samples may be necessary to ensure that a site is fully characterized so as not to spread potentially impacted soil throughout the property.	
	H-4 **Disposal of Gun Club Soil** - The impacted soil at the former gun club location will be transported off-site and disposed of at a licensed disposal facility. Documentation of the disposal activity will be included in a site closure report submitted to OCHCA and DTSC.	
	H-5 **Disposal of Road Material** - Asphaltic road material will be removed during grading activities and used as deep fill, and its placement, location, and elevation will be documented during mass grading activities. Documentation of this activity will be included in the site closure report.	
	H-6 **Disposal of Tarry Material** - If the tarry material is found to be suitable, based on analytical results for reuse on-site as deep fill, the exact depth and location will be surveyed and documented in the site closure report. If it is not suitable for burial on-site, it will be removed and transported to a licensed waste facility.	
	H-7 **Disposal of Soil Containing PCB-Impacted Material** - Soils containing PCB concentrations greater than 0.22 mg/kg but less than 0.5 mg/kg will be stockpiled and reused in open space or as deep fill at depths greater than 10 feet in non-residential areas of the Tonner Hills project. Excavated soils containing PCB concentrations ranging from 0.5 mg/kg and to 10 mg/kg will be stockpiled and reused as deep fill at depths greater than 10 feet in street locations that will provide a "cap" within the Tonner Hills project. Excavated soils containing PCB concentrations greater than 10 mg/kg or greater will be transported off-site to a licensed disposal facility.	

Description of Impact	Mitigation Measure Summary	Impacts
	H-8 **Supervision of Mass Grading Activities** - An experienced petroleum environmental consultant will be on-site during all mass grading activities to ensure that all "suspect" material is properly characterized and managed.	
	H-9 Prior to commencing grading operations, the developer/property owner shall consult with the CDOGGR for information on the wells located in the residential area. All wells to be abandoned, or wells not abandoned to current standards, shall meet the current standards of CDOGGR. Any previously abandoned well shall be plugged and abandoned in accordance with current CDOGGR specifications prior to grading permit approval. Evidence of this consultation shall be provided to the County Manager, Subdivision and Grading, prior to commencement of grading. Any idle wells within the Planned Community shall be abandoned prior to development unless adequate provisions are taken to ensure that operators have access to these wells prior to grading, to the satisfaction of the County.	
	H-10 Any previously abandoned well that does not meet current standards and is located within a residential or commercial neighborhood or within an adjacent street right-of-way shall be reabandoned in accordance with current CDOGGR specifications prior to building permit approval. Evidence of conformance to CDOGGR standards for any remedial plugging shall be provided to the Manager, Current Planning, and the Manager, Subdivision and Grading, immediately upon completion of reabandonment activity.	
	H-11 The developer/property owner shall demonstrate on residential site plans that no buildings shall be allowed over wells that have either been plugged and abandoned or reabandoned to the CDOGGR and OCFA current specifications, or that are within 50 feet of a water injection well. Said plans shall be subject to review and approval by the Manager, Current Planning.	
	H-12 A seismic sensor shall be placed at strategic locations to shut down production in the event of a significant seismic event (5.0 magnitude or	

Description of Impact	Mitigation Measure Summary	Impacts
	higher on the Richter scale). The oil operator shall conduct a study to determine the seismic thresholds for shutting down production and the location, type, and number of sensors required. The study shall be subject to review and approval by the County. The seismic sensor and shut-down system shall be in place and operational prior to the County's issuing the first Certificate of Occupancy for a residential unit.	
	H-13 Oil wells in residential areas will be placed with subsurface pumping units enclosed in a concrete vault. The vault will have a grated steel grill plate to restrict the unit from public access. No new wells shall be drilled in a residential area once the County issues the first Certificate of Occupancy. Within the residential, park, and commercial/mixed-use planning areas, no new wells shall be drilled, nor shall existing wells be redrilled after the County issues the first Certificate of Occupancy for a residential unit.	
	H-14 Any residential structure constructed within 10 feet of an abandoned well shall receive special venting treatment pursuant to CDOGGR and OCFA standards and to the satisfaction of the County and CDOGGR. The developer/property owner shall indicate compliance with this measure on proposed building plans that are subject to review and approval by the Manager, Current Planning. Compliance is also subject to periodic site inspections by the County during construction.	
	H-15 All habitable structures shall be located at least 50 feet from any operating well head, including water injection wells, pursuant to the requirements of the Uniform Fire Code and the OCFA and subject to monitoring and inspection by the OCFA.	
	H-16 All drilling, operations, maintenance, and abandonment of wells during the life of the project shall be in accordance with §3106 of the Public Resources Code and overseen and approved by the CDOGGR. Compliance with this measure is subject to periodic site inspections by the Manager, Building Inspection Services and the CDOGGR.	
	H-17 If any abandoned or unrecorded wells are uncovered or damaged	

Description of Impact	Mitigation Measure Summary	Impacts
	during excavation or grading, remedial plugging operations shall be required. If such discovery occurs, approval from CDOGGR to perform remedial activities is required. In the event the abandoned or unplugged wells are encountered during grading, Nuevo or the Construction Manager shall inform the Manager, Subdivision and Grading, within 24 hours of such an occurrence. Evidence of conformance to CDOGGR standards for any remedial plugging shall be provided to the County and the OCFA immediately upon completion of said remediation activity.	
	H-18 Oil wells within open space planning areas where Scenic Preservation Easements have been dedicated to the County shall contain security fencing that meets the standards and requirements of CDOGGR. This fencing shall be indicated on project plans and subject to the review and approval of the Manager, County PFRD/HBP Program Management and Coordination.	
	H-19 Prior to issuance of building permits, soils adjacent to oil wells abandoned in residential areas will be mitigated to meet residential cleanup requirements of the OCHCA-approved RAP. Once the project is occupied, subsequent well abandonments shall be subject to and processed in accordance with CDOGGR and OCHCA regulations.	
	H-20 Prior to the County's issuing the first Certificate of Occupancy, a program to carefully monitor the hydrogen sulfide (H_2S) content of the produced gas shall be developed and implemented to prevent higher levels of H_2S from becoming present in the produced gas. This program shall be reviewed and approved by the CDOGGR and the OCHCA. Downhole treatment shall begin when the level of H_2S exceeds 10 ppm.	
	H-21 All oil and gas flowlines shall be installed in underground trenches, separate from other utilities. Location of all pipelines shall be recorded on site plans. Seismic joints and flexible couplings shall be installed in all cases where flowlines cross known or suspected fault lines. Seismic sensing devices shall be installed to allow for the shutdown of the field in the event of a significant seismic event (5.0 magnitude or higher on the Richter scale). The developer/property owner shall indicate compliance	

Description of Impact	Mitigation Measure Summary	Impacts
	with these measures on project utility and building plans and be subject to review and approval by the Manager, Current Planning, prior to implementation of the proposed project.	
	H-22 The oil operator shall compile a list of all hazardous materials used on the project site and demonstrate that the storage and use of these materials do not present a public safety hazard. This list, and documentation demonstrating that no public safety hazard exists, shall be reviewed and approved by the OCHCA and the OCFA prior to the County's issuing the first Certificate of Occupancy for a residential unit. In addition, the oil operator and the owner shall provide the same type of documentation it proposes to use a hazardous material not currently on the approved list.	
	H-23 Prior to issuance of occupancy permits, the geotechnical consultant shall prepare a maintenance/monitoring manual describing the responsible parties, upkeep, monitoring program, record keeping and reporting required with respect to any oil seep mitigation measures installed within the project. The report shall include a map showing the locations of all pertinent structures (such as subdrain outlets, vaults, clarifiers, etc.) and shall be approved by the Manager, Subdivision and Grading.	
	H-24 Prior to grading, a baseline study shall be performed to gain a better understanding of the current distribution and concentrations of methane in the area proposed for development. This study shall include soil gas sampling and analysis performed by a methane consultant. Since the distribution of methane can change with depth, the consultant's report shall include a work plan for further investigation during grading, including sampling intervals, procedures, and potential mitigation measures that might be implemented during grading. This report shall be submitted to the OCFA for approval.	
	H-25 During grading, soil gas sampling and analysis shall be performed on the bottom of all excavations in the development area. This would include cuts to design grade, overexcavation of building pads, the	

Description of Impact	Mitigation Measure Summary	Impacts
	bottoms of areas where unsuitable foundation soils have been removed, buttress cuts, etc. "Bottoms" sampling shall also be conducted at each well location. The sampling and analysis shall include a determination of gas pressure, hydrocarbon concentration, and chemical composition. If anomalous and potentially hazardous gas seeps are identified, the methane consultant shall recommend specific remedial measures and submit findings to the OCFA for approval.	
	H-26 During grading, any subsurface structures that may act as a conduit for methane gas (such as sewer lines, storm drains, subdrains, etc.) shall be evaluated by the methane consultant with respect to the local conditions. The methane consultant shall provide specific remedial recommendations, such as venting, as needed for approval by OCFA.	
	H-27 Full time monitoring of the grading activities shall be provided by the petroleum environmental consultant in order to document the depth, lateral extent, and concentrations of any crude oil-impacted fills. This information shall be provided to the methane consultant for evaluation and consideration in the final methane remedial recommendations.	
	H-28 At the completion of grading, and prior to the issuance of building permits, sampling and analysis shall be performed by the methane consultant at future building locations. Based on the data collected prior to, during, and at the completion of grading, the methane consultant shall make final recommendations for methane mitigation during construction and future ongoing monitoring at buildout. The analysis and recommendations shall consider the guidelines recommended by OCFA (Guideline C-03 dated January 31, 2000) as minimum requirements. Any deviations from the guidelines shall be supported by scientific evidence, and approved by the OCFA.	
	H-29 Prior to the issuance of occupancy permits, the methane consultant shall prepare a manual describing the responsible parties, upkeep, monitoring program, record-keeping required, and reporting required with respect to the methane mitigation installed within the project. The report shall include a map showing the locations of all monitoring wells,	

Description of Impact	Mitigation Measure Summary	Impacts
	vents, or other pertinent structures. The Tonner Hills Homeowners Association shall be responsible for ongoing monitoring and reporting to the OCHCA and the OCFA as described in the methane consultant report.	
	H-30 All methane investigation and analyses shall be performed by a California registered engineer and/or geologist with demonstrated proficiency in the subject of soil gas investigation and mitigation. All methane reports, work plans, mitigation plans, and monitoring plans are subject to the review and approval of the OCFA.	
Public Services		
The project is situated in the County of Orange Special Fire Protection Area (SFPA), which is designated as a high potential fire hazard zone. Development of the planned community will result in greater demand and impact on school services provided by Brea-Olinda Unified School District. Approximately 511 students in grade levels kindergarten through 12 are projected to be generated by the Tonner Hills Planned Community Development. The Project will not significantly impact emergency services provided by the Orange County Fire Authority (OCFA) and the Orange County Sheriff's Department.	PS-1 **Secured Fire Protection Agreement** - Prior to recordation of the first final map within the project boundaries, including maps for financial and conveyance purposes only, the applicant shall enter into a Secured Fire Protection Agreement with the Orange County Fire Authority (OCFA).	Implementation of the recommended mitigation measures will reduce potentially significant project-related impacts to public services to a less than significant level. The project will not result in any adverse impacts to public services.
	PS-2 Fire Hydrants a. Prior to the recordation of a subdivision map for development, the applicant shall submit a fire hydrant location plan for the review and approval of OCFA. b. Prior to the issuance of a building permit, the applicant shall submit to OCFA evidence of the on-site fire hydrant system and indicate whether it is public or private. If the system is private, it shall be reviewed and approved by OCFA prior to issuance of a building permit. Provisions shall be made by the applicant for the	

Description of Impact	Mitigation Measure Summary	Impacts
	repair and maintenance of the system, in a manner meeting the approval of OCFA. c. Prior to the issuance of any certificate of use and occupancy, all fire hydrants shall have a blue reflective pavement marker indicating the hydrant location on the street or drive per the Orange County Fire Authority Standards as approved by OCFA. These markers are to be maintained in good condition by the property owner.	
	PS-3 **Water Availability** - Prior to the issuance of a building permit, the applicant shall provide evidence of adequate fire flow. The Orange County Fire Authority Water Availability for Fire Protection form shall be signed by the applicable water district and submitted for approval to the Orange County Fire Authority. If sufficient water to meet fire flow requirements is not available, an automatic fire extinguishing system may be required in each structure affected by insufficient fire flow. It is recommended, but not required, that fire flows are based upon field testing and not solely on engineering calculations to avoid issues at time of certificates and use and occupancy when verification is again required.	
	PS-4 **Automatic Fire Sprinkler Systems** a. Prior to the recordation of a subdivision map for development, a note shall be placed on the map stating that all commercial structures over 6,000 square feet, all residential structures over 5,500 square feet, and all structures exceeding fire department access requirements shall be protected by an automatic fire sprinkler system, in a manner meeting the approval of OCFA. To the extent feasible, such situations should be identified during the tentative map review process, or equivalent review, and such approval should be specifically conditioned regarding appropriate fire sprinkler requirements. b. Prior to the issuance of a building permit, the applicant shall submit plans for any required automatic fire sprinkler system in any structure to the OCFA for review and approval.	

Description of Impact	Mitigation Measure Summary	Impacts
	c. Prior to the issuance of a certificate of use and occupancy, this system shall be operational in a manner meeting the approval of OCFA.	
	PS-5 **Fire Access Roads** a. Prior to the issuance of a mass or rough grading permit, the applicant shall provide plans and/or information for review and approval by OCFA demonstrating that adequate fire and emergency response access ways through the disturbed areas of the project site will be maintained during all phases of mass or rough grading operations. b. Prior to the recordation of a subdivision map for development or the issuance of any precise grading permit, whichever occurs first, the applicant shall obtain approval of OCFA for all fire protection access roads within 150 feet of all portions of the exterior of every structure on-site, or an alternative means and method request shall be approved by OCFA. c. Prior to the issuance of any precise grading permits, the applicant shall submit and obtain approval of plans for all roads, streets and courts, public or private, from OCFA in consultation with the Manager, Subdivision and Grading Services. The plans shall include the plan view and section view, and indicate the grade and width of the street or court measured flow line to flow line. All proposed fire apparatus turnarounds shall be approved by OCFA and, if needed, clearly marked when a dead-end street exceeds 150 feet or when otherwise required. Applicable CC&Rs or other approved documents shall contain provisions that prohibit obstructions, such as speed bumps/humps, control gates, or other modifications within said easement or access road unless prior approval of OCFA is granted. d. A note shall be placed on the fire protection access easement plan indicating that all street/road signs shall be designed and maintained to be either internally or externally illuminated in a manner meeting approval of OCFA.	

Description of Impact	Mitigation Measure Summary	Impacts
	PS-6 **Street Markings** a. Prior to the issuance of a building permit, the applicant shall submit plans and obtain approval from OCFA for fire lanes on required fire access roads less than 36 feet wide. The plan shall indicate the locations of red curbing and signage. A drawing of the proposed signage with the height, stroke and color of lettering and the contrasting background color shall be submitted to and approved by OCFA. b. Prior to the issuance of any certificate of use and occupancy, the fire lanes shall be installed in accordance with the approved fire lane plan. The CC&Rs or other approved documents shall contain a fire lane map and provisions which prohibit parking in the fire lanes. The method of enforcement shall be documented.	
	PS-7 **Fire Hazard Notification** a. *State Responsibility Areas*. Prior to the recordation of a subdivision map for development, the subdivider shall place a note on the map meeting the approval of OCFA that the property is in a "(High/Very High) Fire Hazard Area" due to wildland exposure based on State SRA Maps. b. *Special Fire Protection Area Notification*. Prior to recordation of any final tract map, the subdivider shall place a note on the map meeting the approval of OCFA that the property is in a "Special Fire Protection Area" and must meet all requirements for development within the area or file for a conditional exclusion with OCFA. c. *Special Fire Protection Area Development*. Prior to the issuance of a building permit, the applicant shall meet all requirements for development and construction within a Special Fire Protection Area, including increase street widths, Class A roof assemblies, fire sprinklers, etc., or shall receive a conditional exclusion approved from OCFA. d. *Special Fire Protection Area Conditional Exclusion*. If applicable, prior to recordation of any final tract map, the subdivider shall place a note on the map meeting the approval of OCFA that the	

Description of Impact	Mitigation Measure Summary	Impacts
	property is "Conditionally Excluded" from a "Special Fire Protection Area," and shall identify lots/buildings which are subject to construction requirements.	
	PS-8 **Fuel Modification** - Prior to the issuance of any preliminary grading permit, the applicant shall obtain the approval of OCFA, in consultation with the Manager, Subdivision and Grading Services, of a conceptual fuel modification plan and program. Prior to the issuance of any precise grading permit, the applicant shall obtain the approval of OCFA, in consultation with the Manager, Subdivision and Grading Services, of a precise fuel modification plan and program. The plan shall indicate the proposed means of achieving an acceptable level of risk to structures by vegetation. Prior to the issuance of a building permit, the developer shall have completed, under the supervision of OCFA, that portion of the approved fuel modification plan determined to be necessary by OCFA before the introduction of any combustible materials into the project area. Approval shall be subject to on-site inspection. Prior to the issuance of any certificate of use and occupancy, the fuel modification shall be installed and completed under the supervision of OCFA. Further, the installed fuel modification plant pallet shall be established to a degree meeting the approval of OCFA. The CC&Rs, or other approved documents, shall contain provisions for maintaining the fuel modification zones including the removal of all dead and dying vegetation subject to triennial inspections.	
	PS-9 **Access Gates** - If applicable, prior to the issuance of any grading permits, the applicant shall submit and obtain OCFA's approval for the construction of any gate across required fire authority access road/drives. Contact the Orange County Fire Authority at (714) 744-0499 for a copy of the "Guidelines for Design and Installation of	

Description of Impact	Mitigation Measure Summary	Impacts
	Emergency Access Gate and Barriers."	
	PS-10 **Fire Impact Fees** - The project applicant shall pay all applicable dispatch impact fees prior to the issuance of any building permits.	
	PS-11 **Oil Field Mitigation** - Copies of oil field mitigation measures specified in the Mitigation Measures subsection of the Hazards section shall be provided to OCFA as part of "standard conditions" of approval for the proposed development prior to the issuance of certificate of occupancy.	
	PS-12 **Library Impact Fees** - The project applicant shall pay all applicable Orange County Library Services in lieu fees prior to the issuance of any building permits.	
	PS-13 **School Impact Fees** - Prior to the issuance of a building permit, the project applicant shall comply with Senate Bill 50 and pay the applicable school impact fees. Presently, the Brea-Olinda Unified School District's adopted School Impact Fees for Residential development is $2.05 per square foot and $0.33 per square foot for commercial or mixed use developments. Upon completion of the designated tract map, the valid amount shall be issued.	
Utilities and Service Systems		
The Project will result in incremental increase in the demand for utilities and service systems. However, the demands by the proposed project are within the capacities of the service providers. Utilities and services systems such as water, electricity, gas sewer, solid waste, and telecommunications are not anticipated to experience significant impacts due to the developer and service fees typically allocated to fund necessary on-site and off-site improvements.	US-1 **Water Conservation** - Prior to issuance of building permits, the project applicant shall incorporate all practical and mandated water conservation measures to the satisfaction of the Metropolitan Water District of Southern California, Water Conservation Plans.	Implementation of the recommended mitigation measures will reduce potentially significant project-related impacts to utilities and service systems to a less than significant level.

Description of Impact	Mitigation Measure Summary	Impacts
	US-2 **Recycling Programs** - Prior to issuance of building permits, the applicant shall comply with guidelines set forth by the County of Orange in accordance with the California Integrated Waste Management Act (1989, AB 939), which mandates recycling programs for each jurisdiction in California.	
	US-3 **Consultation with Southern California Edison Company** - Prior to the issuance of building permits, the developer shall demonstrate to the Manager, Current Planning, Southern California Edison has been consulted regarding participation in programs designed to increase the efficiency of operation and decrease energy costs.	
	US-4 **Consultation with Southern California Gas Company** - Prior to the issuance of building permit, the project applicant shall consult with the Southern California Gas Company to determine the proper facilities and location needed to serve the site.	
	US-5 **Payment of Construction Fees** - The project applicant shall be responsible for paying the appropriate costs and fees for the construction of facilities used to serve the project site per the rules and regulations established by each utility for the extension of said facilities.	
	US-6 **Water Services** - Prior to the issuance of a grading permit, Southern California Water Company must obtain a Certificate of Public Convenience and Necessity (CPCN) under §1001 of the *Public Utilities Code* from the California Public Utilities Commission (CPUC).	

2.3 Cumulative Impacts

Cumulative impacts of the proposed Tonner Hills Planned Community are assessed in detail in Chapter 4, Environmental Analysis, of this Draft EIR within the discussions of the various issue areas. Cumulative impacts are defined in §15355 of the CEQA Guidelines as follows:

a. Cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.

b. The individual effects may be changes resulting from a single project or a number of separate projects.

c. The cumulative impacts from several projects are the changes in the environment which result from the incremental impact of the projects when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

The analysis of cumulative impacts within each issue area in Chapter 4, Environmental Analysis, is based upon a list of projects that are in various stages of project planning or development and are expected to contribute to cumulative impacts in the vicinity of the proposed Tonner Hills Planned Community.

Table 2-2 lists the projects provided by the County of Orange and the Cities of Brea, Fullerton, Placentia, and Yorba Linda to be used as a basis for cumulative impact analyses.

Table 2-2 - Cumulative Project List

Project	Location	Acres/Units	Status
City of Brea			
Aera Energy	Los Angeles County west of Orange (57) Freeway to Harbor Blvd.; Orange County within Brea Sphere of Influence east of Orange (57) Freeway	3,000 acres (approximately 3,600 units); 2,700 acres located within Los Angeles County and 300 within Orange County and the City of Brea SOI	Discussed; not yet submitted for review
Artisan Walk	Southeast corner of Imperial Highway/ Placentia	106 units	Completed

Project	Location	Acres/Units	Status
Brea Cañon Estates	North Brea Blvd. North of Central Ave.	81 units	Hearings, mid-2002
Canyon Crest	East end of Carbon Canyon	250 units	Hearings, mid-2002
Capco Building	3120 Enterprise	99,000 sq.ft.	Plan check construction completed end of 2002
MBK Homes/ Townhomes	Southwest corner of Brea Blvd./Central Avenue	83 townhomes	Under construction
Tentative Tract 16047	Lambert Road/ Kraemer Avenue	55 units	EIR process
Tomlinson Specific Plan	Berry Street and Central Avenue	231 units	Entitled, anticipated construction 2002-03
Tonner Canyon Estate of Al Levinson	Tonner Canyon	400+ units	Discussed; not yet submitted for review
Violt Brea Business Park	Challenger Street between Columbia and Berry	2.6 acres 513,000 sq.ft.	Plan check construction 2002-03
Brea Industrial Specific Plan	Imperial/Puente	619,984 sq.ft.	Under construction
City of Fullerton			
Amerige Heights (Hughes Site)	Bastanchury (east) Gilbert (west) Pioneer (north) Malvern (south)	1,450 units; 1.2 million sq.ft. mixed use	Retail uses open; MFD/SFD construction underway
Bastanchury Greenbelt Activity Park Sports Complex	East of Hughes Site Malvern/Bastanchury	12.5 acres; 2 ballfields	Construction to begin Summer 2002
California State University, Fullerton		University Masterplan	Under construction
Chevron-West Coyote Hills	West of Gilbert	Estimated 600 single-family and multi-family dwellings	Draft EIR review
Chevron-West Coyote Hills	East of Gilbert	Estimated 200 single-family dwellings	Draft EIR review

Project	Location	Acres/Units	Status
Hawkes Pointe Emery Heirs Property	Beach Boulevard	203 units and open space	Grading underway
City Pointe Morgan Group/ Chapman Avenue Apartments	Harbor/Chapman	183 multi-family units; 3,200 sq.ft. commercial	Permits issued for construction
Parkhurst Imperial Phase II	Rolling Hills/Placentia	390 single-family dwellings	Last phase under construction
Dynamic Builders Raymer Industrial Complex	Brookhurst/ Commonwealth Blvd.	250,000 sq.ft.	Buildings 1 through 4 under construction
ECH PA 1 and 2 - Standard Pacific		212 single-family dwellings	Construction plans under review
Pacific Medical Buildings		New 95,000-sq.ft. medical building	Submitted August 2001
Police Department		Facility expansion	Construction underway
St. Jude Medical Center		Redevelopment of medical center	Not yet submitted
Snyder Langston		New 221,388-sq.ft. industrial buildings	Under construction
Unocal Sports Complex	South Bastanchury between Brea and Harbor	Sports complex	Grading underway
Van Daele	North Bastanchury at corner of State College Boulevard	91 single-family dwellings	Under construction
City of Placentia			
Saddleback Pacific Homes	Southwest corner of Alta Vista and Rose	±19.67 acres 102 units	Grading permit issued
City of Yorba Linda			
Extended Stay America	Savi Ranch (Oakcrest Circle)	4-story hotel	Planning Commission meeting
John Cantwell/ Woodbridge Development	Casino Ridge	TTM for 51 lots (revision to approved TM 14528)	Approved by Planning Committee, TTM 16186

Project	Location	Acres/Units	Status
S&S	Around O.C. College District site; west of Fairmont	284 new subdivision and 383-unit senior complex	Planning Commission meeting
S&S	Eastlake Village area (northern tract in Eastlake)	Reconfigure approved tracts to 315 single-family lots	Planning Commission meeting
Shea Homes	Valley View Circle	108 single-family detached residences	Building and selling homes
Shea Homes	Vista Del Verde 16145 (Tract 15926)	74 single-family residences, Village II	Building and selling homes
Toll Brothers	Shell Specific Plan	77-unit multi-family condo development	Map and DR approved; Planning Commission meeting
Toll Brothers	Planning Area A	TTM for 108 lots	Under construction
Toll Brothers	Planning Area B	TTM for 59 lots	Under construction
Toll Brothers	Planning Area G	TTM for 57 lots	Under construction
Toll Brothers	Planning Area K	TTM for 74 lots	Under construction
William Lyon Co.	PA E and F of Vista Del Verde	House plans for 106 lots	Building and selling homes
County of Orange			
Coyote Hills/Hawks Pointe	Adjacent to Rosecrans Avenue in Fullerton's Sphere of Influence	203 dwelling units on 97 acres next to Ralph B. Clark Regional Park	Contact City of Fullerton's Planning Department (Lead Agency)
Del Rio Specific Plan	Adjacent to Santa Ana River, Orange	1238 dwelling units on 97 acres of land on an old gravel pit	Applicant considering withdrawal

2.4 Impacts Found Not To Be Significant

Section 15143 of the CEQA Guidelines requires that an EIR focus on the significant effects on the environment. In this regard, those effects dismissed during the Initial Study and NOP process need not be discussed further.

For the proposed Tonner Hills Planned Community, the Initial Study and scoping process determined that the following environmental effects would not be analyzed in this EIR:

Table 2-2 - Impacts Found Not to Be Significant for the Tonner Hills Planned Community

Environmental Issue	Basis for Dismissal from EIR Discussion
1. Population and Housing	The project site currently contains no housing. Therefore, the project will not result in displacing existing housing affecting a substantial number of people.
2. Transportation/Circulation	The proposed project is not anticipated to result in insufficient parking capacity on-site or off-site.
3. Transportation/Circulation	The proposed project is not anticipated to result in impacts to rail, waterborne, or air traffic. The project will not result in changes in air traffic patterns.
4. Noise	The project site is not located within an airport land use plan or within two miles of a public airport or public use airport. Therefore, the project site will not be exposed to aircraft noise.
5. Recreation	The project includes the provision of a neighborhood park and linkages to regional trails. It is not anticipated to result in recreational facilities that may adversely affect the environment.
6. Hazards	The project is not located within an airport land use plan or within two miles of an airport, or a private airstrip. Therefore, the project is not anticipated to expose people to potential safety hazards.

2.5 Project Alternatives

Project Alternatives, analyzed in Chapter 6, have been designed to alleviate identified environmental impacts, or were specifically requested for consideration during the preparation of the EIR. Each of the alternatives has been measured against the project objectives. These alternatives focus on approaches capable of eliminating significant adverse environmental impacts, or reducing them to a level of insignificance. The alternatives evaluated include project level and design level alternatives (see Table 2-3).

Table 2-3 - Comparison Chart of Environmental Issues - Proposed Project vs. Project Alternatives

Alternatives	Land Use and Planning	Agricultural Resources	Population and Housing	Geophysical	Hydrology and Drainage	Water Quality	Transportation and Circulation	Air Quality	Noise	Biological Resources	Aesthetics	Cultural/ Scientific	Recreation	Mineral Resources	Hazards	Public Services	Utilities and Service Systems
Proposed Project	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=
Project Alternatives																	
1 - No Project	–	=	–	–	+	+	–	–	–	–	+/–	–	–	=	–	–	–
2 - No Development	–	=	–	–	+	+	–	–	–	–	+/–	–	–	=	–	–	–
3 - Previous 1,445-Unit Project	+	=	+	+	+	+	+	+	+	+	+/–	=	+	=	+	+	+
4 - City of Brea Alternative	=	=	–	+	+	+	–	+	+	+	+	=	=	+	+	–	–
5 - Golf Course and Large Lot Residential	+	=	–	+	+	+	–	+	–	+	–	=	=	=	+	–	+
6 - City of Brea Former General Plan	+	=	+	+	+	+	+	+	+	+	+	=	+	+	=	+	+
7 - City of Brea - Revised Updated General Plan (30% Reduction)	=	=	–	–	–	–	+	=	–	+	–	=	–	+	=	–	–
8 - 624-699 Dwelling Units on Project Configuration	=	=	–	=	=	=	–	–	–	=	–	=	–	=	=	–	–
9 - Very Low Density/Estate	+	=	=	=	=	=	–	=	–	=	+	=	+	=	+	–	=
Design Alternatives																	
1 - Delete Tonner Hills Rd.	=	=	=	–	+	+	+/–	=	=	+	=	=	=	=	=	+	=
2 - 150 Affordable Housing Units on Mixed Use Site	–	=	+	+	=	=	–	=	=	=	=	=	=	=	=	+	+
3 - Wildlife Passage	=	=	=	–	–	–	=	=	=	=	=	=	=	=	=	–	–
4 - Relocate Dwelling Units to Public Use Site	=	=	=	=	=	=	=	=	=	–	–	=	=	=	+	=	=

Legend:
= similar to project
+ greater impact
– lesser impact

2.6 Areas of Controversy/Issues to Be Resolved

Section 15123 of the CEQA Guidelines requires that an EIR contain a brief summary of the proposed actions and its consequences. This summary has been provided in Section 2.2 of this EIR. Sections 15123(b)(2) and (3) also require that the EIR summary identify areas of controversy known to the lead agency, issues raised by agencies and the public, and issues to be resolved, including the choice among alternatives and whether or how to mitigate significant, adverse physical impacts.

Areas of public controversy and issues to be resolved which are known or which have been called to the attention of the County during the Initial Study process and scoping meetings are noted below. Because each issue to be resolved involves some degree of controversy, the distinction between an area of controversy and an issue to be resolved is not critical.

Following are issues to be resolved that will be paramount for the discussion during the consideration of this project:

- Project consistency with the overall transportation planning and traffic congestion impacts to the City of Brea residents and to neighboring cities.
- Brea Olinda Unified School District's ability to support the proposed development due to increase student enrollment.
- Project impacts on wildlife corridor movement protection and preservation.
- Water quality and drainage impacts associated with the increased runoff and flooding by the proposed development.
- Mitigations for tar seep and methane gas during construction and after occupancy.
- Project site remediation processes, issues and concerns.
- Preservation and protection of aesthetics and ridgeline views.
- Screening of remaining oil wells for aesthetic and safety concerns.
- Continued operation of oil and gas facilities/activities on-site and its compatibility with proposed land uses.
- Accommodation of affordable housing consistent with the County of Orange General Plan Housing Element.
- Applicability of the County's Sphere of Influence guidelines with the City of Brea.
- Project consistency with the Master Plan of Arterial Highways (MPAH).

- Determination of providers of public services and utilities for the project area.
- Emergency vehicle project access.
- Commercial use in conflict with neighboring land uses.
- Traffic analysis methodology used in evaluating project traffic impacts and potential mitigation measures between the County of Orange Traffic Model and the City of Brea Traffic Model.
- Traffic congestion along Lambert Road and the incorporation of "Right Turn on Red" mitigation measure.
- Overflow traffic accessing Wandering Lane, becoming a thoroughfare to Brick Avenue.
- Completion of Tonner Canyon Road.
- Valencia Avenue as potential project access road.
- Encroachment of proposed development into wildlife areas.
- Compliance with the City of Brea's Hillside Management Ordinance.
- Mitigation of geological impacts (tar seeps and methane) during pre- and post-development of the proposed project.
- Proximity of proposed residential dwelling units to existing oil wells and associated facilities.
- Assessment and remediation of hazards and hazardous material on-site.
- Potential geological constraints (seismic activity, landslides, methane) within the project area.
- Project area annexation from the County of Orange into the City of Brea.
- Potential hydrology/drainage and water quality impacts associated with the proposed development.
- Proposed Mixed Use and its conflict with the City of Brea's Preferred Plan.
- Project impacts on flora and fauna of the development area.

- Duration of proposed project development and its potential to result in a significant impact to construction effects.

It is recognized that other issues may be raised during the review and hearing process which were not and could not have been known at the time of the publication of the Draft EIR. Where certain mitigation measures are within the control of agencies other than the County of Orange, the EIR will use best efforts to disclose the mitigation believed likely to be acceptable to these agencies.

2.7 Issues Raised by Agencies and the Public

Pursuant to §15063 and §15082 of the CEQA Guidelines, the County of Orange prepared an Initial Study for the project, and a Notice of Preparation (NOP) for an EIR was distributed to local Responsible and Trustee Agencies, the State Clearinghouse, involved local groups, and members for public review and comments from March 27, 2001 through May 9, 2001. The objective of distributing the NOP was to identify and determine the full range and scope of environmental issues of concern on the proposed project so that these issues can be examined in the EIR. Comments received during the NOP distribution and public Scoping Meeting process regarding potential significant environmental impacts have been addressed in Chapter 4, Environmental Analysis, of this Draft EIR. The Initial Study and Notice of Preparation are contained in Appendix ? of the EIR.

Issues identified within the Initial Study are discussed in detail in Chapter 4, Environmental Analysis. The environmental factors that require evaluation, based upon the issues identified within the Initial Study, include: Land Use and Planning, Agricultural Resources, Population and Housing, Geological, Hydrology and Drainage, Water Quality, Transportation/Circulation, Air Quality, Noise, Biological Resources, Aesthetics, Cultural/Scientific Resources, Recreation, Mineral Resources, Hazards, Pubic Services, and Utilities and Service Systems.

Issues raised during Public Scoping meeting held on April 26, 2001 and comments provided in response to the Notice of Preparation are listed below accompanied by an indication of the source and date of the comment received. Comments received in response to the Notice of Preparation are contained in the Technical Appendices of this Draft EIR.

2.7.1 Issues Raised at Public Scoping Meeting

a. Land Use

1. Consistency of project density with surrounding areas.
2. Compatibility of mixed land uses of residential and oil production.
3. Non-conforming proposed multi-family residential development.
4. Commercial use proposed on the northeast corner of Lambert Road and Wild Cat Way.

5. Tonner Hills cumulative impact with Tentative Tract Map 16047 in the process of City approval.

b. Population and Housing

1. Conformance with affordable housing requirements.
2. Future City annexation of Tonner Hills Planned Community and its integration into the City's Housing Element.

c. Geological

1. Stability of soil
2. Remediation of soil
3. Landslide impacts
4. Soil erosion impacts
5. Soil contamination
6. Seismic impacts
7. Unstable slopes

d. Hydrology and Drainage

1. Increase in urban runoff
2. Stormwater management impacts

e. Traffic/Circulation

1. Lambert Road traffic impacts
2. Valencia traffic impacts
3. Kraemer traffic impacts
4. 57 Freeway traffic impacts
5. Impacts from construction traffic
6. Use of Wandering Lane as public alternative route
7. Potential traffic at Lambert Road/Wild Cat Way
8. Tonner Canyon Road traffic impacts
9. Potential extension of Wandering Lane
10. Bolsa Avenue traffic impacts
11. Carbon Canyon Road traffic impacts
12. Extension of Tonner Canyon Road to Valencia Avenue

f. Air Quality

Air pollution/impacts resulting from increases in traffic

g. Noise

1. Construction noise impacts
2. Increased traffic noise impacts

h. Biological Resources

1. Impacts to flora and fauna
2. California Black Walnut Woodland impacts
3. Increased road kill resulting from the project
4. Introduction of non-native invasive species
5. Impacts to wildlife movement corridor

i. Aesthetics

1. Concerns over ridgeline views
2. Underground utilities
3. Lighting and glare impacts
4. Compliance with the City's Hillside Management Ordinance

j. Recreation

1. Keep Wildcatters Park, but rename it to A.C. Rubel Park
2. Provide additional organized sports fields

k. Hazards

1. Hazardous oil and gas production site, which requires long-term remediation
2. Methane gas exposure, tar seep impacts
3. Threat of lawsuits from future homeowners, parents, and residents against the County/City/developer/applicant

l. Public Services

1. Schools
   a. Project impacts on schools and potential funding
   b. Long-term plans if the project absorbs Brea Olinda Unified School District capacity
   c. Existing and future overcrowding of schools
   d. Proximity and compatibility of school use and commercial use

2. Fire Department
   a. Emergency vehicle access concerns
   b. Fuel modification concerns, high-risk of hill fires
   c. Identification of emergency services provider

3. Utility Services
   a. Electricity shortage concerns
   b. Jurisdiction responsible for providing utility services for this development area, the County of Orange or the City of Brea
   c. Impacts of Olinda Landfill expansion on future residents of Olinda Ranch and Tonner Hills

m. Alternatives

1. No project alternative
2. Alternative to reduce number of proposed units
3. Alternative to provide project access from Valencia
4. Planned residential community for seniors

2.7.2 Issues Raised in Written Comments on NOP

Summaries of comments from public agencies, as well as individuals/groups, received during the NOP public review process are included in the Appendix to this EIR.

3. Project Description

3.1 Description of Project

Nuevo Energy Company proposes a comprehensive plan to develop 789.8 acres of land that has been used for oil and gas production for approximately 100 years. The proposed plan involves development of a master-planned community that combines residential, open space, recreational, public/institutional, and mixed uses. The plan also incorporates continued operation of oil and gas production facilities. The project applicants have carefully evaluated the opportunities and constraints associated with establishing residential development to ensure a balanced community. The site plan is mindful of existing topography and unique landforms and minimizes impacts to undisturbed areas. In support of this effort, the proposed project maximizes the use of existing infrastructure improvements resulting from the industrialized use of the site, such as roadways, sewers, building pads, graded and paved areas, oil operations equipment, and targets construction to areas already touched by development. Exhibit 3-1 illustrates the proposed Planned Community land use diagram. (The City water tanks within the project footprint depicted in Exhibit 3-1 are not a part of the project.) The plan provides for the following land uses:

Table 3.1 - Tonner Hills Project Summary

PA	Land Use	Acres	Minimum Lot Size/ Target Lot Size	Dwelling Units
1	SFD/Cluster SFD	15.0	SFD: 4,000 SF; Cluster SFD: 2,600 SF/5,000 SF	66
2	SFD/SFA/Cluster SFD	11.5	SFD: 4,000 SF; Cluster SFD: 2,600 SF/N/A	116
3	SFD/Cluster SFD	42.7	SFD: 4,000 SF; Cluster SFD: 2,600 SF/N/A	233
4	SFD	41.9	4,000 SF/5,000 SF	182
5	SFD	26.0	4,000 SF/5,000 SF	116
6	SFD	26.6	4,000 SF/6,000 SF	106
7	SFD	17.5	4,000 SF/6,000 SF	55
8	SFD	12.7	8,000 SF/8,000 SF	40
	Subtotal	193.9		914
9	Mixed Use	7.7	Approximately 77,000 SF	
10	Wildcatters Park	5.8		
	Main Oil Facility	15.0		
	Collector Streets	20.6		
11	Open Space (includes 32.7-acre potential public use area) and oil wells	546.8		
	Project Total	789.8		914

SFD = single-family dwelling, residential
SFA = single-family attached, residential
SF = square feet

As part of the proposed project, the existing oil and gas production facilities will be consolidated, abandoned, or relocated on the site. Remediation efforts will be implemented to eliminate contamination on-site. Additional details of the project and the potential environmental effects of the project are contained in Chapter 4, the Environmental Analysis, of this document. The City water tanks within the project footprint depicted in Exhibit 3-1 are not a part of the project.

The project is comprised of a variety of land uses, including:

- ***Open Space/Parks/Public Use*** - The Planned Community provides a network of pedestrian greenbelts and trails, including pocket parks and passive open space areas. A multi-use trail is proposed within the northern portion of the development to provide a link through the site to the County's regional riding and hiking trail system. A network of open space corridors is proposed. The open space corridors are intended to provide connectivity between the open space areas located west of the Orange (SR 57) Freeway with the open space areas east of the Orange Freeway in Chino Hills State Park. The open space will include oil wells for ongoing oil production.

  Exhibit 3-2 depicts the project open space component in the context of a regional open space plan.

  The 5.8-acre private Wildcatters Park will be improved as a private park and maintained by the Tonner Hills Master Homeowners Association. The park will maintain its current barbecue and picnic areas, passive recreation areas, restrooms, and parking. Portions of the park will be left as open space. The project will also provide for passive parks located within the residential planning areas which will be improved with thematic landscaping, benches, and pergolas.

  The project has reserved 32.7 acres in the southeastern portion of the site for potential public acquisition uses such as sports fields or school facilities. The property owner has made available this land for purchase by the City of Brea or any other interested public agency. Development plans for this area have not been developed. Further analysis pursuant to CEQA will be required when specific public uses have been defined and development plans area available. However, in order to assess cumulative impacts, reasonable assumptions have been made as to future uses, and those impacts have been addressed in the Traffic and other sections.

- ***Residential*** - Residential land uses will be developed into 8 distinct neighborhoods with each neighborhood bordered by natural open space. The neighborhoods will provide up to 914 residential units, composed of traditional single-family detached homes, single-family cluster homes, and single-family attached homes. The neighborhoods will be linked to recreational uses and natural and enhanced open space areas.

- ***Mixed Use*** - The proposed mixed use commercial area will be located at the southwesterly corner of the site and will be developed as a neighborhood convenience retail center, with the potential for residential uses integrated into the retail/service commercial businesses.

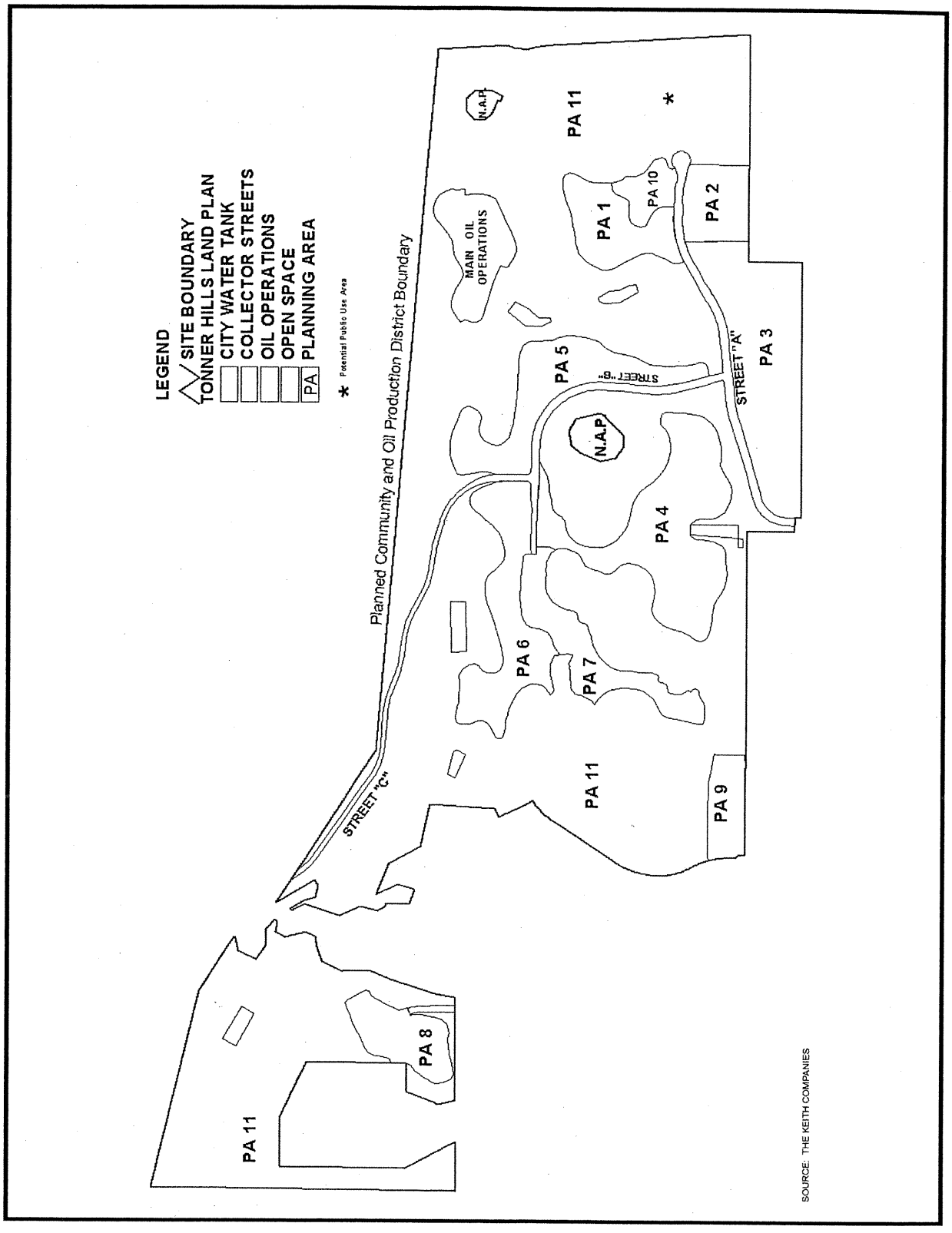

Exhibit 3-1

Tonner Hills Concept Development Plan

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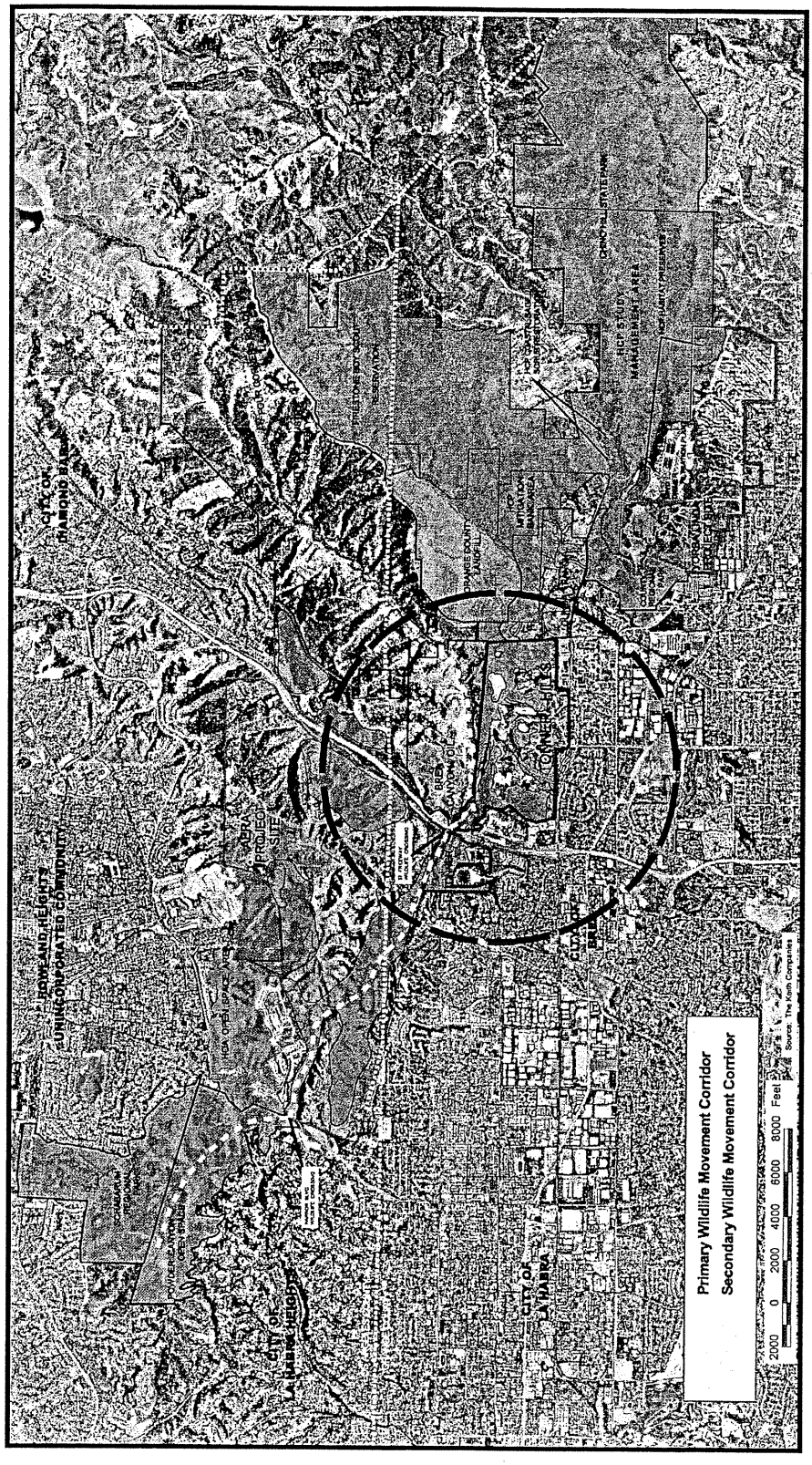

Exhibit 3-2

Regional Open Space Plan

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- ***Oil Facilities*** - The Planned Community includes a long-term plan for the phasing of new development with selective abandonment and consolidation of certain oil production facilities. The proposed project includes approximately 15.0 acres to be allocated exclusively to oil field-related facilities that will remain in operation as long as oil production is economically viable. Other oil field facilities will be incorporated into residential neighborhoods and also remain in existing open space.

  Throughout the project site, some oil and gas production facilities are scheduled to either remain in place or be relocated for continued operation. Exhibit 4.1-2 on page 4.1-5 depicts the locations of on-site oil wells. The existing gas plant will remain in place and will be screened from view. The two existing tank farms used for processing crude oil will be consolidated within the existing Tonner Canyon tank farm in the northwestern corner of the site. This location is isolated from residential uses and surrounded by open space. Remediation efforts will also be implemented to eliminate contamination from the site and reduce the potential for public health and safety impacts.

  When oil field facilities are located within or adjacent to residential and/or open space areas, they would be designed to be compatible with such uses.

- ***Circulation*** - The Planned Community includes the construction of an internal roadway circulation network utilizing the existing oil production roadways to the maximum extent feasible. The primary access points to the project will be from Kraemer Boulevard and Tonner Canyon Road.

  Proposed Tonner Hills Road will provide access from Tonner Canyon Road to the central area of the project. The project is proposed to be gated, with gates located at the Kraemer Boulevard and Tonner Hills Road project entrances. Correspondingly, the project street system will be privately maintained by the Tonner Hills Homeowners Association.

The project includes a proposed zone change. The proposed zone change application requests changing the existing site zoning from "A1" (General Agriculture) to "PC" (Planned Community) to establish Tonner Hills Planned Community. The Planned Community contains land use regulations and planning procedures for the project. In conjunction with the Planned Community, an Area Plan has been prepared that provides a detailed breakdown of development statistics by individual planning area. The community-wide Area Plan provides a mechanism for review of the relationship of land uses, one to the other, throughout the Planned Community.

3.2 Project Area History

The Planned Community site encompasses three oil and gas producing properties comprising 789.8 acres owned entirely by Nuevo Energy Company. These properties include the Stearns Fee, the East Naranjal Fee, and the Columbia Fee (Exhibit 4.14-1 in Section 4.14, Mineral Resources illustrates the boundaries

of these fee areas). The site has been used for oil and gas production since 1900 when the first oil well was drilled. Exhibits 3-3, 3-4, and 3-5 provide historical photographs of the Tonner Hills site.

A total of 210 active oil wells (including 14 water injection wells) exist on-site, in addition to 82 idle wells and 87 abandoned wells. Two active tank farms that process crude oil are located on-site. A gas plant, which collects and processes natural gas from producing oil fields for sale or for lease production operations, is located in the northeastern portion of the site. The plant also generates electrical power from the burning of natural gas produced on this and other Orange County fields. The electrical power is used to provide oil field power or is placed in the larger electrical grid. The turbines produce seven megawatts of power per day. The oil field operations consume two megawatts per day, leaving five megawatts of excess energy available for sale to the Independent Service Operator (ISO). A dewatering facility, which processed oil solids and liquids, operated in the central portion of the site and was decommissioned in 2000.

There are tank farms and oil sump locations, a former gas plant site, other associated production facilities, and surface and subsurface flow lines, underground utilities, and associated facilities (including those of other oil companies) that span the site. A gun range, now closed and remediated for lead contamination in 1996, is also located on the site. The site is developed with extensive oil and gas wells and their accompanying processing, roadways, distribution lines, maintenance facilities, and some operations office buildings. Gas turbines and storage facilities are located on the site. The project as proposed carefully considers the placement of dwelling units among ongoing oilfield operations to the extent that all potential impacts and hazards are minimized or eliminated.

Exhibits 3-6 and 3-7 depict photos of the existing industrialized development on the project site.

3.3 Project Objectives

The intent of the project objectives is to:

- Provide specific characteristics of the proposed project that assist the lead agency in the selection of feasible alternatives to be analyzed in the Draft EIR; and
- Provide tangible yardsticks for comparing project alternatives with the proposed project.

For purposes of CEQA, the County of Orange has determined that the project objectives of the Tonner Hills Planned Community are as follows:

- Create a livable master-planned community with long-term viability that comprises distinct residential neighborhoods linked to recreational uses, open space, appropriate public facilities, and commercial uses designed to achieve a balanced community with a sense of place, while maintaining the existing critical oil and gas production;

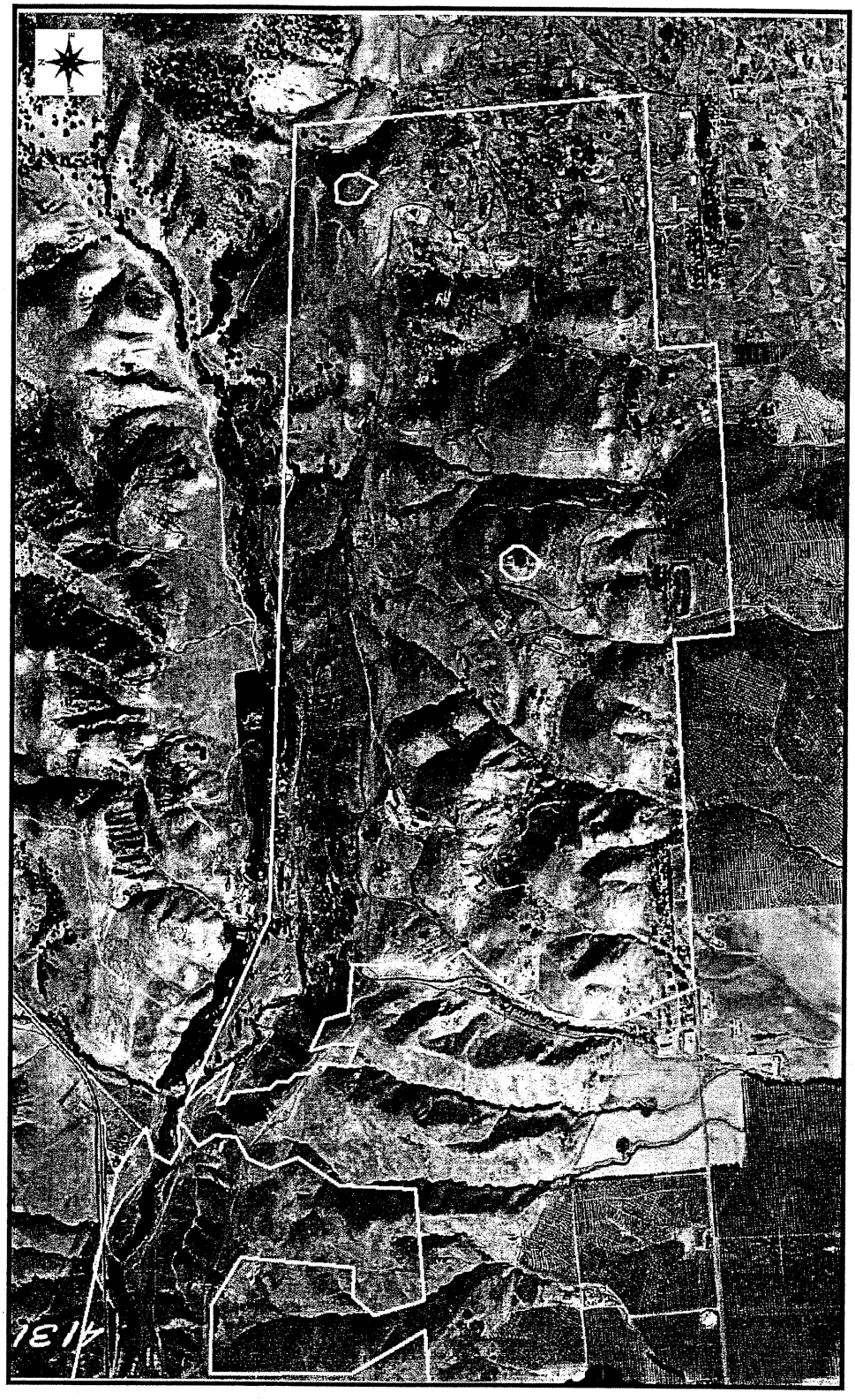

Exhibit 3-3
Historical Photo - 1936

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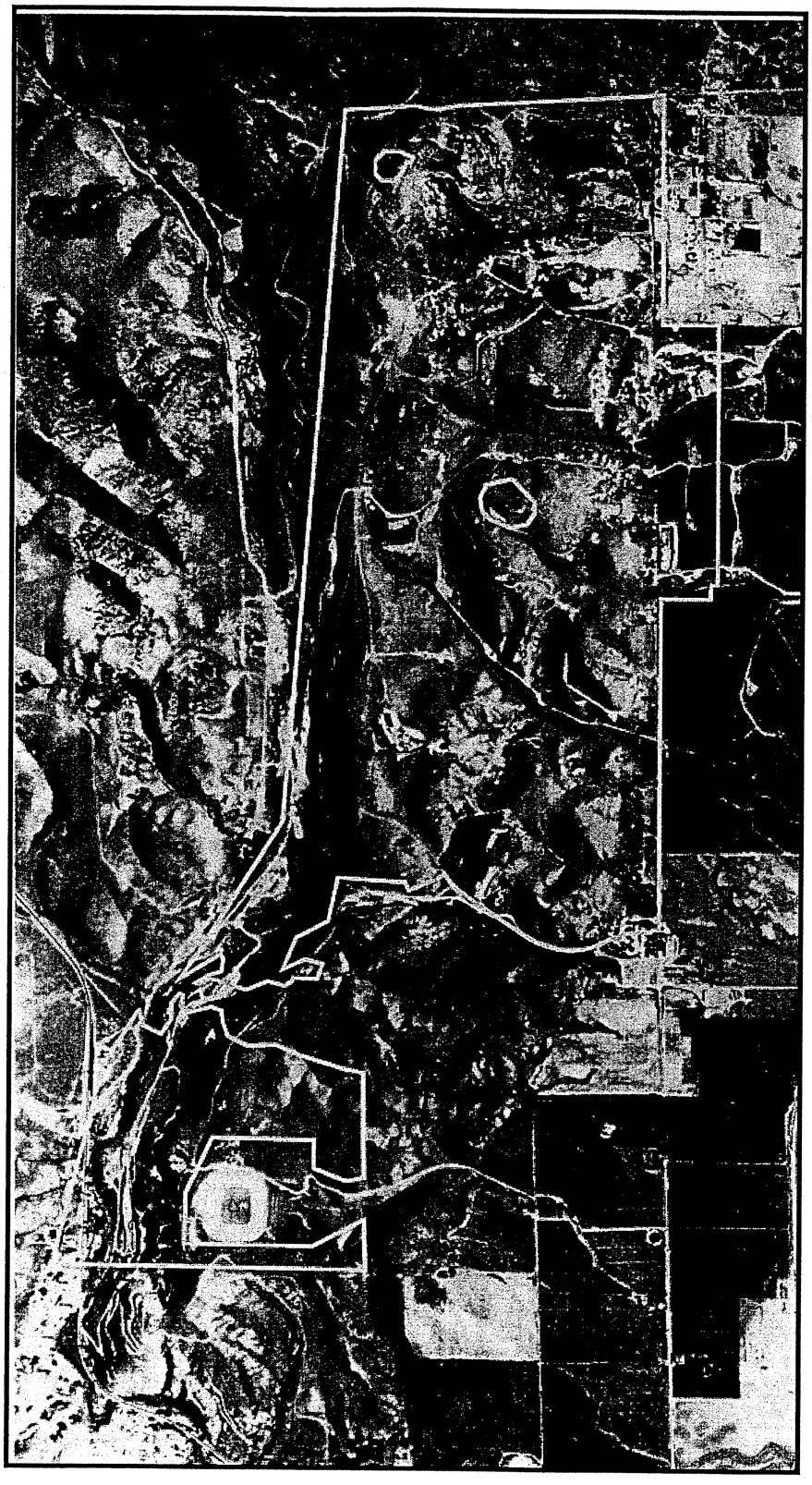

Exhibit 3-4
Historical Photo - 1949

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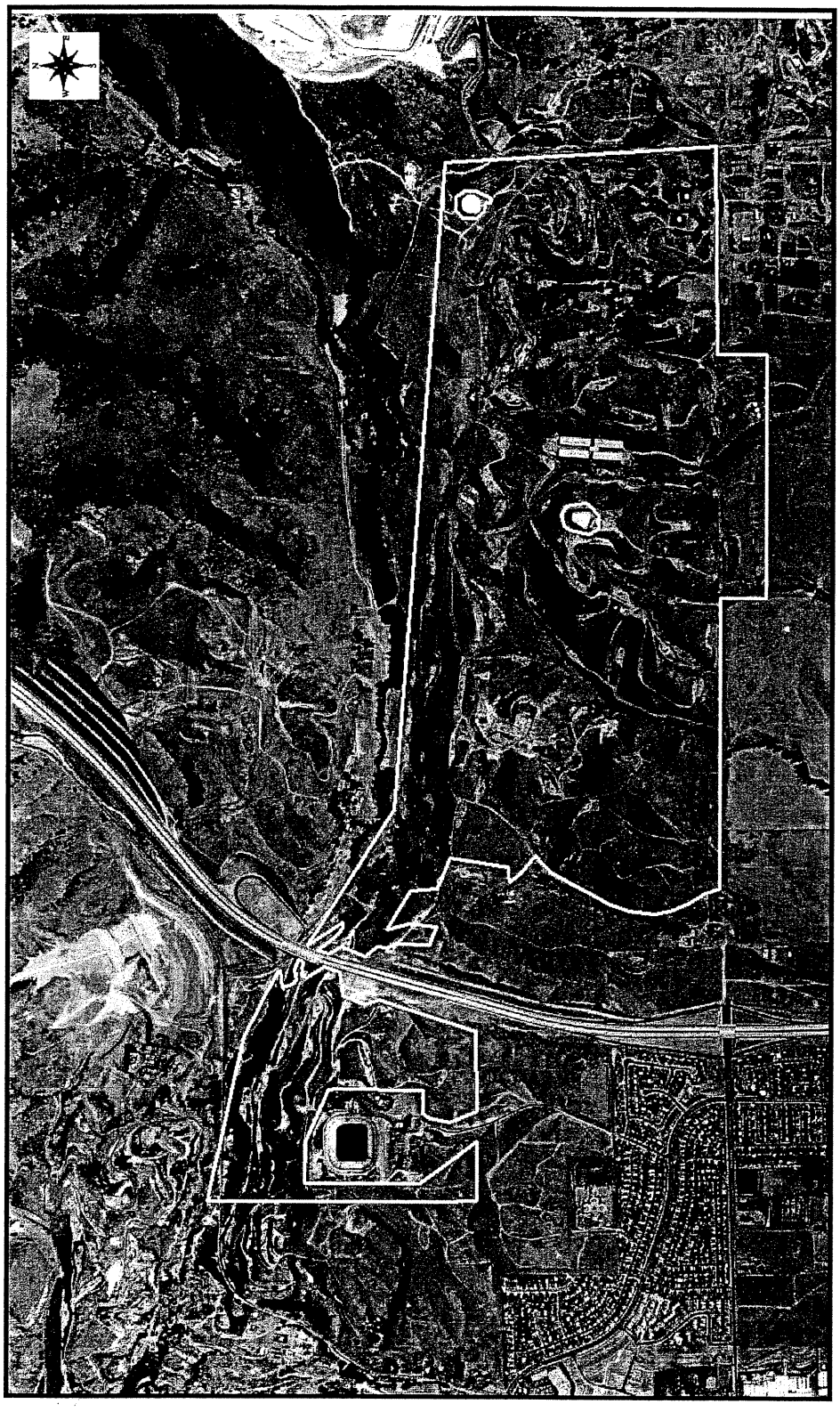

Exhibit 3-5
Historical Photo - 1973

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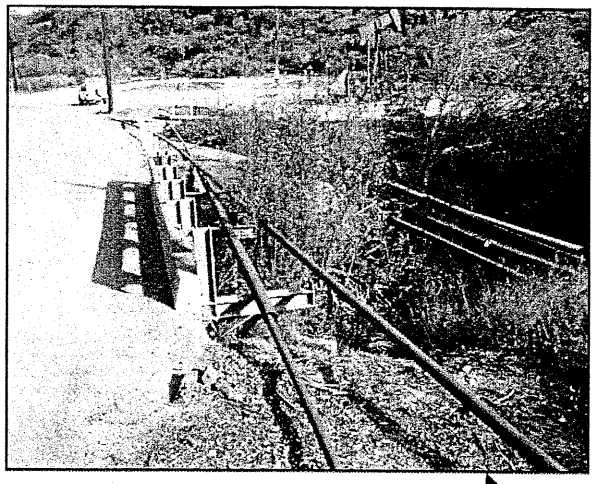
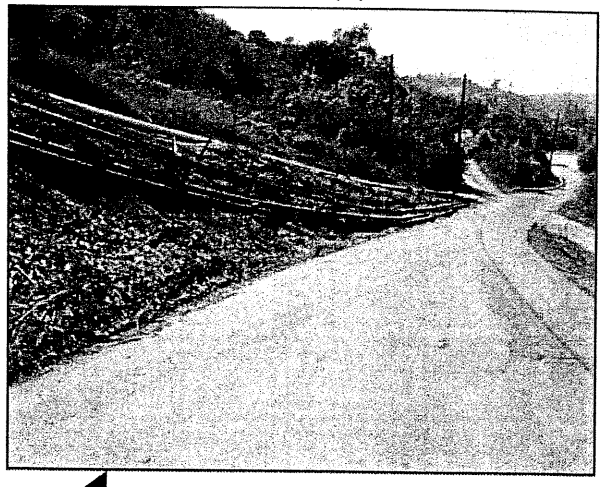
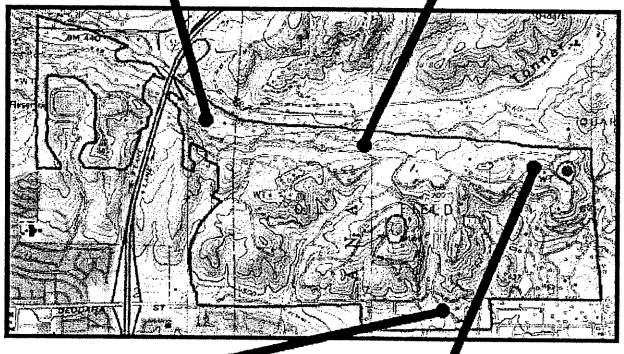
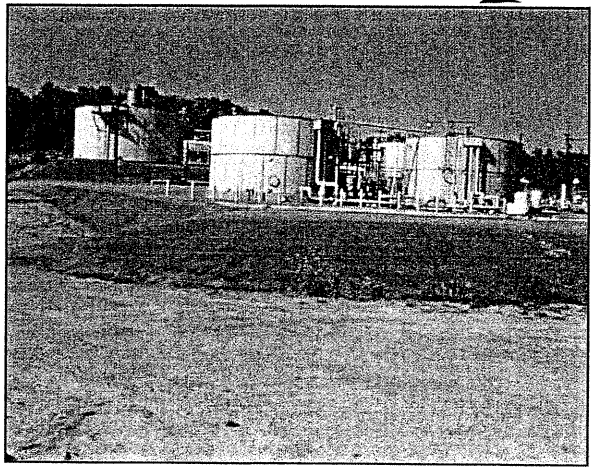
Tonner Creek oil field access road crossing



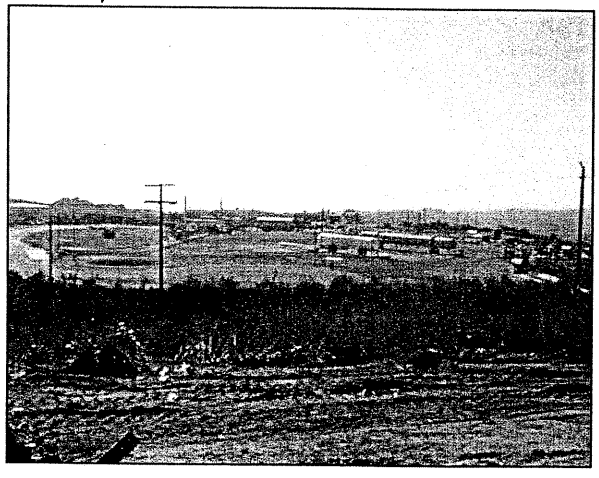
Tonner Canyon Service Road
with adjacent pipelines







East Naranjal Tank Farm



New Gas Plant

Exhibit 3-6

Photos - Industrialized Development

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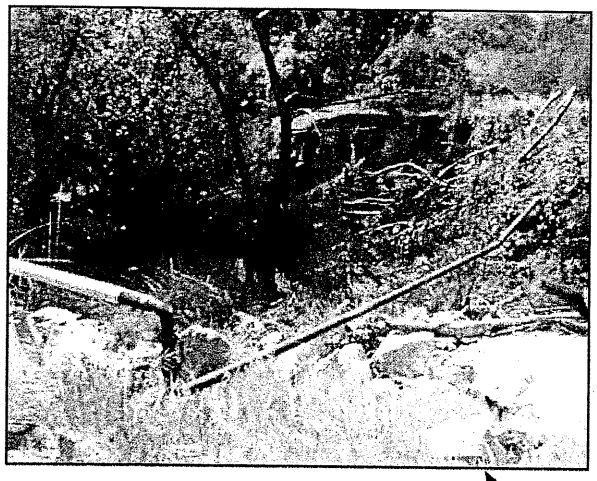
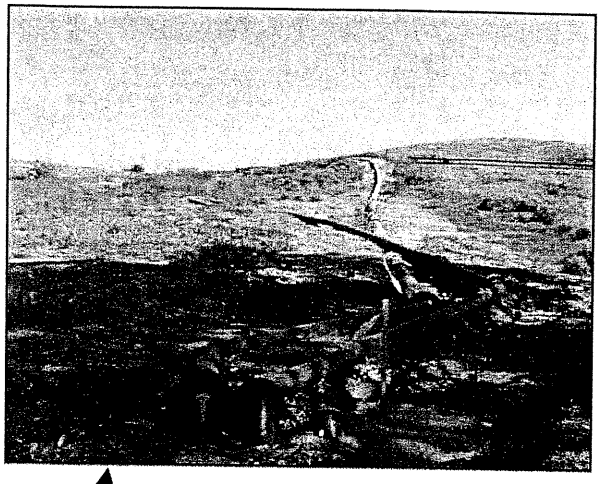
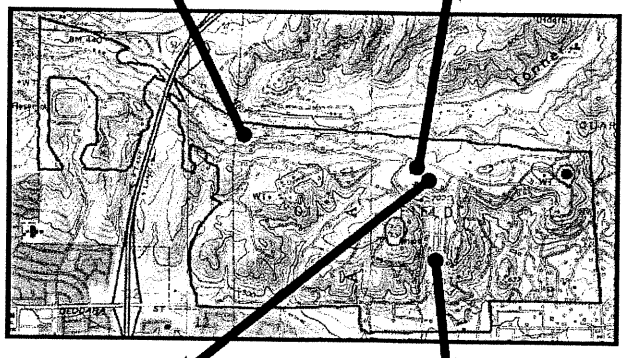
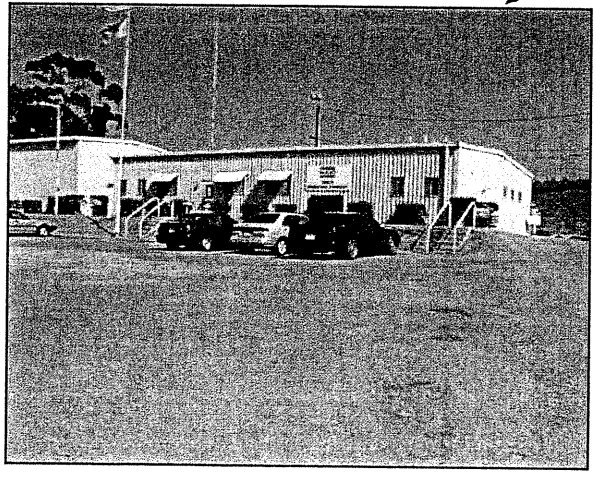
Tonner Creek oil field access road with pipelines



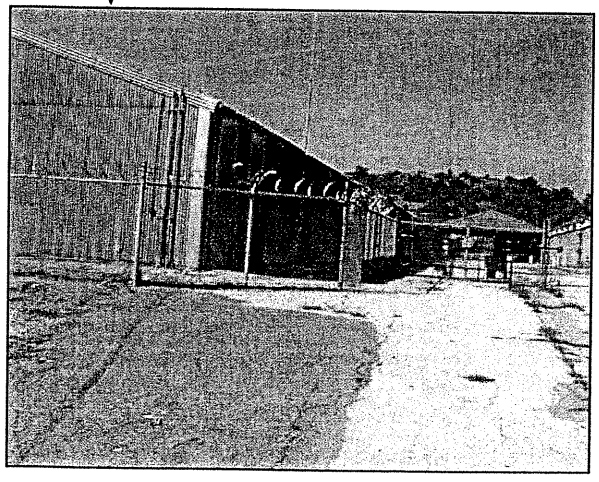
Above gound pipelines







Field office building A



Core storage buildings

Exhibit 3-7

Photos - Industrialized Development

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- Create a community inviting interaction among residents of the proposed project by providing an organized yet simple system of streets, entries, gardens, common areas, and open spaces to which residents can walk or bicycle;
- Create a planned community of appropriate density and scale that respects the existing topography and natural backdrop of the project site;
- Establish appropriate relationships among new neighborhoods and land uses within the planned community as well as with existing adjacent uses;
- Minimize exposures to known hazards such as tar seeps, fault lines, and landslide areas;
- Avoid placing housing on tar seeps to the maximum extent possible;
- Ensure that open space linkages for wildlife movement are preserved;
- Provide recreational opportunities for residents in the project vicinity;
- Provide a circulation network that promotes pedestrian, equestrian, and bicycling activities while facilitating appropriate vehicular movement and maximizes the use of existing internal roadway alignments;
- Ensure that the proposed development of the project adequately addresses the County General Plan policies for providing adequate public facilities and services, including local parks, trails, and school sites;
- Ensure that the proposed project is compatible with and complementary to other existing communities in the area;
- Provide additional housing in the north Orange County area, to the maximum extent possible, in an effort to reduce the jobs/housing imbalance;
- Sustain energy production on-site;
- Balance earthwork and grading on-site;
- Preserve and enhance permanent open space and habitat;
- Minimize dry season flows and implement Best Management Practices to prevent storm runoff pollutants entering the storm drain system.
- Minimize the overall adverse environmental impacts throughout the project site; and

- Create a variety of lot sizes and configurations that support a diversity of housing styles throughout the planned community.

3.4 Required Permits and Approvals

This Environmental Impact Report is intended to provide complete and adequate California Environmental Quality Act (CEQA) coverage for all actions and approvals associated with ultimate development of the proposed project. The Planned Community will serve as a legal document that provides the general plan land use designation and zoning for the project area. The Planned Community will also serve as a "blueprint" for development by establishing the distribution of land uses on the project site and providing criteria for development. In addition to the Planned Community, the following actions by the County of Orange will be covered by the Program EIR:

- Certification of a Final Program Environmental Impact Report
- Zone Change (establishment of Planned Community, Development Plan, and Program Text)
- Area Plan
- Site Development Permits
- Master Tract Map (Level A) for finance and conveyance only
- Level B Vesting Subdivision Maps
- Grading permits
- Improvement plans
- Development permits
- Development Agreement

In addition to the County of Orange, other agencies whose approval(s) are required for project implementation are:

- U.S. Army Corps of Engineers – Section 404 Permits, Clean Water Act
- California Department of Fish & Game – Streambed Alteration Agreement
- Regional Water Quality Control Board – Remediation/NPDES Permit/401 Permit
- County Sanitation Districts of Orange County – Sewer connections
- Orange County Flood Control District – Storm drains
- State of California Division of Oil, Gas and Geothermal Resources
- California Department of Transportation (Caltrans) – Intersection improvements at Tonner Canyon Road/SR 57 (Orange Freeway) interchange
- Orange County Health Care Agency (Local Enforcement Agency) - Site remediation
- U.S. Fish & Wildlife Service - Section 7 Consultation
- California Public Utilities Commission - water supply/sewer

Where applicable, the environmental impacts of all required approvals will be addressed in this Environmental Impact Report.

3.5 Project Phasing

The proposed project is planned to be implemented over a period of ten years from the commencement of construction and constructed in approximately three phases. The project includes a phased restoration of habitat, including coastal sage scrub and other native plant species in disturbed portions of the preserved open spaces. The revegetation plan begins prior to the start of Phase 1 grading and construction activities. Exhibit 3-7 depicts the phasing plan.

a. Phase 1

The first phase of the project will include grading for Neighborhoods 1, 2 and 3 and the Public Use Area. Construction for Neighborhoods 1, 2 and 3 will also commence. The timing of construction of the Public Use facilities will be dependent upon which public agency will be responsible for facility development. The habitat revegetation plan will continue throughout Phase 1.

b. Phase 2

The second phase of the project will include grading for Neighborhoods 4, 5 and 7 as well as for the 7.7-acre Mixed Use site. Construction for Neighborhoods 4, 5 and 7 will also commence. Habitat revegetation will continue in Phase 2.

c. Phase 3

The third and final phase of the project will include grading for Neighborhoods 6 and 8. Construction for Neighborhoods 6 and 8 will also commence during this phase. The habitat restoration and presentation efforts will be completed in Phase 3. Subsequent habitat monitoring and maintenance will continue post-construction.

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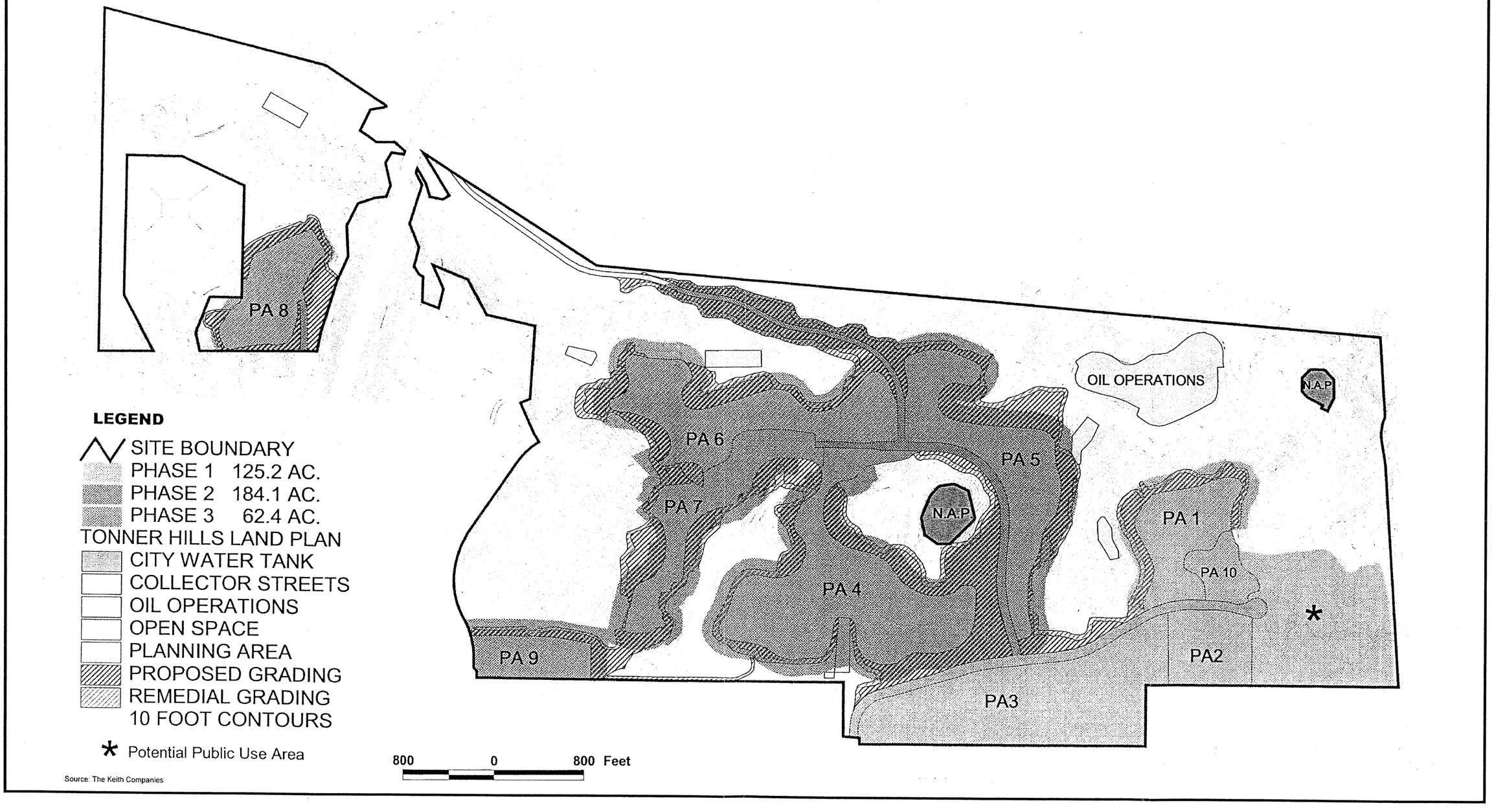

Exhibit 3.5-7
Phase Development

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4. Environmental Analysis

The County of Orange prepared an Initial Study and Notice of Preparation for the proposed Tonner Hills Planned Community in March 2001. The Initial Study and Notice of Preparation identified issue areas that, in combination with comments received during the Notice of Preparation (NOP) and public Scoping Meeting process, have resulted in evaluation of the following issues in this Draft Environmental Impact Report.

- Land Use and Planning
- Agricultural Resources
- Population and Housing
- Geophysical
- Hydrology and Drainage
- Water Quality
- Transportation/Circulation
- Air Quality
- Noise
- Biological Resources
- Aesthetics
- Cultural/Scientific Resources
- Recreation
- Mineral Resources
- Hazards
- Public Services
- Utilities and Service Systems

The discussion of each environmental issue within this section adheres to the following format.

1. **Existing Conditions**

   The existing conditions on the project site and within the vicinity of the Tonner Hills Planned Community are described. Relevant planning documents and resources will also be discussed.

2. **Thresholds of Significance**

   The County of Orange has not adopted County thresholds of significance for evaluating project impacts. For purposes of this EIR, relevant thresholds of significance identified by the California Environmental Quality Act (CEQA) are used, or other relevant standards are noted.

3. Project Impacts

The nature and extent of project impacts relative to issue areas noted above are analyzed. These analyses address direct (or primary) effects and indirect effects of the proposed Tonner Hills project. Where applicable, impacts are identified as short-term or long-term in nature and are identified per specific project phase or development option. Project impacts considered positive or of benefit to the project site or adjacent environment also are discussed.

4. Mitigation Measures

Measures to reduce or eliminate project impacts are provided. These measures are assigned to a specific project phase or development option to facilitate their consideration and implementation. Mitigation measures have been structured to meet the requirements of *Public Resources Code* §21081.6 for monitoring programs, as follows:

- **Time for Performance** - In each mitigation measure, a time for performance of the mitigation measure, or review of evidence that mitigation has taken place, is provided. The performance points selected are designed to ensure that impact-related components of project implementation do not proceed without establishing that the mitigation is assured;

- **Responsible for Supervising Performance** - For each mitigation measure, a public official is identified for ensuring that the mitigation is carried out. To guarantee that the mitigation measure will not be inadvertently overlooked, the supervising public official is the official who grants the permit or authorization called for in the performance; and

- **Definition of Mitigation** - For each mitigation measure, the measure will contain the criteria for mitigation, either in the form of adherence to certain regulations or identification of steps to be taken in mitigation. An exception to this rule is where a mitigation measure is a well known procedure, such as the submittal of soils reports prior to grading.

5. Cumulative Impacts

Analysis of cumulative impacts within each issue area involves identification of those incremental impacts of the project added to closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects occurring over time. Analysis of cumulative impacts within each resource issue is based on a list of cumulative projects in various stages of project planning and development and expected to contribute to cumulative impacts in the vicinity of the proposed Tonner Hills project.

6. Unavoidable Adverse Impacts

After evaluation of identified project impacts, proposed mitigation measures and cumulative impacts, residual significant impacts are identified. Significant adverse impacts that cannot be mitigated to a level of insignificance require the adoption of a Statement of Overriding Consideration by the County of Orange as the Lead Agency if the proposed project is approved. Potentially significant adverse impacts that can be reduced to a level of insignificance or avoided entirely with implementation of proposed mitigation measures are identified.

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4.1 Land Use and Planning

4.1.1 Existing Conditions

a. Regional Setting

The project site is located within the northern portion of the County of Orange directly north of the City of Brea. The project area encompasses approximately789.8 acres within unincorporated County of Orange and within the City of Brea Sphere of Influence (SOI). The Orange (SR 57) Freeway bisects the project area. Approximately 684.2 acres are located east of the Orange Freeway and north of Lambert Road, and approximately 105.6 acres are located west of the Orange Freeway at the southwest corner of Tonner Canyon Road and the Orange (SR 57) Freeway (Exhibit 4.1-1).

(1) On-Site Land Uses

The Planned Community area contains three oil and gas producing properties that are owned by Nuevo Energy Company and that were established over 100 years ago. These properties are commonly characterized as "fees" and include the Stearns Fee, the East Naranjal Fee, and the Columbia Fee. The Columbia Fee includes a mineral lease to Aera Energy. The site has been utilized for oil and gas production since 1900 when the first oil well was drilled. A total of 210 active oil wells (including 14 water injection wells) exist on-site, in addition to 82 idle wells and 87 abandoned wells.[1] Two active tank farms, which process the crude oil, are located on the site. For purposes of the tank farm, "process" refers to the practice of separating the water from crude oil and storing the oil. A gas plant, which collects and processes natural gas from producing oil fields for sale or for lease production operations, is located in the northeastern portion of the site.

There are numerous historical uses that are also associated with oil and gas production on the site, including tank farms and oil sump locations. The site also contains an old gas plant that has been abandoned and remediated. Other associated production facilities, and surface and subsurface flow lines, electrical lines, and associated facilities (including those of other oil companies) that span the site. Exhibit 4.1-2 indicates the location of existing oil facilities. An abandoned gun club is located on the site and has been remediated at the time of this writing.

In addition, Wildcatters Park is an existing 5.8-acre private recreation facility in the southeastern portion of the project site. Two City of Brea existing water reservoirs provide water storage within the boundaries of the project but are not part of the project. In the northern portion of the project area, two existing crossings – one bridge and one culvert – provide access over Tonner Creek. The site is mostly

[1]Water injection wells re-inject produced water into the formation to enhance recovery of oil. Water is often a byproduct of oil production as well.

developed with oil and gas wells and their accompanying roadways, maintenance facilities, and some operations office buildings.

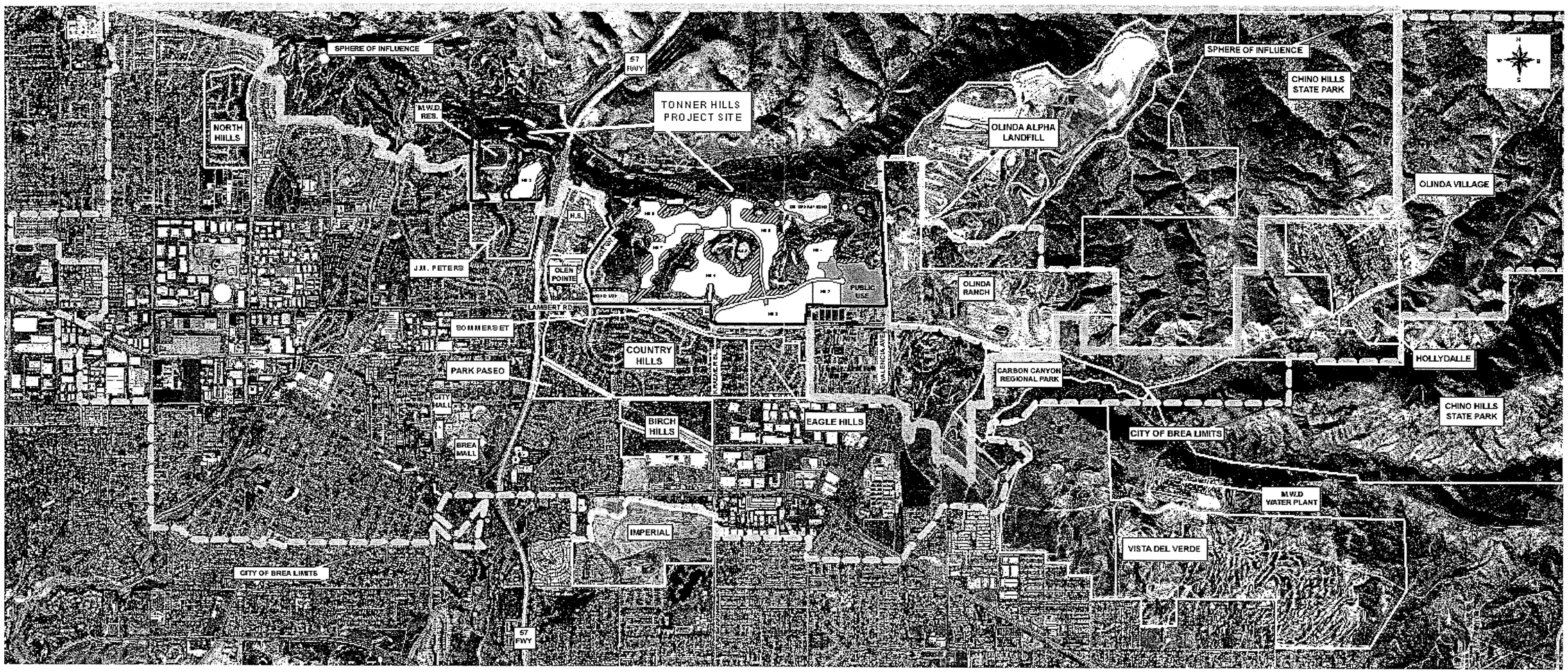
Recently discontinued commercial nursery operations have occupied a small, southerly portion of the site north of Lambert Road and east of Kraemer Boulevard. The nursery site occupied 18 acres on the project site. This area of the property is currently vacant and void of natural vegetation, with the nursery products being grown in individual containers. No other agricultural resources are being grown or cultivated on-site. For expanded discussion and an exhibit of project agricultural resources, applicable policies, and related project impacts, please refer to Section 4.2, Agricultural Resources, in this EIR.

(2) Surrounding Land Uses

The Planned Community is bounded on three sides by existing and proposed urban development, including office and residential uses, oil production facilities, public facilities, and open space. Exhibit 4.1-1 shows the surrounding land uses. The Olinda Alpha Landfill operated by the County of Orange is located approximately one-half mile east of the project area and is scheduled to continue operation until 2013 (but could be operational for a longer period of time). Brea Olinda High School is located adjacent to the site in the northwest portion of the Planned Community east of the Orange (SR 57) Freeway. The City of Brea Fire Station No. 3 is located to the south of the site at the northeast corner of Kraemer Boulevard and Lambert Road. The Sommerset townhome residential development is located directly south of the site, north of Lambert Road. Additional single-family detached residential land uses are located to the south of the site across Lambert Road (Country Hills and Eagle Hills). A 13.4-acre, 56-lot residential development (Tentative Tract Map No. 16047) is proposed between the southern boundary of the project and Lambert Road. The proposed subdivision is in the City of Brea and currently in the City's development review process.

The proposed Olinda Ranch development (formerly know as "Olinda Heights") is currently under construction to the east of the site at the northeast corner of Valencia Avenue and Lambert Road/ Carbon Canyon Boulevard. Olen Pointe, a commercial office and retail center of approximately 770,000 square feet, is located immediately west of the Planned Community at the northwest corner of Lambert Road and Wild Cat Way, east of the Orange (SR 57) Freeway. The East Side Reservoir and the Valencia Reservoir are surrounded by the Planned Community, east of the Orange (SR 57) Freeway. Both reservoirs have a 10-million-gallon capacity and are owned and operated by the City of Brea. Undeveloped areas in the County of Orange, with areas in the County of Los Angeles beyond, are located north of the Planned Community.

On the west side of the Orange (SR 57) Freeway, the Specific Plan area surrounds a 60-million-gallon covered reservoir operated by the Municipal Water District of Orange County. A small retention basin is located to the south of the reservoir, and paved access to the reservoir is maintained. West of the Orange (SR 57) Freeway, south of the project site, existing residential uses are located adjacent to the project which include townhomes and single-family residences which take access from Balsa Avenue.



LEGEND

SITE BOUNDARY BREA LIMITS S.O.I. LOCAL SITES

Exhibit 4.1-1
Surrounding Land Uses

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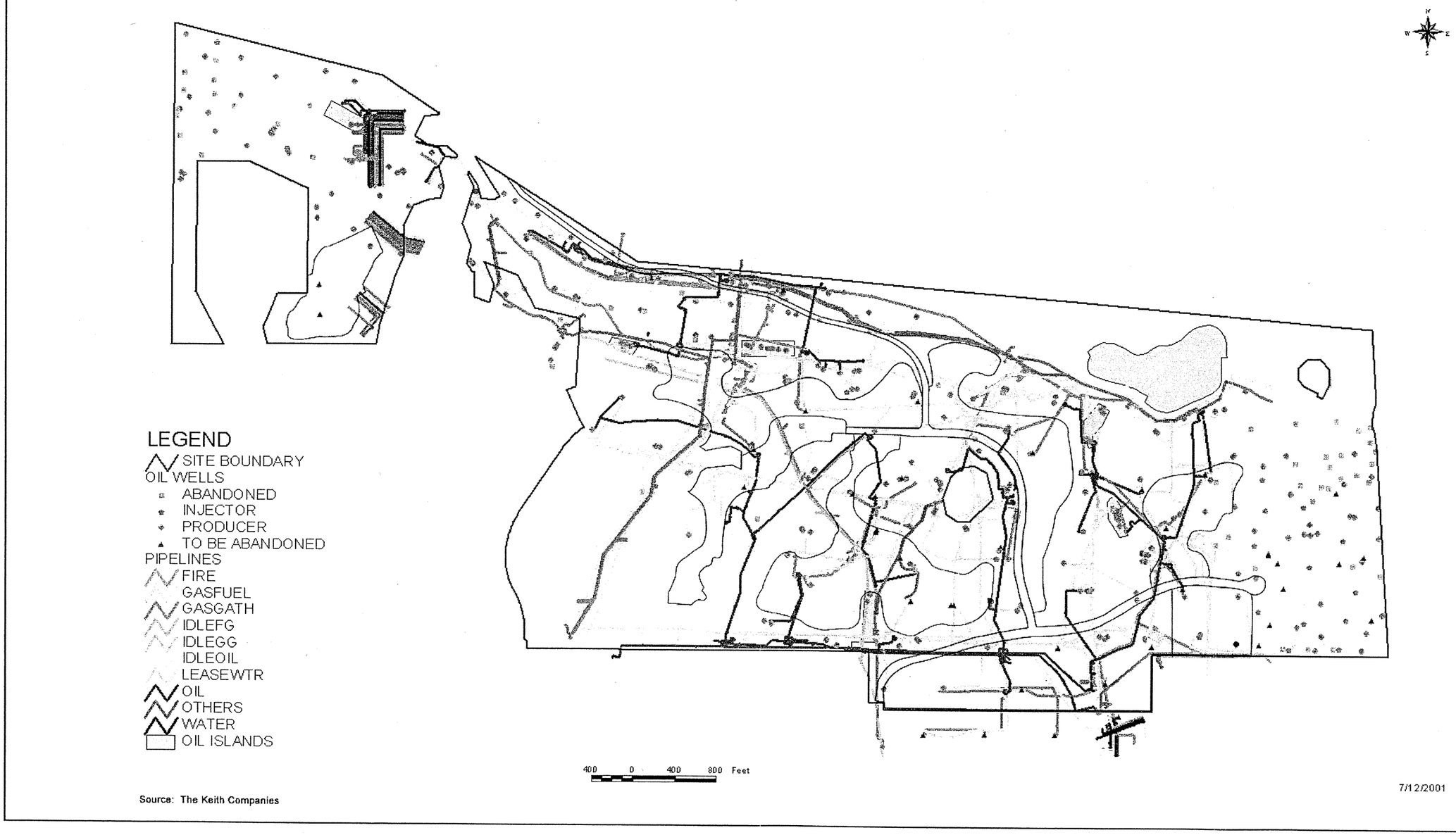

Exhibit 4.1-2
Existing Oil Operation Facilities

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b. Regulatory Setting

The proposed project is governed by state, local, and regional land use regulations. The primary land use regulatory mechanisms of the County include the General Plan and Zoning Ordinance. These documents provide a blueprint for development throughout the planning area. Due to the project location within the City of Brea Sphere of Influence, City regulatory and policy documents, including the General Plan and Zoning Ordinance, will also be discussed.

(1) County of Orange General Plan

The proposed Planned Community is under the regulatory jurisdiction of the County of Orange. The County of Orange General Plan is comprised of nine elements addressing Land Use, Transportation, Public Services and Facilities, Resources, Recreation, Noise, Safety, Housing, and Growth Management. In 2000, the most recent comprehensive update to the County of Orange General Plan was adopted by the Board of Supervisors by Resolution 00-59. In addition, the Housing Element was recently updated and adopted on December 4, 2001 and is currently under review by the State Housing and Community Development Department. Once certified it will be incorporated into the County of Orange General Plan.

The Land Use Element of the County of Orange General Plan describes objectives, policies, and land use patterns for all unincorporated territory. The project site is located within Regional Statistical Area (RSA) A-36 (Neighborhood 8) and RSA B-41 (Neighborhoods 1-7). The County of Orange has applied land use designations for the site: "1B - Suburban Residential" and "2A - Community Commercial" (Exhibit 4.1-3).

Approximately 766.1 acres of the project site are designated Suburban Residential. The Suburban Residential designation is characterized by a wide range of housing types, from estates on large lots to attached dwelling units (townhomes, condominiums, and clustered arrangements). This category permits the greatest flexibility for residential development. The Suburban Residential designation allows a development density of 0.5 to 18 dwelling units per acre (du/ac) and a development intensity (land area per unit) of 1,800 square feet to 2 acres. This would allow for approximately 383 to a maximum of 13,789 dwelling units. The General Plan Land Use Element residential categories identify those areas suitable for residential development and include allowances for local and community open space, local schools, child care facilities, neighborhood commercial centers, and other facilities needed for neighborhood services.

Approximately 23.7 acres of the project site are designated Community Commercial. This designation identifies land for commercial development that provides for convenience goods and retail trade, including community services (e.g., child care facilities).

(2) County of Orange Zoning Ordinance

The project site is zoned "A1" (General Agriculture) with an "O" (Oil Production) overlay district by the County of Orange (Exhibit 4.1-4). The A1 zone provides for agricultural uses with a four-acre minimum site and a maximum of 1 dwelling unit per site. In addition, Section 7-9-55.1 of the County's zoning ordinance indicates that the A1 district "may be used as an interim zone in those areas which the General Plan may designate for more intensive urban uses in the future." The Oil Production zoning overlay designation provides for oil drilling and production of oil, gas and other hydrocarbon substances. Such activities are subject to the regulations of the Orange County Oil Code (§7-8-1 through §7-8-53).

(3) City of Brea General Plan

The project site is within the City of Brea Sphere of Influence and has been assigned several land use designations within the City's General Plan including Public Facilities, Rural Residential, Low Density Residential, General Commercial, Office/Financial, and Hillside Residential. These are discussed below and are shown in Exhibit 4.1-5 and Exhibit 4.1-6. Inasmuch as this project is being processed in the County, the County's General Plan is controlling. However, a discussion of the City's plan is offered here for completeness. Clustering of residential densities may be permitted upon the review of a specific plan and the evaluation of its appropriateness for the site. The designations for the site as of the update to the City's General Plan for 2001 are:

- ***Public Facilities*** - Approximately 30.5 acres are designated for Public Facilities uses.
- ***Rural Residential*** - Approximately 547.0 acres are designated for Rural Residential uses (1 dwelling unit per 5 acres). This would allow a maximum of approximately 109 units.
- ***Hillside Residential*** - Approximately 53.4 acres are designated for Hillside Residential uses (1 to 2 dwelling units per acre). This would allow between 53 and a maximum of 106 dwelling units.
- ***Low Density Residential*** - Approximately 146.1 acres are designated for Low Density Residential uses (1 to 6 dwelling units per acre). This would allow between 156 and a maximum of 942 units.
- ***General Commercial*** - Approximately 9.2 acres are designated for General Commercial uses.
- ***Office/Financial*** - Approximately 3.6 acres are designated for Office/Financial uses.

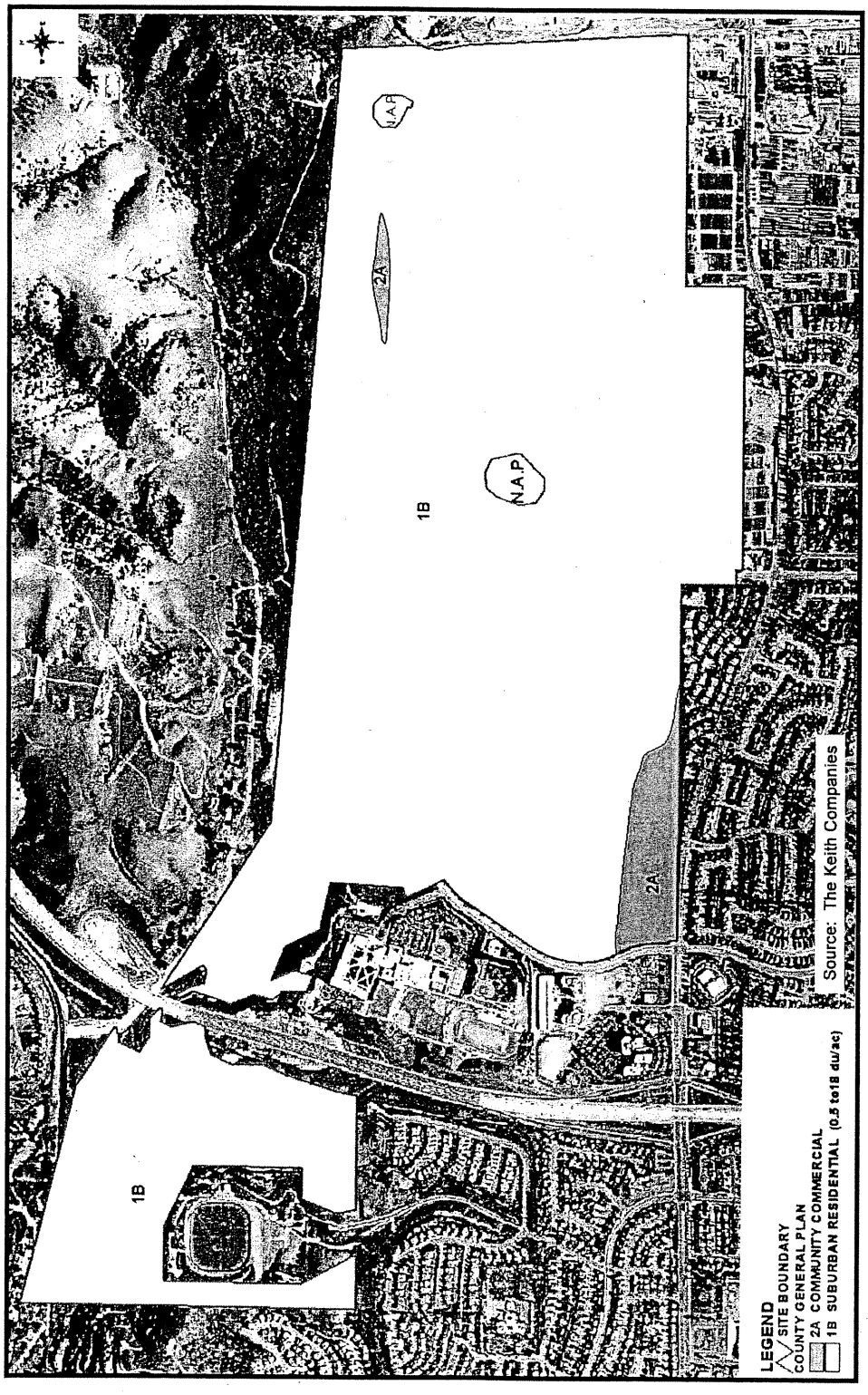

Exhibit 4.1-3

County of Orange General Plan Land Use Designations

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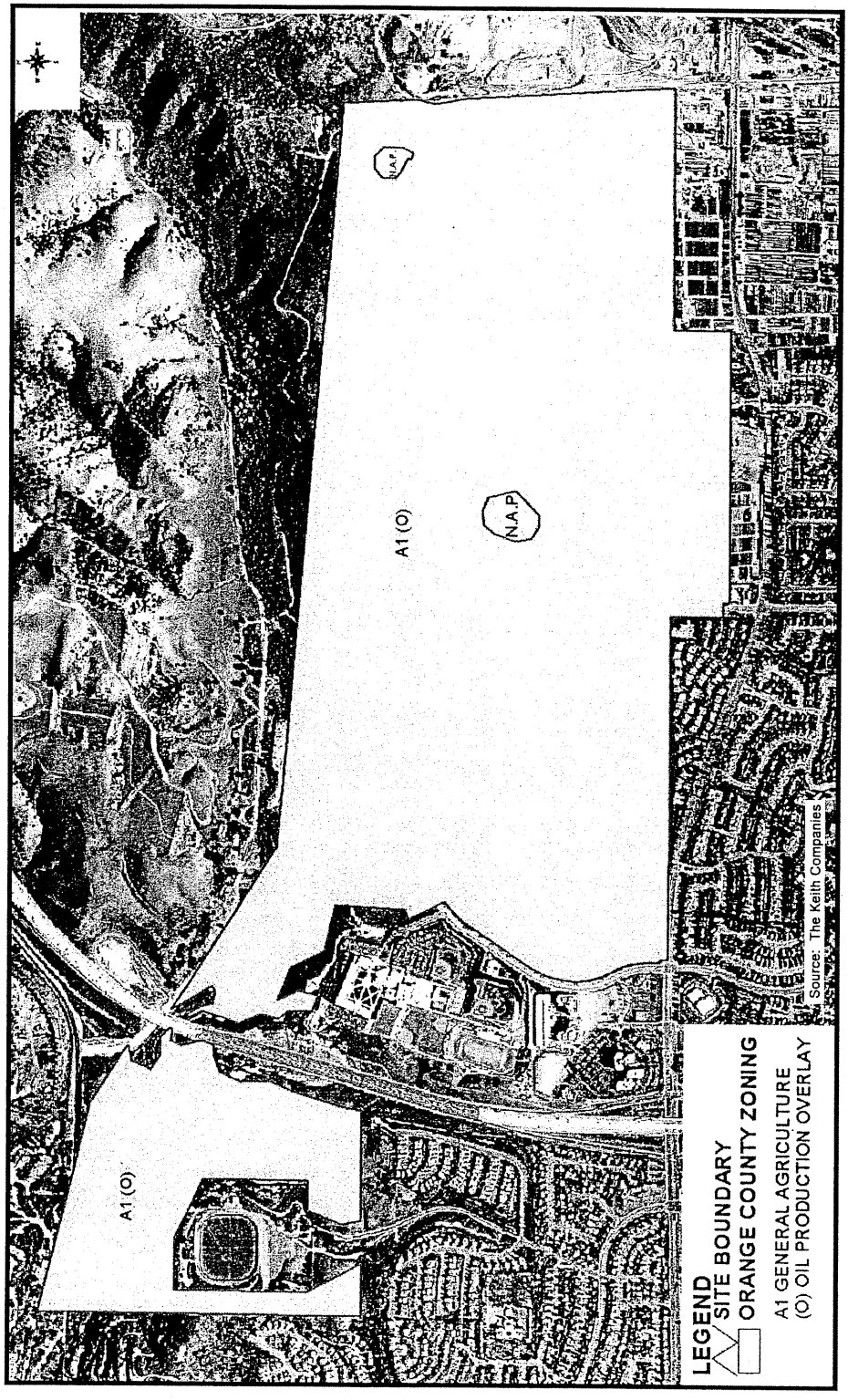

Exhibit 4.1-4

Existing County of Orange Zoning

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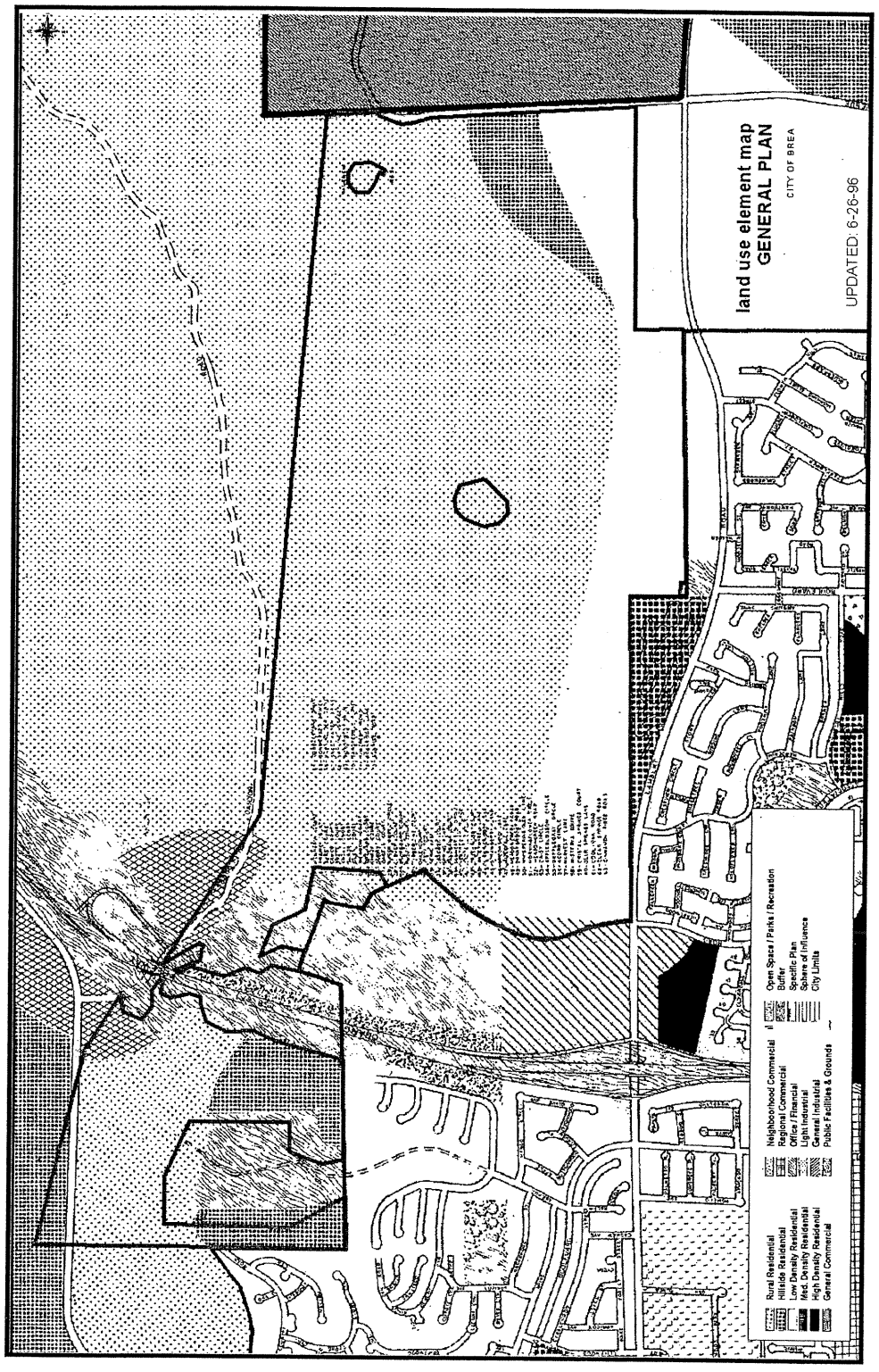

Exhibit 4.1-5

Existing City of Brea General Plan Land Use Designations

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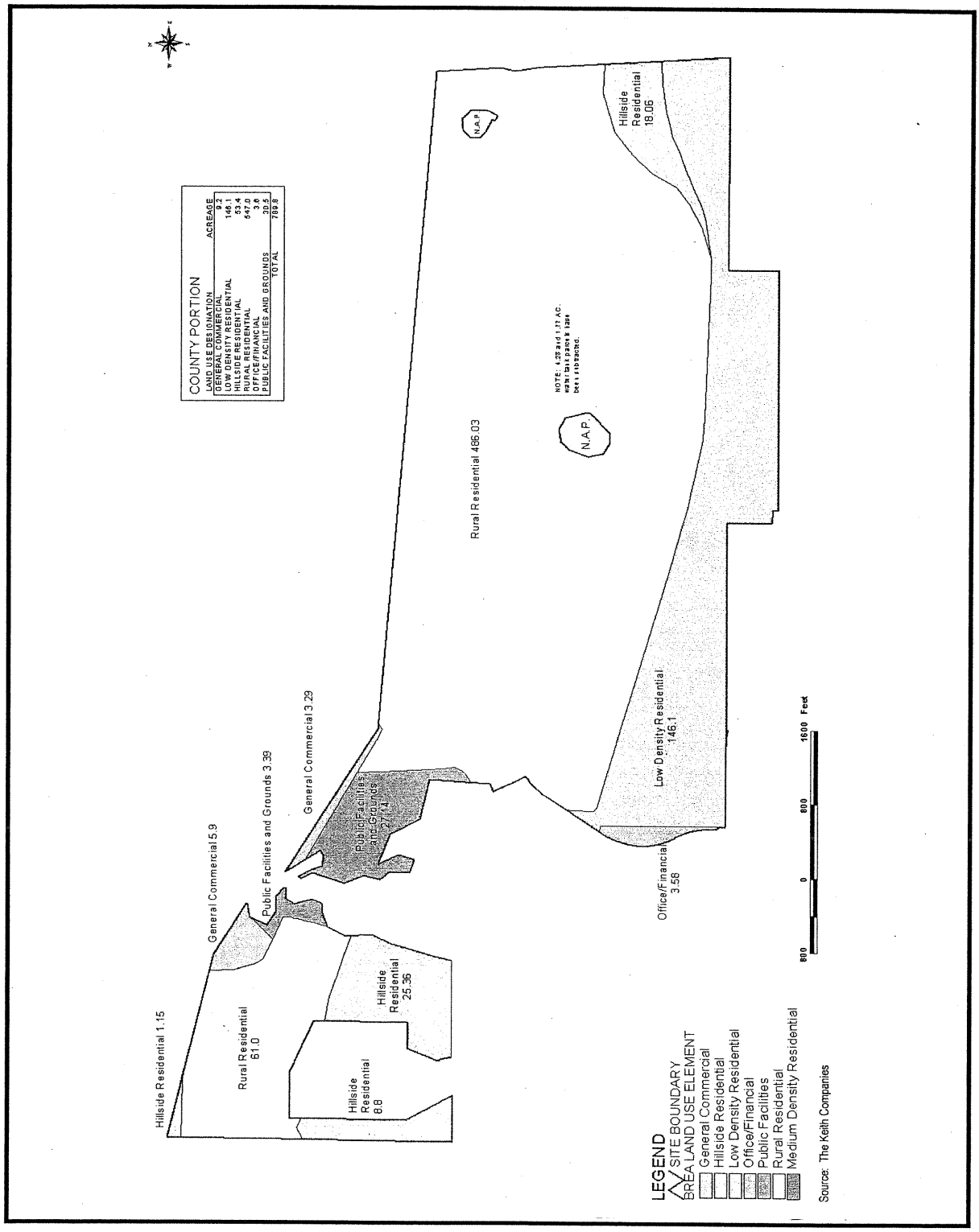

Exhibit 4.1-6

Existing City of Brea General Plan Land Use Designations with Acreages

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Under the City of Brea General Plan designations in effect at the time of project development application submittal (November 7, 2000), the site could accommodate a maximum of 1,093 residential units, plus limited commercial, office, and public facility uses. Subsequently, on August 7, 2001, the City of Brea adopted a revision to the General Plan providing for a 30% reduction in residential density within the City's sphere of influence areas.

Additionally, the General Plan establishes certain objectives for preparing specific plans. Even though most of the area in the SOI is designated as Rural Residential, the City's General Plan establishes a policy that future development within the SOI area is subject to the preparation, adoption, and processing of a specific plan, and states "One objective of the specific plan land use category is to provide a general plan framework for the designated areas requiring further detailed planning as well as a general indication of appropriate boundaries, land use classifications and associated land use intensities, and to pinpoint general plan goals, policies and objectives that should be implemented within the context of specific plans."

(4) Future Brea: Shaping the Vision

In 1992, the Brea City Council initiated a public process for citizens to formulate goals for the Sphere of Influence. The resulting vision document has no regulatory authority; however, the City Council intended that the document be used as a guide for standards and principles for development projects within the City's SOI. The County incorporated these principles into its General Plan.

A set of seven planning principles, as well as implementation measures, were formed to achieve the vision. The principles were intended to guide the sensitive development of hillsides and canyons and ensure the preservation of natural resources in these areas. In regards to the proposed project, the elements of the seven principles are summarized below.

1. Diversity - provide a mix of land uses, including natural and undeveloped open space, based on environmental criteria and a mixture of housing types (cluster, attached, detached, with affordable housing); provide flexibility in the planning process.

2. Sustainability - provide self-sustaining design, such as housing patterns that reduce traffic, multi-purpose public service facilities, use of reclaimed water, and resource-efficient techniques.

3. Economic Feasibility - eliminate costs to existing Brea residents from private development, encourage collaboration among the City and property owners to ensure comprehensive planning, acquire open space to protect environmental assets, and balance private property rights with public welfare.

4. Environmental Quality - enhance open space and natural habitats, including corridors, utilize non-traditional design that does not compromise public safety, avoid impacts on ridgelines, maintain significant viewsheds, establish a regional trail system.

5. Mobility - improve transportation modes, establish trails and open space linkages, implement innovative street designs, require Transportation Demand Management planning for new development.

6. Cultural/Historic enhancement - preserve historic oil field areas while permitting continued oil production, provide a variety of cultural and educational activities that enhance connectivity to the rest of Brea.

7. Phasing - implement long-range, incremental planning while avoiding piecemeal decision making, participate in inter-governmental planning and coordination with surrounding jurisdictions, facilitate coordination with property owners, and provide for incremental review of SOI by subareas as defined by ownership patterns and other common features.

Since 1992, the City of Brea has undertaken many initiatives to implement the Brea Vision document, including the Hillside Management Ordinance, the Trails Master Plan, the Open Space Preservation Report, a version of the Open Space and Conservation Element, participation in the creation of the Wildlife Corridor Conservation Authority, creation of several development impact fees, development of the Fiscal Impact of New Development computer model, and securing land and facilities for a Historic Oil Park. In July1999, the Brea Vision document was revisited to review and augment the original principles that were established in 1992. The City of Brea decided to conduct a follow-up outreach meeting because Orange County had emerged from the recession and Brea's hillsides and canyons were experiencing development pressure. Through revisiting the Vision document, the principles contained in the original Vision document were confirmed and the following value statements were developed: preserve open space, wilderness, hillside, and canyon areas as much as possible; protect ridgelines; ensure corridors for wildlife; minimize additional traffic congestion; provide for schools. Other general statements were provided such as the acceptability of providing for prudent, sensitive, well-planned development and responsible development of hillside and canyon areas should be allowed.

(5) City of Brea Zoning Ordinance

The City of Brea has the authority to "prezone" areas within its SOI to plan for the future land use of an area in anticipation of annexation. However, the City of Brea has not taken this step with respect to this project.

If the project area were to be annexed to the City of Brea, applicable zoning regulations would include the Brea Hillside Management Ordinance. As part of the City's zoning ordinance, the City of Brea adopted the Hillside Management Ordinance in 1994. The Hillside Management Ordinance is intended to "further define and implement the goals and objectives of the General Plan and Sphere of Influence Vision document, primarily to preserve the natural terrain, quality environment, and rural aesthetic

character, and also to minimize the negative effects of grading, and to provide for the health, safety and welfare of the citizens of the city while providing for the development of hillside areas ..." Some of the major elements of the ordinance include the preservation of ridgelines and natural topography, maintenance of scenic character, preservation and retention of significant natural habitat, encouragement of sensitive development through flexible design and use of nontraditional design standards, and avoidance of safety hazards.

(6) Memorandum of Understanding between County of Orange and City of Brea

The City of Brea and the County of Orange entered into a Memorandum of Understanding (MOU) regarding the Olinda Alpha Landfill on March 10, 1992. Generally, the agreement covers the terms and standards for management of the landfill and mitigation of effects on the City of Brea. Of relevance to this project, the City received a funding commitment from the County of $9.4 million and up to $13.3 million in compensation, a portion of which was to be devoted to the acquisition and development of a sports park in the immediate vicinity of the landfill. The agreement has been amended six times (1993, 1995,1997, 1999, and 2000) and is included in its entirety in the Appendices to this EIR. A section of the agreement relevant to the proposed project relates to land use within the City's SOI. The following provision has remained unchanged since the original agreement:

> *H. Land Use Planning*
>
> *County shall not approve private project developments within the City's sphere of influence east of the 57 Freeway without verifying the City's ability to provide necessary services. The County will not approve of private services such as septic tanks, individual wells, or retention basins.*

On August 5, 1997, the Land Use Planning section of the MOU was expanded to include the following additional language:

> *In recognition of the City's long range planning in its Sphere of Influence, the County will continue to be sensitive and responsive to the City's comments on proposed land uses in that area.*

The proposed project's compliance with the land use provision within the MOU is discussed below under "Project Impacts."

(7) Regional Planning Programs

County-wide and regional plans affecting planning in the project area include SCAG's Regional Mobility Plan, SCAG's Growth Management Plan, the Air Quality Management Plan prepared by the South Coast Air Quality Management District, the County's Master Plan of Regional Parks, the Orange County Flood Control District's Master Plan of Drainage, and the County's Integrated Waste Management Plan. In addition, all of these plans are included in the State Implementation Plan (SIP).

(8) Planned Community

The proposed project involves the proposal for a Planned Community. The Planned Community process is briefly summarized in the discussion below. A description of the proposed planned community is provided in Chapter 3, Project Description, as well as throughout this EIR.

A Planned Community is a tool for the implementation of the General Plan that establishes a link between implementing policies of the General Plan and the individual development proposals in a defined area. A planned community provides for the authority, regulations and procedures whereby large land areas can be planned. The land use regulations of each planned community are known as the Planned Community (PC) Program and include text specifying regulations such as uses permitted and site development standards, a statistical summary regulating the maximum/minimum of certain aspects of development, a PC zoning map showing the exterior boundaries of the planned community and any applicable overlay or combining districts; and a PC development map showing certain general and certain detailed information such as the general location of infrastructure facilities and a detailed statistical table regulating land uses in each PC planning area. All subsequent subdivision, individual developments, and public works projects must be consistent with the planned community. As development areas are further defined, a more specific level of development review is provided during the Area Plan and Site Plan application review processes.

(9) Sphere of Influence (SOI) Policy Guidelines and the Local Agency Formation Commission (LAFCO)

A Sphere of Influence designates a city's probable future physical boundary and service area. The proposed project is located within jurisdiction of the County of Orange and within the City of Brea's SOI. An annexation occurs when a city incorporates additional territory to its boundary. The Orange County LAFCO is the responsible agency for annexations within the County of Orange. At the time of this writing, no annexation request has been filed. However, because potential annexation of the property to the City of Brea is a reasonable foreseeable condition, this EIR provides analysis of project compliance with City of Brea regulations and policies, where appropriate.

The Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000 (*Government Code* §56000 et seq.) provides Orange County LAFCO with its powers, procedures, and functions. This law gives Orange County LAFCO power to "approve or disapprove with or without amendment, wholly, partially

or conditionally" proposals concerning the formation of cities and special districts, and other changes in jurisdiction or organization of local governmental agencies. In reviewing proposals, Orange County LAFCO is required to consider certain factors such as the conformity between city and county plans, current service levels and need for future services to the area, and the social, physical, and economic effects that agency boundary changes present to the community.

(10) Sphere of Influence Policy Guidelines

Representatives of the County, Orange County cities and the Building Industry Association prepared Sphere of Influence Policy Guidelines to guide private development and the provision of municipal services in city spheres of influence. On July 27, 1999, the Board of Supervisors approved the policy guidelines by Resolution No. 99-301 which states "the guidelines are not intended to direct or influence development, rather they serve solely as the framework for cooperation among affected agencies and landowners and only become a formal policy with regard to individual city spheres when this Board and the City Council reach agreement on their adoption and implementation." The Sphere of Influence Policy Guidelines and adopting resolution are included in their entirety in the Technical Appendices to this EIR. Applicability of the Guidelines to the proposed project is discussed under "Project Impacts."

4.1.2 Thresholds of Significance

For the purposes of this EIR, the thresholds of significance for evaluating project impacts are based upon suggested criteria from the County of Orange Environmental Checklist and the CEQA Environmental Checklist found within Appendix G of the CEQA Guidelines. The project would result in a significant impact if it would:

- Conflict with applicable general plan designation or zoning;
- Conflict with environmental plans or policies of agencies with jurisdiction over the project;
- Disrupt or divide the physical arrangement of an established community (e.g., low income, minority); or
- Conflict with adjacent, existing or planned land uses.

4.1.3 Project Impacts Prior to Mitigation

a. On-Site and Surrounding Land Uses

Implementation of the proposed Planned Community will alter existing on-site land uses from open space and oil production, to residential, commercial, community facilities, open space, and access/circulation uses and continued oil production. The Planned Community proposes 914 dwelling units in up to 8 distinct neighborhoods, a mixed use center, neighborhood parks, an area for public use purposes, open space and green belts, and retention of some oil field related facilities. This will permanently alter the existing land uses on-site and the character of the area to a permanent, higher intensity developed

condition. This alteration will have long-term land use impacts which would include increased local traffic, as well as related increased noise levels and air pollutants. The impacts associated with these issues are discussed in detail and mitigation measures recommended in the respective sections of this EIR.

The Olinda Alpha Landfill is located one-half mile to the northeast of the project which could potentially result in incompatibility with the proposed land uses due to potential odors and potential leachate migration. However, prevailing winds from the south direct odors predominantly northward. In addition, the vacuum extraction measures in place at the landfill mitigate potential leachate migration. Project distance and intervening faulting mitigate potential land use compatibility impacts to the proposed project.

In accordance with existing operating permits, the Olinda Alpha Landfill has an extensive groundwater monitoring program to determine impacts to groundwater, and a seepage collection system and an ultraviolet/ozone treatment system that collects and treats water impacted by volatile organic compounds (VOCs). This treated water is then used at the site for dust control. Information on the details of the existing environmental control systems at the site is available upon request.

Implementation of the proposed project would also result in potential on-site land use compatibility impacts due to the ongoing oil production uses combined with residential, open space, and public facility uses. It should be noted that the Orange County Fire Department standards prohibit the construction of any residential units within 100 feet of any operating well head. This will apply to the development surrounding the remaining oil wells on the site.

Construction of the proposed project may temporarily result in increased amounts of local airborne and particulate matter, as well as an increase in traffic congestion, noise levels, adverse visual impacts and related effects, thereby causing short-term construction impacts to surrounding uses. Project construction-related activities would affect adjacent and surrounding land uses. Residential uses west and south of the site could experience some of these short-term construction impacts. However, these impacts would be short-term in nature and are not expected to continue after build-out of the proposed project. Dust generation due to typical construction and grading activities can be anticipated to temporarily increase local airborne and particulate matter. Construction equipment would also be unsightly for adjacent residents and motorists on a temporary basis. Noise levels would also temporarily increase due to construction activities. For additional analysis of construction impacts refer to the Air Quality, Noise, Aesthetics, and Transportation/Circulation sections of this EIR.

b. Consistency with the Orange County General Plan

(1) Land Use Element

The Land Use Element of the General Plan establishes land use designations of Suburban Residential (0.5 to 18 dwelling units per acre) and Community Commercial for the project site. The suburban residential land use designation includes a wide range of housing types, from estates on large lots to attached dwelling units (townhomes, condominiums, and clustered arrangements). The community commercial land use provides for a wide range of facilities for convenience goods and retail trade including tourist recreation businesses and community services (e.g., childcare facilities). The proposed land uses within the Tonner Hills Planned Community are consistent with the General Plan land use designations for the project site.

The Tonner Hills Planned Community includes a variety of housing types such as conventional single-family and single-family cluster housing to address several market segments with an overall density of approximately 1.2 dwelling units per acre. A 7.7-acre mixed use center is proposed to include retail and service tenants.

The Tonner Hills Planned Community is evaluated below for compliance with the following applicable Land Use Element policies of the General Plan.

- *Policy 1. Balanced Land Use - To plan urban land uses with a balance of residential, industrial, commercial, and public land uses.*

  The Tonner Hills Planned Community is a balanced community comprised of 789.8 acres with a mix of land uses. Residential development includes several housing types providing housing opportunities to various segments of the market through the provision of single-family attached, conventional single-family detached, and single-family cluster housing. The Planned Community includes a 7.7-acre neighborhood serving retail center, 514.1 acres of open space, and recreational opportunities within the community, and a 32.7-acre public use site to be reserved for development of public facilities. This policy does not require completely self-contained communities. The notion of balanced land use in part is that residential development is able to take advantage of its proximity to employment opportunities.

- *Policy 2. Phased Development - To phase development consistent with the adequacy of public services and facilities within the capacity defined by the General Plan.*

  As appropriate levels of infrastructure, community facilities, and open space dedications are provided, development will be phased in.

- *Policy 3. Housing Densities - To provide a variety of residential densities that permits a mix of housing opportunities affordable to the County's labor force.*

  The Tonner Hills Planned Community will provide a range of residential densities offering affordable, entry level housing as well as "move up" and executive housing through a variety of attached and detached housing types distributed throughout the master planned community, all of which are located close to job centers such as Olen Pointe, the Brea Mall, the high school, Kaiser Permanente, and the City of Brea Civic & Cultural Center.

- *Policy 4. Land Use/Transportation - To plan an integrated land use and transportation system that accommodates travel demand.*

  Collector and local streets form the backbone circulation system for Tonner Hills providing for the safe and efficient movement of vehicles through the community as well as a backbone for a comprehensive system of bikeways. Streets will include landscaped parkways and pedestrian walkways separated from the street. "Traffic calming" strategies have been incorporated to slow vehicular traffic through the use of open space, landscaped areas and narrowed intersections to influence a driver's peripheral vision and encourage drivers to proceed more slowly.

- *Policy 6. New Development Compatibility - To require new development to be compatible with adjacent areas.*

  The Tonner Hills Planned Community is consistent with the existing surrounding land uses. The Planned Community is bounded to the west, south and east by existing and proposed urban development including office and residential uses, oil production facilities, public facilities, and open space. The slopes along the northern portion of the project will remain almost exclusively in open space, which will provide compatibility with open space properties to the north along Tonner Canyon and retains the wildlife corridor.

- *Policy 7. Creative Design Concepts - To encourage innovative concepts that contribute to the solution of land use problems.*

  The topographic and geographic features of the land within Tonner Hills define distinct residential neighborhoods. Sensitive ridgelines and natural open space areas, including the wildlife corridor, will be preserved. Streets will be laid out in a manner responsive to the terrain in order to reduce grading impacts.

- *Policy 8. Enhancement of Environment - To guide development so that the quality of the physical environment is enhanced.*

  Natural and enhanced open space areas proposed for Tonner Hills will primarily include areas supporting native plant communities. Open space areas within the project site include preserved and restored native plant communities valuable for wildlife and recreation. The open space areas are primarily comprised of ornamental vegetation, native grasslands, coastal sage scrub, and

woodland habitats. California walnut and coast live oak woodlands provide food, cover, and nesting habitat for a variety of birds, amphibians, reptiles, and mammals. Riparian woodlands along Tonner Creek will be preserved. These open space areas will be designed to provide a diversity of plant communities that is important for public open space and wildlife value. The existing terrain will be incorporated as part of the natural open space in order to preserve the wilderness value and character of the site. Disturbed open space areas within the project site will be revegetated and reserved as open space.

- *Policy 10. Childcare Improvement - To encourage and facilitate provision of childcare facilities to address the growing County demand.*

  The Tonner Hills Planned Community would allow childcare facilities subject to approval of an Area Plan or a Site Plan within the residential and mixed use districts. In addition, the Planned Community provides the potential for 32.7 acres for development of public facilities which could include a childcare facility.

(2) Transportation Element

The Transportation Element of the General Plan contains three components:

- Circulation Plan
- Bikeways Plan
- Scenic Highways Plan

The Tonner Hills Planned Community is evaluated below for compliance with the following applicable Transportation Element policies of the General Plan.

Circulation Plan

- *Policies*

  3.1 Maintain acceptable levels of service on arterial highways pursuant to the Growth Management Element of the General Plan.

  3.2 Ensure that all intersections within the unincorporated portion of Orange County maintain a peak hour level of service "D", according to the County Growth Management Plan Transportation Implementation Manual.

  3.3 Evaluate all proposed land use phasing plans for major development projects to ensure maintenance of acceptable Levels of Service on arterial highway links and intersections.

The Tonner Hills Planned Community will provide for a circulation system and roadway improvements for the safe and efficient movement of vehicles to and from the project site. The project-specific traffic study has been prepared for the proposed Planned Community and discussed in detail within Section 4.7, Transportation/ Circulation, of this EIR. The traffic study analyzes the traffic impacts associated with the project proposal and recommends mitigation measures to ensure that intersections impacted by the project will maintain a peak hour level of service "D" or better.

- *Policy 6.2 - Encourage new developments to support means of enhanced pedestrian and bikeway use by providing linkages between land use such as residential areas, parks, schools, businesses and commercial areas which typically generate a large number of peak hour trips.*

  Bicycle trails and pedestrian walkways are an integral element to promote alternative methods of travel within Tonner Hills. A Class I paved bicycle trail system and pedestrian walkways will be provided within the right of way of collector streets with access into the planned community. This system will link residential neighborhoods to open space, parks, the public use area, and commercial area within Tonner Hills, as well as to employment centers such as Olen Pointe, the Brea Civic & Cultural Center, Brea-Olinda High School, and the Brea Mall. The Tonner Hills bike trail system will ultimately link to Chino Hills State Park and Carbon Canyon Regional Park.

Bikeways Plan

- *Policy 1.5. Recreation - Plan bicycle routes to facilitate access to recreational areas such as regional parks, beach areas, and major tourist commercial/ recreational facilities.*

  The Tonner Hills bike trail system will provide connections to Chino Hills State Park and Carbon Canyon Regional Park as well as to the Brea Civic & Cultural Center through connections to planned and existing bike trails adjacent to the project site.

- *Policies*

  1.11. Design Standards - Design and construct bikeways in accordance with County and Caltrans standards in order to maximize safety and minimize potential conflicts with pedestrians and motor vehicles.

  1.17. Development Commitment - Encourage developers to provide local bicycle trails, as well as require construction of applicable Bikeways Plan bikeways within their projects as conditions of development approval.

  The Tonner Hills Planned Community bikeway system will be a Class I off-street bikeway system designed to maximize safety and minimize potential conflicts between pedestrians. The Tonner Hills Planned Community is not designated for "Bikeways Plan" bikeways in

the County General Plan; however, on-site trails are planned to connect to trail systems leading to Chino Hills State Park and Carbon Canyon Regional Park.

(3) Public Services and Facilities Element

The Public Services and Facilities Element of the General Plan contains County policies on the planning and provision of public services and facilities that are necessary for orderly growth and development. The Tonner Hills Planned Community is evaluated below for compliance with the applicable Public Services and Facilities Element policies of the General Plan.

- *Policy 1. Phasing and Funding (General) - To implement public facilities in a manner that supports the implementation of the overall land use development policies and the needs of County residents and is consistent with the funding capabilities of the County. Proponents of planned communities or tentative tract or parcel maps in conventionally zoned communities shall provide ultimate, fair share infrastructure improvement for regional services as required by County and service provider plans in effect at the time of implementation. Proponents shall also participate, on a fair share basis, in provision of community level facilities. The County and service providers shall strive to provide facilities and services to complete the service system.*

  As appropriate levels of infrastructure, community facilities, and open space dedications are provided, development will be phased in. Phasing sequencing is subject to change over time to respond to various market factors, and individual phases may overlap or develop concurrently. Development phasing will be implemented through the approval by the County of tentative tract maps and parcel maps which will require appropriate levels of infrastructure and community facilities and through the site development permit approval process. A plan for the phasing of public improvements will be provided with the first Level B subdivision map.

- *Policy 2. Phased Development (Orange County Fire Authority) - Require phased development whereby land use proposals shall display the ability to provide adequate fire and paramedic service prior to project development. The service provision shall include station site acquisition, construction, equipment, and station staffing. The level of service shall be established in accordance with the criteria identified in the above policy.*

  The Orange County Fire Authority is the primary fire and paramedic service agency for the project site. Provision of fire and paramedic services is discussed in greater detail in Section 4.16, Public Services.

- *Policy 2. Phased Development (Library Services) - Require phased development whereby land use proposals shall display the availability of or the ability to attain adequate public library service prior to project development. The service provision shall include library site, construction, collection, furniture and equipment.*

It is anticipated that existing library facilities within the Brea area are adequate to serve the project development. A branch library is located within the Brea Civic & Cultural Center near the project site. The Tonner Hills Planned Community includes a designated public use site which could be used for development of a new library facility if needed.

- *Policy 2. Land Use Review (Local Special Service Districts) - Through the project review process, land use proposals shall be required to incorporate appropriate construction and landscape designs and materials to minimize the costs for public slope, median, and roadside maintenance.*

  All roadways and landscaping will be privately maintained. No public maintenance of project slopes, medians or parkways is proposed.

- *Policy 1. School Facilities - To coordinate land use proposal reviews with appropriate school districts to assure that facility needs shall be adequately addressed, including the notification and participation of school district planners in initial County studies of all major developments.*

  The project is located within the Brea Olinda Unified School District which provides educational facilities and services for grades K-12. The developer will pay school fees, pursuant to *Government Code* §65995, et seq., as amended, to address the school needs of the Tonner Hills Planned Community. An expanded discussion of project school impacts and mitigation is provided in Section 4.16, Public Services.

(4) Resources Element

The Resources Element of the General Plan contains six components:

- Natural Resources
- Energy Resources
- Water Resources
- Air Resources
- Open Space
- Cultural-Historical

The Tonner Hills Planned Community is evaluated below for compliance with the following applicable policies contained in the Natural Resources component, the Energy Resources component, and the Open Space component of the Resources Element.

Natural Resources

- *Policy 1. Wildlife and Vegetation - To identify and preserve the significant wildlife and vegetation habitats of the County.*

  The Tonner Hills Planned Community will preserve areas within the project site as natural open space which currently provide habitat areas for sensitive plants and wildlife. The project site contains sensitive plant communities within the project site including California walnut woodland, coast live oak woodland, southern arroyo willow woodland, and coastal sage scrub. The California walnut woodland is considered a sensitive community because its distribution is limited in southern California. The coast live oak woodland is considered a sensitive community because it provides food and shelter for a variety of animal species, and because of the oak's historic and aesthetic values. The southern arroyo willow woodland is considered sensitive because it is associated with riparian habitats, and it typically has the potential to support listed wildlife species. Coastal sage scrub is considered a sensitive community because it is declining in California, and it is the habitat of the coastal California gnatcatcher, a federally listed threatened species.

  The project site supports wildlife species typical of coastal sage scrub, grassland, oak and walnut woodland, and riparian habitats. The grasslands support numerous species of small rodents and reptiles that typically fall prey to foraging birds of prey and medium- to large-sized mammals. Coastal sage scrub habitat supports the foraging and nesting activities of a large variety of birds as well as the foraging and burrowing activities of small mammals and reptiles. Woodlands typically provide nesting opportunities for a number of birds, particularly owls and hawks. In addition, the heavier leaf litter in the woodlands provides shelter and foraging areas for amphibians, reptiles, and some species of small mammals. The riparian habitats are used by a wide variety of wildlife species because the habitat not only provides shelter and nesting opportunities, but the presence of water typically draws most wildlife species to this habitat repeatedly. Tonner Creek, located along the northern portion of the project site, supplies a year-round source of water and supports a dense growth of riparian habitat, which is valuable for wildlife occurring on the site and those that move through the area.

  The project site has the potential to support some sensitive species of wildlife that typically occur in the coastal sage scrub, riparian and woodland habitats. Only one species listed under the Federal Endangered Species Act (as amended) is known to occur within the project site. The federally listed coastal California gnatcatcher occurs in low numbers in some of the sagebrush scrub and mixed sage scrub areas. No other listed wildlife species are known to occur on the site.

- *Policy 4. Mineral Extraction - To ensure opportunities for the extraction of minerals in the County and to protect the environment during and after these minerals are being extracted.*

The Tonner Hills Planned Community anticipates the retention and integration of elements of the existing oil operations into the proposed development. The major elements of the operations include oil production and water injection wells; oil storage and processing facilities; natural gas plan and power generation turbine; and the gathering lines, utility lines and access roads to serve these facilities.

The project proposes to retain 210 oil producing wells (including 14 water injection wells) located on the property with approximately 82 idle wells and 87 previously abandoned wells. With the development of the project, an additional 85 wells will be abandoned and selected idle or shut in wells will be returned to production. Oil production and natural gas production is planned to remain at its present level with implementation of the proposed project. Please see Section 4.14, Mineral Resources for further discussion. In the future, certain existing oil wells will be converted to water injection wells. As the development phases are constructed, certain wells will be abandoned and others will be accommodated to remain in place. A few wells will be located in residential areas; the majority of wells will remain in open space areas. All current oil wells are operated by above ground electrical pumping units.

Any oil well or water injector well to be abandoned will be permitted through the California Department of Conservation, Division of Oil, Gas and Geothermal Resources (CDOGGR). After approving an abandonment plan, CDOGGR will inspect the abandonment procedure and certify the completed process. The well casings will be buried a minimum of 10' below the finish grade in areas to be developed, or existing grade in areas to remain natural. No residential or commercial structure will be built over an abandoned well. Building setbacks will follow current Orange County Fire Authority (OCFA) standards. Methane venting requirements and short- and long-term methane monitoring requirements will be subject to the CDOGGR and OCFA guidelines and requirements.

No new wells will be drilled or existing wells re-drilled within any residential neighborhood after the County issues the first Certificates of Use and Occupancy within that neighborhood. Any new wells drilled, or existing wells re-drilled outside the residential neighborhoods, will be permitted and inspected by the CDOGGR. Prior to the first grading permit, the oil operator will provide the County with a map providing survey coordinates for all current and abandoned wells. This plan will be revised as conditions demand.

- *Policy 5. Landforms - To protect the unique variety of significant landforms in Orange County through environmental review procedures and community and corridor planning activities.*

Preparation of this EIR constitutes a large part of compliance with environmental review procedures. The County General Plan does not provide for a formal landform management program, although there are individual programs which provide for the management, conservation, protection, and preservation of the natural environment in the public interest. The County General Plan does not identify any specific significant landform features in the project area. Primarily, the County's Grading Ordinance regulates hillside grading with regard to soil stability. Cut and fill slopes are generally limited to a ratio of two horizontal to one vertical. It also provides for erosion control measures at the time of development.

Portions of the site's ridge features have been substantially modified in the past as evidenced by the vacant building pad north of Neighborhood 8, which previously accommodated a natural gas plant. In addition, the City of Brea constructed a water tank located east of Neighborhood 6 on a ridgeline. In 1995, new gas plant facilities were authorized by the County of Orange after the adoption of the Hillside Management Ordinance in ridgeline areas northeast of proposed Neighborhood 6 without City opposition.

The project site contains a primary ridgetop plateau oriented in an east/west trend along the northernmost portion of the project site, providing the highest elevations on the project site. This landform drops steeply along the northern boundary to Tonner Canyon below, which continues off-site in a northeasterly direction. This ridge, known as Tonner Ridge, will be preserved as part of the open space planned for Tonner Hills. In addition, Cable Canyon will also be preserved. However, Park Ridge, a lesser foreground hillock feature, will be graded to accommodate the residential development of Neighborhood 1. In large part, the property's topographical features will be preserved in the proposed development through use of contour grading techniques, clustering of development and preservation of open space. The project design is sensitive to the existing topography through preservation of Tonner Ridge and Cable Canyon, and use of contour grading. The project is consistent with the County's landform policy because of project compliance with the Grading Ordinance and the overall grading sensitivity and preservation of the more prominent landform features.

Energy Resources

- *Policy 1. Land Use - To plan urban land uses with a balance of residential, industrial, commercial, and public land uses as set forth in the Land Use Element.*

The Tonner Hills Planned Community is a balanced community comprised of 789.8 acres with a mix of several land uses. Residential development includes several housing types providing housing opportunities to various segments of the market through the single-

family attached, conventional single-family detached, and single-family cluster housing. The Planned Community also includes a 7.7-acre neighborhood-serving retail center, 514.1 acres of open space, the 5.8-acre Wildcatters Park, trail systems opportunities within the community, and a 32.7-acre public use site to be reserved for development of public facilities.

- *Policy 7. Solar Access - To support and encourage voluntary efforts to provide solar access opportunities in new developments.*

  Residential development within Tonner Hills will be located on south-facing slopes to provide opportunities for use of passive solar energy.

Water Resources

- *Policy 1. Water Supply - To ensure the adequacy of water supply necessary to serve existing and future development as defined by the General Plan.*

  Please refer to Chapter 4.17, Utilities and Service Systems, of this EIR for evaluation and discussion of project-related water demand and adequacy of the water supply. The Southern California Water Company indicates that the project will not pose a significant impact to water services and adequate water supply will sufficiently serve the project.

- *Policy 5. Water Quality - To protect water quality through management and enforcement activities.*

  Please refer to Chapter 4.6, Water Quality, of this EIR for evaluation and discussion of project water quality impacts and proposed water quality measures including structural and non-structural best management practices. With implementation of recommended mitigation measures, potentially significant impacts to water quality will be reduced to a less than significant level.

Air Resources

- *Policy 1. To develop and support programs which improve air quality or reduce air pollutant emissions.*

  Please refer to Chapter 4.8, Air Quality, of this EIR for evaluation and discussion of project compliance with adopted air quality programs and plans.

Open Space

- *Policy 1.3 To seek out, evaluate, and take advantage of special opportunities to obtain open space as these opportunities become available and when the available open space meets or helps to meet established open space goals and objectives.*

  The Tonner Hills Planned Community includes 514.1 acres of open space which will include both natural and enhanced open space to retain the character and natural beauty of the environment comprising Tonner Hills. This open space area contains wildlife corridor and habitat areas of certain species of sensitive plants and wildlife offers scenic and educational opportunities. A riding and hiking trail is proposed within this open space area providing public recreational opportunities. Existing disturbed open space areas will be revegetated and maintained as open space within the Planned Community.

Cultural-Historical Resources

- *Objective 3.1. Undertake actions to identify, preserve, and develop unique and significant cultural and historic resources.*

  Please refer to Chapter 4.12, Cultural/Scientific Resources, of this EIR for evaluation of potential project impacts, compliance with County policies and recommended mitigation measures for this topical area.

(5) Recreation Element

Please refer to Chapter 4.13, Recreation, of this EIR for evaluation of project consistency with applicable County recreation and parkland policies.

(6) Housing Element

Please refer to Chapter 4.3, Population and Housing, for evaluation of project consistency with applicable Housing Element policies.

(7) Growth Management Element

The Growth Management Element of the General Plan contains County policies on the planning and provisions of traffic improvements and public facilities that are necessary for orderly growth and development. The Tonner Hills Planned Community is evaluated below for compliance with the following applicable Public Services and Facilities Element policy of the General Plan.

- *Policy 2. Balanced Community Development - Balanced community development shall be established which encourages employment of local residents and provides for both employment and employee housing opportunities within the County or Growth Management Area except in "Transition Areas for Rural Communities" which may be established pursuant to this Element or where a Specific Plan or Feature Plan dictates otherwise.*

  The Tonner Hills Planned Community provides for a variety of housing types to provide employee housing opportunities within the community. The project site is adjacent to Olen Pointe, a major job center, and is in close proximity to the Brea Civic & Cultural Center, Brea Olinda High School, and the Brea Mall which are also regional job centers. The Planned Community includes conventional single-family, single-family cluster, and single-family attached housing types to address varying market segments including the first time home buyer as well as the move-up and/or executive home buyer. Employment opportunities are also provided within the project through development of commercial uses and retention of oil production operations.

c. Consistency with the Orange County Zoning Ordinance

The project site is zoned A1 "General Agriculture." The A1 zoning designation allows single-family dwellings at one building per site. As currently proposed, the Planned Community would not be consistent with the provisions of the county's zoning ordinance. However, the ordinance also indicates that the A1 district is intended to be used as an interim zone in those areas that the General Plan may designate for more intensive urban uses in the future. As discussed above, the General Plan designates the project area for Suburban Residential and General Commercial uses. The County has anticipated that a change in the land use designation would occur when a development project is proposed on-site.

Approval of the proposed Planned Community would provide development standards for all development within the Planned Community and would establish the zoning for the project site consistent with the General Plan.

d. Consistency with City of Brea General Plan

(1) General

The entire project area is also addressed by the City of Brea General Plan because the project is located within the Brea SOI. The City's General Plan identifies areas within the SOI for future development.

As discussed above under "Existing Conditions," the proposed project site spans several land use designations that have been established by the City of Brea General Plan. The project is not proposed to be developed in strict accordance with the City's General Plan designations for the project area. The development patterns are proposed to be clustered in certain areas to allow areas to be preserved as open

space throughout the site. The proposed Planned Community is within the 1,093 maximum number of dwelling units allowed by the General Plan in effect at the time the project application was submitted to the County of Orange on November 7, 2000. The proposed project provides for all 914 dwelling units. In August 2001, the City of Brea adopted a revised General Plan that reduced some residential intensities. This subsequent 30% reduction in the allowable residential intensity in the City's General Plan would allow for a maximum of 766 dwelling units for the project site.

Although the project would not be developed strictly according to the land use designation areas outlined in the City's General Plan, the General Plan anticipates and expects that future development in the SOI would be subject to the preparation, adoption, and processing of a specific plan as defined in the City's regulations. Although the proposed comprehensive planning mechanism is a "planned community" instead of a "specific plan," the proposed project is consistent with the objectives of the specific plan policies of the City by providing a framework for the master planning efforts of the project area. The proposed Planned Community provides land use classifications and intensities as well as goals, policies, and objectives for the project.

The Planned Community allows for a project design that takes into consideration existing constraints and opportunities on the site. The project proposes development primarily on areas which have already been disturbed though years of industrial oil operations. Existing internal service roads and graded areas are used in the proposed roadway network and development areas. The proposed project avoids ridgeline areas that have not been already modified as well as drainages such as Cable Canyon. Landform grading is used throughout the project to blend proposed development areas with open space areas.

The overall intensity of the proposed project is less than that envisioned in the City of Brea General Plan in place at the time the project application was submitted to the County. Many areas designated for residential, public facilities, office/financial, and general commercial will not be developed. An overall intensity comparison of the project and the Brea General Plan is provided below. In addition, two project alternatives are provided in Section 6.0 of this EIR which provide a comparison of impacts related to the proposed project with those related to implementation of the City of Brea General Plan in effect at the time of the project application was submitted to the County and the most recent General Plan reflecting a 30% intensity reduction for sphere of influence areas.

The proposed Planned Community would be substantially consistent with the overall goals and policies of the City of Brea General Plan Land Use Element. An analysis of the project's consistency with the relevant goals and policies is provided below.

1. ***Goal 1*** - The proposed project conforms to Goal 1 by providing opportunities for a range of housing types and densities. These dynamics are consistent with the rural-suburban-urban city concept identified in the General Plan and meet the various housing and neighborhood needs of the community. Additionally, the proposed project includes a neighborhood commercial center, which is intended to serve the local area, including the project residents.

2. *Goal 2* - The proposed project conforms to Goal 2 by providing residential and commercial land uses in the SOI that are adjacent to the suburban-urban edge of the incorporated city. The project area is located directly adjacent to the incorporated boundaries of the city. The project is a logical extension of new development within the SOI, providing a mix of housing types and a neighborhood commercial center.

3. *Goal 4* - The proposed project is consistent with Goal 4. The project provides a range of housing types, including single-family and multi-family housing. The project also includes approximately 7.7 acres of mixed use, 5.8 acres for Wildcatters Park, and 32.7 acres for public use facilities.

4. *Policy 1* - The proposed project is consistent with Policy 1 of the General Plan. The project includes a range of housing types and densities. However, the higher density areas are proposed to be located near Lambert Road, where the topography is relatively flat. The steeper hillside areas within the project site are proposed to be developed with residential uses that have a lower density with larger lot sizes.

The proposed project has been demonstrated to be consistent with the goals and policies of the Land Use Element of the City of Brea General Plan. An analysis of the proposed project's consistency with goals and policies of other elements of the City's General Plan are discussed in the respective chapters of this EIR. For CEQA purposes, even if the project were found to be inconsistent with provisions of the City of Brea General Plan, no significant impacts would result as the applicable General Plan for the proposed project is under the County of Orange.

(2) Equivalent Development Units Analysis

Project land use designations vary from county to city and what is proposed for the Tonner Hills Planned Community. This analysis provides a comparative look at equivalent development intensities using trips generated by land use as the relative measure over the 789.8-acre Tonner Hills proposed project. One of the reasons this analysis is included is to evaluate the total traffic impacts under different mixes of use. This analysis compares the amount of trips among different configurations of land uses allowable under Brea's General Plan. The model assumes various housing densities, commercial uses, and a regional post office facility, and compares these uses to the proposed project.

When the City of Brea amended its General Plan in August 2001, efforts to reduce the overall traffic impact of new residential development in and around the City was the driving force leading to a 30% reduction in the allowable residential development densities.

This analysis compares the Average Daily Traffic (ADT) generated by allowable development under: 1) the City's General Plan before the August 2001 Amendment, and 2) after the General Plan Amendment, which reduced residential development densities by 30% in some land use designations, against the Tonner Hills Planned community proposed land uses.

Exhibit 4.1-7 depicts the equivalent development intensities allowable under the City's General Plan and corresponding traffic rates generated by these uses.

The city General Plan 30% Reduction would enable development that could generate an Average Daily Trip (ADT) rate of 22,233 with a mix of residential and commercial applications. The proposed Tonner Hills Planned community project generates less traffic than the intensity of development prescribed by the City of Brea's 30% Reduction General Plan (Exhibit 4.1-7). Although there is a greater number of dwelling units, the proposed project's overall environmental traffic impacts are less significant than what could otherwise be allowed under the City's General Plan and 30% Reduced General Plan.

e. Consistency with Future Brea: Shaping the Vision Document

The proposed project would be substantially consistent with the Vision document that was developed by the Brea community. A set of seven planning principles was formed to achieve the vision (these are described above under the "Existing Conditions" section). An analysis of the project's conformity with each of these principles is provided below.

1. ***Principle 1: Diversity*** - The proposed project is consistent with the diversity principle. The proposed project includes a diverse range of land uses, including low- and medium-density residential (including attached, detached and clustered designs), undeveloped and developed open space, recreation areas, and commercial land uses. Permanent open space areas are proposed to be dedicated to the City.

2. ***Principle 2: Sustainability*** - The proposed project would be largely consistent with the sustainability principle, where applicable. The project encourages housing development that reduces traffic by providing cluster development patterns with pedestrian trails and access to mass transit alternatives.

3. ***Principle 3: Economic Feasibility*** - The proposed project is consistent with the economic feasibility principle in that the proposed project includes provisions for financing appropriate for public/private infrastructure. Through payment of applicable impact fees, construction of infrastructure, and establishment of homeowner maintenance associations, the proposed project will not create additional costs for existing County and Brea residents.

4. ***Principle 4: Environmental Quality*** - The proposed project is largely consistent with the environmental quality principle. While some adverse impacts would occur on biological resources and sensitive ridgeline areas, the project applicant has made considerable efforts to balance developed areas with open space and to preserve many of the environmental resources on the project site by utilizing nontraditional design, such as cluster development patterns, landform grading, and smaller streets. Further discussions regarding wildlife and aesthetics are provided in Section 4.10, Biological Resources, and Section 4.11, Aesthetics, respectively.

5. ***Principle 5: Mobility*** - The proposed project is substantially consistent with the mobility principle. The project includes a network of trails that connect to other parts of the County of Orange and the City of Brea. The street designs include smaller streets within the project area, and Transportation Demand Management opportunities are included for this development. In addition, the design for Tonner Hills Road provides for a scenic roadway with abundant open area and adequate buffering, which maximizes environmental compatibility.

6. ***Principle 6: Cultural/Historical Enhancement*** - The proposed project is consistent with this principle. A cultural/heritage center/museum is included in plans for the Olinda Ranch development project that is located adjacent to the project site. The applicant intends to preserve some of the oil fields for active production, and phase out production as demand increases for development within the Planned Community area. In addition, the project proposes the preservation of Wildcatters Park.

7. ***Principle 7: Phasing*** - The proposed project is consistent with the phasing principle. The proposed project establishes a master plan for approximately 790 acres of unincorporated territory in the SOI. Although market demand will drive the construction on the project area, the master plan establishes a framework for future development and provides some consistency and predictability throughout the Planned Community area. Additionally, this EIR identifies the cumulative effects of development within the SOI. This EIR, along with other EIRs for the cumulative projects in the area, allows for a comprehensive review of the future of the SOI, rather than an incremental approach to evaluating development proposals.

Overall, the proposed project is substantially consistent with the Vision document. The project applicant has taken many of the principles established by this process into account during the planning for the future of the project site. Therefore, impacts would be considered less than significant.

f. Consistency with City of Brea Zoning Ordinance

As noted previously, the City has not established prezoning for the project site. If the project site is annexed to the City, the proposed Planned Community could serve as the zoning. The Planned Community outlines the development standards and permitted land uses within the project site. In addition, applicable City zoning regulations would include the Hillside Management Ordinance. Project consistency with the Hillside Management Ordinance is evaluated below.

Tonner Hills Dwelling Unit per Land Use Designation and Traffic Generation Estimates Comparison

Project Footprint Equivalent Comparison

Nuevo Energy Company - Stearns, East Naranjal and Columbia Stearns Properties

City of Brea General Plan Land Use Designations	County of Orange Tonner Hills PC
General Commercial	9.2
Hillside Residential	53.4
Low Density Residential	146.1
Medium Density Residential	0
Rural Residential	547
Public Facilities	30.5
Office/Financial	3.6
Total	789.8

City of Brea General Plan: Pre-August 7, 2001

City of Brea Land Use Designation	Total Acreage	Allowable Density Per Unit	Total Dus	ADT Counts Per Unit	Total ADT
General Commercial	9.2			748.3 /Acre	6,884
Hillside Residential	53.4	2 Du/Acre	107	12 /DU	1,284
Low Density Residential	146.1	6 Du/Acre	877	12 /DU	10,524
Medium Density Residential	0.0	12 Du/Acre	0	12 /DU	-
Rural Residential	547.0	0.2 Du/Acre	109	12 /DU	1,308
Public Facilities and Grounds**	30.5			108.19 /K square foot	6,491
Office/Financial	3.6			185 /Acre	666
Total	789.8		1093		27,157

**Assumes a 60,000 square foot regional postal facility

City of Brea General Plan: 30% Reduction

City of Brea Land Use Designation	Total Acreage	Allowable Density* Per Unit	Total Dus	ADT Counts Per Unit	Total ADT
General Commercial	9.2			748.3 /Acre	6,884
Hillside Residential	53.4	1.4 Du/Acre	75	12 /DU	900
Low Density Residential	146.1	4.2 Du/Acre	614	12 /DU	7,368
Medium Density Residential	0.0	12 Du/Acre	0	12 /DU	-
Rural Residential	547.0	0.14 Du/Acre	77	12 /DU	924
Public Facilities and Grounds**	30.5			108.19 /K square foot	6,491
Office/Financial	3.6			185 /Acre	666
Total	789.8		766		23,233

*Reflects General Plan Amendment 01-01 reducing allowable densities 30%. Medium Density acreage lies outside amendment area.

**Assumes a 60,000 square foot regional postal facility

Tonner Hills Planned Community	Total Acreage	Allowable Density* Per Unit	Total Dus	ADT Counts Per Unit	Total ADT
Residential	193.9		914	12 /DU	10,968
Commercial	7.7			748.3 /Acre	5,762
Public Use	32.7			41.76 /Acre	1,366
Park	5.8			5 /Acre	29
Total	240.1				18,125

Exhibit 4.1-7

Equivalent Development Units

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g. Consistency with the City of Brea's Hillside Management Ordinance

The proposed project is not fully consistent with the City's Hillside Management Ordinance. The major objectives of Chapter 20.56 of the City's zoning ordinance are to preserve the natural character and topography of the hillside areas when development is proposed in hillside areas. As discussed previously, some of the major elements of the ordinance include the preservation of ridgelines and natural topography, maintenance of scenic character, preservation and retention of significant natural habitat, encouragement of sensitive development through flexible design and use of nontraditional design standards, and avoidance of safety hazards.

The proposed Planned Community has taken Hillside Management Ordinance standards and guidelines into consideration in the plan for the area. The Hillside Management Ordinance provides standards and guidelines for driveways and roadways, architecture, landscaping, walls and fences, and grading. The Ordinance also includes the Prominent Ridgeline Map which broadly identifies prominent ridgelines within the City's SOI. Exhibit 4.1-8 shows the City's designated prominent ridgelines, as well as more precise ridgeline locations using USGS topographic data.

Because the Planned Community provides a conceptual level development plan and regulations, the project primarily will be evaluated with respect to overall site design, roadways, and grading. Details regarding architecture, landscaping, walls and fences, and grading are not available during this level of review.

The project has utilized cluster patterns to preserve open space and natural habitat on the site and has avoided many of the existing natural safety constraints that are located on-site (i.e., earthquake faults and landslide zones). The project proposes to preserve the unaltered prominent ridgelines on-site that have been identified in the City's Prominent Ridgeline Map. Certain segments of designated ridgelines have been graded into pads over time through the site's historic industrial use. The City's two water reservoirs are also located on designated ridgelines. Portions of proposed residential development within Planning Areas 5 and 6 are located in these previously disturbed areas that were used for the prior gas plant and where an existing operations building will be removed (see Exhibit 4.1-9, Disturbed Ridgeline Areas and Exhibit 4.1-10, Proposed Development with Ridgelines).

The proposed project includes grading of one of the designated prominent ridgelines which upon closer evaluation does not meet prominent ridgeline criteria. This landform is commonly referred to as Park Ridge and is located to the west of Wildcatters Park. The ridgeline mapping for the Hillside Management Ordinance was conducted at a conceptual level with the intent to provide more specific interpretation and evaluation at the specific plan level. As provided in §20.56.070, the policies and provisions of the Hillside Management Ordinance "allow for flexibility and they encourage creativity, especially where a specific plan is prepared." Section 20.56.010 also provides, "Where a specific plan is being processed, these provisions may be altered subject to the review and approval of the Planning Commission and City Council." In this case, the vehicle for comprehensive planning is the Tonner Hills Planned Community, instead of a specific plan.

The Planned Community provides for 514.1 acres open space and preservation of the majority of identified natural features, such as Cable Canyon. Contour and landform grading is proposed to be extensively used throughout the project. Park Ridge is much less prominent than other landform features on the site and does not meet the intent of a "prominent ridge." The City's Development Code, §20.00.070, provides the definition of a "prominent ridge" as follows: "A ridge location which is visible from a major arterial, secondary or collector street, which is seen as a distinct edge against a backdrop of land. Said ridge locations are designated on the City Map of Prominent Ridges contained in §414.200." Section 20.00.070 also defines a "ridge" as "a long narrow, conspicuous elevation of land."

The topographical characteristics of Park Ridge do not fit the prominent ridgeline criteria as provided above. This landform is over two hundred feet horizontally and lies more than one hundred to several hundred feet below the ridgelines that form the backdrop to the City of Brea. Although Park Ridge may be visible from some public streets, the rounded, widened configuration and lower elevation minimize its significance as a potential ridgeline feature.

The City's Prominent Ridgeline map does not distinguish pristine unaffected ridgelines from those that have been altered by development. As a result, the graphic depiction of Prominent Ridgelines includes ridges and hillsides that have previously been graded or changed in some form. The project site includes areas of ridgeline with disturbed slopes incorporating oil field operations facilities and equipment. The site plan proposes to minimize the impacts to ridgelines by placing development within these disturbed areas.

When evaluated with a corrected characterization of Park Ridge, and considering the existing conditions, as discussed above, the project is deemed consistent with the intent of the City's Hillside Management Ordinance. Additional discussion regarding project conformity with the Hillside Management Ordinance is provided in Section 4.11 - Aesthetics.

h. Consistency with Memorandum of Understanding between County of Orange and City of Brea

The City of Brea and the County of Orange MOU regarding the Olinda Alpha Landfill requires that the County not approve private project developments within the City's SOI without verifying the City's ability to provide necessary services. The County has agreed not to permit the use of private services such as septic tanks, individual wells, or retention basins. In the MOU the County also agrees to recognize the City's long-range planning in its SOI and to continue to be sensitive and responsive to the City's comments on proposed land uses in the City's SOI east of the Orange (SR 57) Freeway.

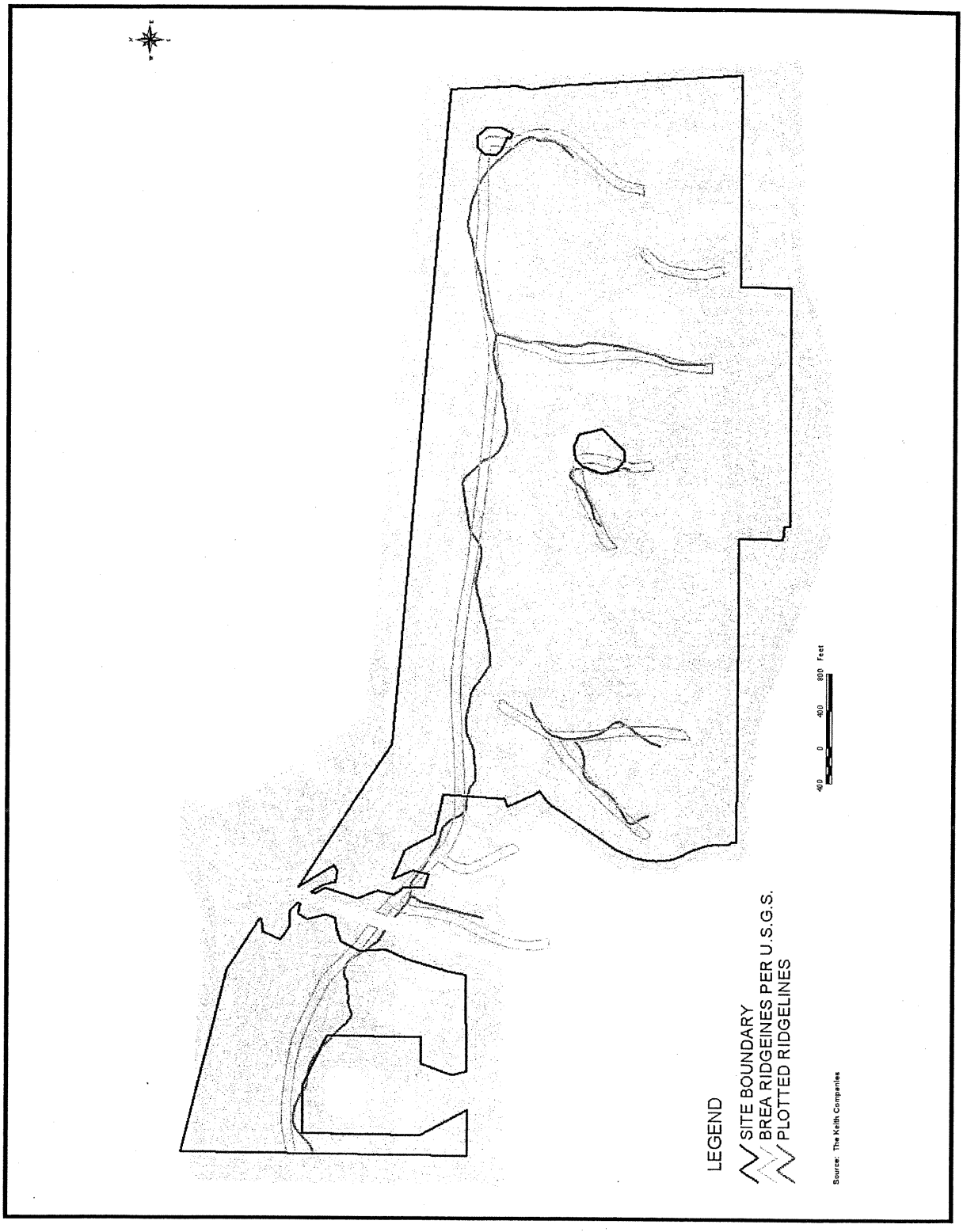

Exhibit 4.1-8
Ridgelines Map

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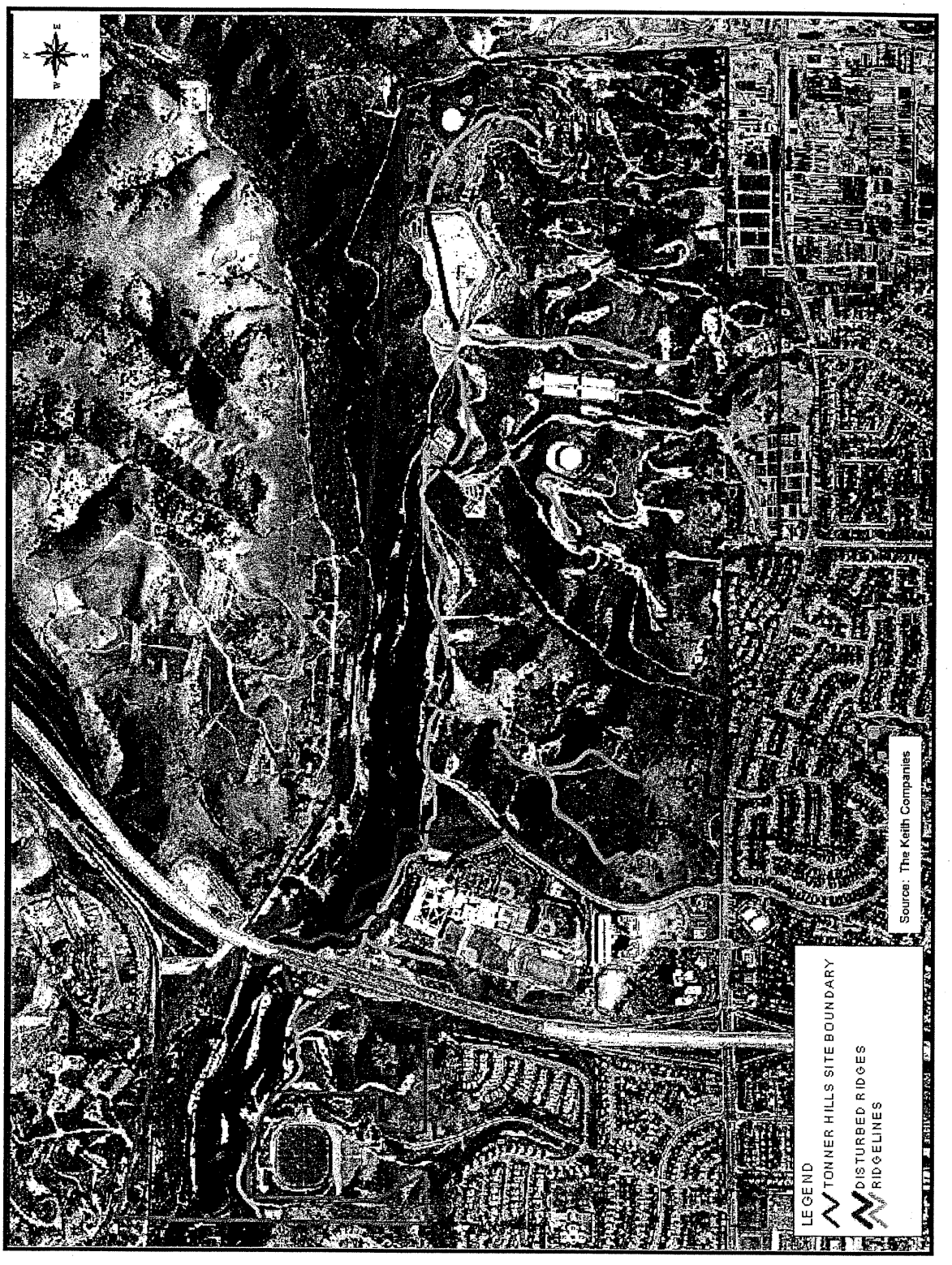

Exhibit 4.1-9
Disturbed Ridgeline Areas

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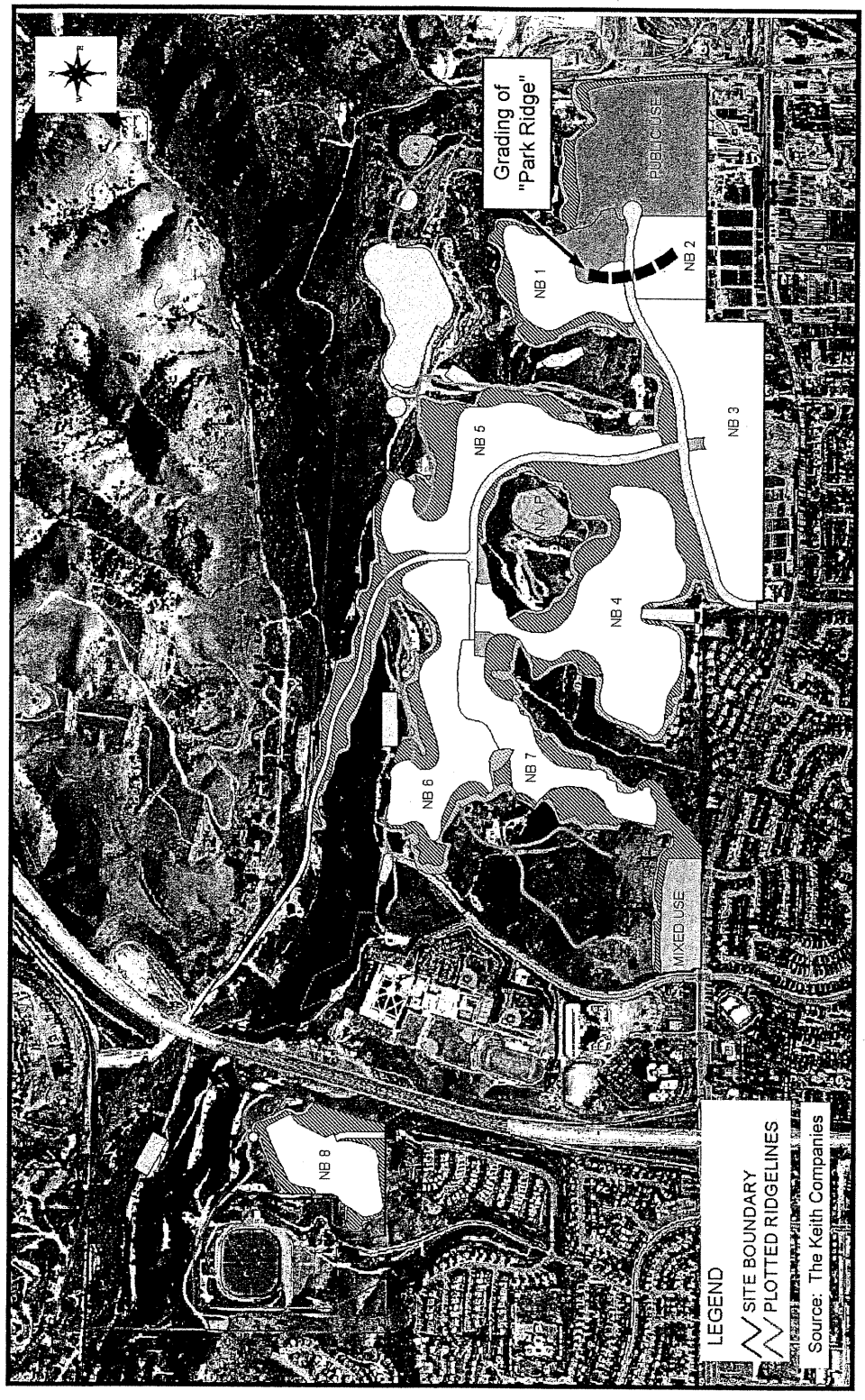

Exhibit 4.1-10

Proposed Development with Ridgelines

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As required by the MOU, the County has consulted with the City through the NOP process regarding service provision to the proposed project and verified the City's acknowledgment of services to be provided by entities other than the City. Chapter 4.16, Public Services, and Chapter 4.17, Utilities and Service Systems, of this EIR describe in detail the public services and utilities proposed to serve the project. No private services such as septic tanks and individual wells are proposed or required to accommodate the proposed project. Detention basins are proposed by the project to reduce peak runoff consistent with City of Brea practice for other nearby projects such as Olinda Heights, not for the purpose of avoiding reliance on public facilities.

The County recognizes the City's long-range planning efforts in its SOI by analyzing the project not only in terms of County planning regulatory documents but also for consistency with the City's General Plan and Advisory Vision Documents. Comments submitted by the City of Brea on May 9, 2001 regarding the project Notice of Preparation have been reviewed and considered in the preparation of this EIR. In order to maximize participation by Brea residents during the EIR scoping process, the County held the public scoping meeting at Brea Olinda High School in the City of Brea. In addition, in Chapter 6, Alternatives to the Proposed Project, the EIR includes an alternative proposed by the City for due consideration and analysis, as well as alternatives evaluating buildout for the property under the City's General Plan in effect at the time the project applications were submitted to the County and the recent revised General Plan which reduced development intensity in sphere areas by 30%.

i. Consistency with Regional Planning Programs

Countywide and regional plans affecting planning in the project area include SCAG's Regional Mobility Plan, SCAG's Growth Management Plan and the Air Quality Management Plan prepared by the South Coast Air Quality Management District, the County's Master Plan of Regional Parks, the Orange County Flood Control District and the County's Integrated Waste Management Plan. In addition, all of these plans are included in the State Implementation Plan (SIP).

The document that provides the primary reference for SCAG's project review activity is the Regional Comprehensive Plan and Guide (RCPG). The RCPG chapters fall into three categories: core, ancillary, and bridge. The Growth Management (adopted June 1994), Regional Mobility (adopted June 1994), Air Quality (adopted October 1995), Hazardous Waste Management (adopted November 1994), and Water Quality (adopted January 1995) chapters constitute the core chapters. These core chapters respond directly to federal and state planning requirements. The core chapters constitute the bases on which local governments ensure consistency of their plans with applicable regional plans under CEQA. The Air Quality and Growth Management chapters contain core and ancillary policies. The Regional Mobility Element (RME) constitutes the region's Transportation Plan. The RME policies are incorporated into the RCPG.

Ancillary chapters are those on the Economy, Human Resources and Services, Finance, Open Space and Conservation, Water Resources, Energy, and Integrated Solid Waste Management. These chapters address important issues facing the region and may reflect other regional plans. Ancillary chapters, however, do not contain actions or policies required of local government. Hence, they are entirely

advisory and establish no new mandates or policies for the region. Bridge chapters include the Strategy and Implementation chapters, functioning as links between the Core and Ancillary chapters of the RCPG. Each of the applicable policies related to the proposed project are identified by number and reproduced below followed by a brief discussion of project implementation consistency with those policies.

(1) Policies Related to Growth Forecasts

The following policies refer to SCAG's mandates and responsibilities in the review of regionally significant projects, as part of the intergovernmental review process:

- *Policy 3.01 - The population, housing, and jobs forecasts, which are adopted by SCAG's Regional Council and that reflect local plans and policies, shall be used by SCAG in all phases of implementation and review.*

  For project analysis, to the extent that SCAG focuses on balancing housing and jobs, the Tonner Hills Planned Community project contributes toward these goals and is consistent with the policy. It is important to note that SCAG's figures and projections are based on generic population distributions that do not take into account community values, planning, or environmental considerations. therefore, SCAG projections are representative of the growth pressures on the region as a whole, and not dicta as to how public agencies should respond.

(2) Policies Related To The RCPG Goal to Improve the Regional Standard of Living

The growth management goals to develop urban forms that enable individuals to spend less income on housing costs, that minimize public and private development costs, and that enable firms to be more competitive, strengthen the regional strategic goal to stimulate the regional economy. The following policies are intended to guide local jurisdictions efforts toward achievement of such goals and do not infer regional interference with local land use powers.

- *Policy 3.04 - SCAG shall encourage local jurisdictions' efforts to achieve a balance between the types of jobs they seek to attract and housing prices.*

  The County of Orange is a jobs-rich area. The project would provide housing for people who work in the area but who currently do not reside in the area.

- *Policy 3.05 and Policy 3.09 - SCAG shall encourage patterns of urban development and land use, which reduce costs on infrastructure construction and make better use of existing facilities; and SCAG shall support local jurisdictions efforts to minimize cost of infrastructure and public service delivery, and efforts to seek new sources of funding for development and the provision of services.*

  The Tonner Hills Planned Community is located adjacent to existing infrastructure and service provision and is located within a predominantly urbanized area, thereby reducing costs on infrastructure development.

(3) Policies Related to the RCPC Goal to Maintain the Regional Quality of Life

The Growth Management goals to attain mobility and clean air goals and to develop urban forms that enhance quality of life, that accommodate a diversity of life styles, that preserve open space and natural resources, and that are aesthetically pleasing and preserve the character of communities, enhance the regional strategic goal of maintaining the regional quality of life. The following policies are intended to provide direction to implementing jurisdictions, and do not allude to regional mandates.

- *Policy 3.1, Policy 2.12 and Policy 3.13 - SCAG shall support provisions and incentives created by local jurisdictions to attract housing growth in job rich subregions and job growth in housing rich subregions. SCAG shall encourage existing or proposed local jurisdictions programs aimed at designing land uses which encourage the use of transit and thus reduce the need for roadway expansion, reduce the number of auto trips and vehicle miles traveled, and create opportunities for residents to walk and bike. SCAG shall encourage local jurisdictions' plans that maximize the use of existing urbanized areas accessible to transit through infill and redevelopment.*

  The proposed Tonner Hills Planned Community is located adjacent to an urbanized area rich in jobs and in need of additional housing. The project's location and design encourage the use of public transit.

- *Policy 3.15, Policy 3.16 and Policy 3.17 - SCAG shall support local jurisdictions' strategies to establish mixed-use clusters and other transit oriented developments around transit stations and along transit corridors. SCAG shall encourage developments in and around activity centers, transportation corridors, under-utilized infrastructure systems and areas needing recycling and redevelopment. SCAG shall support and encourage settlement patterns which contain a range of urban densities.*

  The proposed project provides a range of housing densities, commercial uses, open space, park amenities, as well as continuation of existing oil facilities. The project employs a mixed-use strategy and is located near existing transportation corridors including the 57 (Orange) Freeway, the 91 (Riverside) Freeway, Kraemer Boulevard, and Valencia Avenue.

- *Policy 3.18, Policy 3.20, Policy 3.21 and Policy 3.22 - SCAG shall encourage planned development in locations least likely to cause adverse environmental impact. Vital resources as wetlands, groundwater recharge areas, woodlands, production lands, and land containing unique and endangered plants and animals should be protected. SCAG shall encourage the implementation of measures aimed at the preservation and protection of recorded and unrecorded cultural resources and archaeological sites. SCAG shall discourage development, or encourage the use of special design requirements, in areas with steep slopes, high fire, flood, and seismic hazards.*

  The project design has considered preservation of biological resources and avoidance of site hazards including those relating to potential geology, flood and seismic hazards. These topics are discussed further within the applicable EIR sections.

- *Policy 3.24 and Policy 3.27 - SCAG shall encourage efforts of local jurisdictions in the implementation of programs that increase the supply and quality of housing and provide affordable housing as evaluated in the Regional Housing Needs Assessment. SCAG shall support local jurisdictions and other service providers in their efforts to develop sustainable communities and provide, equally to all members of society, accessible, and effective services such as: public education, housing, health care, child care, social services, recreational facilities, law enforcement, and fire protection.*

j. Consistency with Sphere of Influence Guidelines

The Sphere of Influence policy guidelines recognize that the County will have ultimate responsibility for the application of development standards within a sphere of influence area and that compatibility with city infrastructure and public safety regulations facilitates the ultimate annexation of the development to the city. In this case, the policy guidelines have not taken the form of formal policy because the County of Orange and City of Brea do not have an agreement regarding their adoption and implementation. The sphere of influence guidelines are not binding with respect to review of this project under CEQA. However, the intent of the guidelines is recognized throughout this EIR by providing analysis of City of Brea regulations under various topical areas.

4.1.4 Mitigation Measures

The proposed project consists of the creation and implementation of a Planned Community. The project itself creates conformance with the Land Use Element of the General Plan policies and compliance with zoning regulations. Therefore, no mitigation measures are required. Mitigation Measures for specific project impacts related to Transportation/Circulation, Air Quality, Noise, Aesthetics, Recreation, Hazards, Public Services, and Utilities and Service Systems are found in those sections of the EIR. Short-term impacts would cease upon completion of project construction and would be reduced through proper implementation of mitigation measures identified in the above EIR sections.

4.1.5 Cumulative Impacts

The proposed project combined with other future developments will serve to increase the intensity of land use in the area. On a County-wide basis, the increased land use intensity will result in unavoidable significant impacts such as loss of open space, increased human activity, and increased traffic and noise. As Brea and surrounding areas continue to build out, significant land use changes will result, along with associated vegetation loss, necessary drainage improvements, traffic and noise increases, increased air emissions, aesthetic impacts and greater demand on utilities and services. As cumulative land use impacts are difficult to individually mitigate, mitigation is most effective through implementation of regional programs establishing land use intensity, open space, and park areas such as through the County of Orange General Plan.

4.1.6 Unavoidable Adverse Impacts

With the design of the proposed project and mitigation measures relating to air quality, noise, aesthetics, hazards, and transportation/circulation, no unavoidable adverse impacts related to land use will result from the proposed project.

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4.2 Agricultural Resources

This section summarizes the existing agricultural resources at the project site and analyzes impacts to designated farmland areas.

4.2.1 Existing Conditions

a. Farmland Mapping and Monitoring Program

The project site is classified as X (Other Land) and U (Unique Farmland) by the California Farmland Mapping and Monitoring Program 1998 Important Farmland Map for Orange County (see Exhibit 4.2-1). Approximately 18-acres are designated as Unique Farmland on the site previously used for commercial nursery operations, which closed operations in Spring 2001. This site is currently cleared and vacant.

The Farmland Mapping and Monitoring Program (FMMP) is managed by the California Department of Conservation. The goal of the FMMP is to provide data to decision makers for use in planning for the present and future use of California's agricultural resources. To meet this goal, the FMMP provides maps and statistical data to the public, academia, and local, state, and federal governments to assist them in making informed decisions for the best use of California's farmland.

The FMMP was established in 1982 in response to what was by then a critical need for data on the nature, location, and extent of farmland, grazing land, and urban built-up areas in the state. *Government Code* §65570 mandates the FMMP to biennially report to the Legislature on the conversion of farmland and grazing land, and to provide maps and data to local government and the public. The FMMP was also directed to prepare and maintain an automated map and database system to record and report changes in the use of agricultural lands. Every two years the map data is updated; the latest complete land use conversion information is in the 1996-98 report. However, land use conversion information from the 1998-2000 report is available for Orange County. The Department of Conservation assumes that additional refinements to the maps will be obtainable through project EIR information.

Important Farmland Maps for California are compiled from Natural Resource Conservation Service Soil Surveys and current land use information using eight mapping categories as follows:

- *Prime Farmland* - Land with the best combination of physical and chemical features able to sustain long-term production of agricultural crops. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for production of irrigated crops at some time during the two update cycles prior to the mapping date.

- *Farmland of State Importance* - Land similar to Prime Farmland that has a good combination of physical and chemical characteristics for the production of agricultural crops. This land has minor shortcomings, such as greater slopes or less ability to store soil moisture than Prime Farmland. Land must have been used for production of irrigated crops at some time during the two update cycles prior to the mapping date.

- *Unique Farmland* - Lesser quality soils used for production of the state's leading agricultural crops. This land is usually irrigated, but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

- *Farmland of Local Importance* - Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.

- *Grazing Land* - Land on which the existing vegetation is suited for the grazing of livestock. The minimum mapping unit for grazing is 40 acres.

- *Urban and Built-Up Land* - Land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel.

- *Other Land* - Land which does not meet the criteria of any other category.

- *Water* - Water areas with an extent of at least 40 acres.

b. Existing Site Characteristics

The soil survey data provided by the California Department of Conservation for the approximately 18-acre area designated as Unique Farmland within the project boundaries shows primarily soil types 173 (Myford Sandy Loam, 2 to 9 percent slopes) and 175 (Myford Sandy Loam, 9 to 15 percent slopes), with small portions of 106 (Anaheim Loam, 15 to 50 percent slopes) and 207 (Sorrento Loam, 2 to 9 percent slopes). Nurseries growing plants in containers fall into the Unique Farmland category regardless of the underlying soil quality.[2]

[2] Correspondence dated June 29, 2000 from Dave Patch, Farmland Mapping and Monitoring Program, Division of Land Resource Protection, California Department of Conservation.

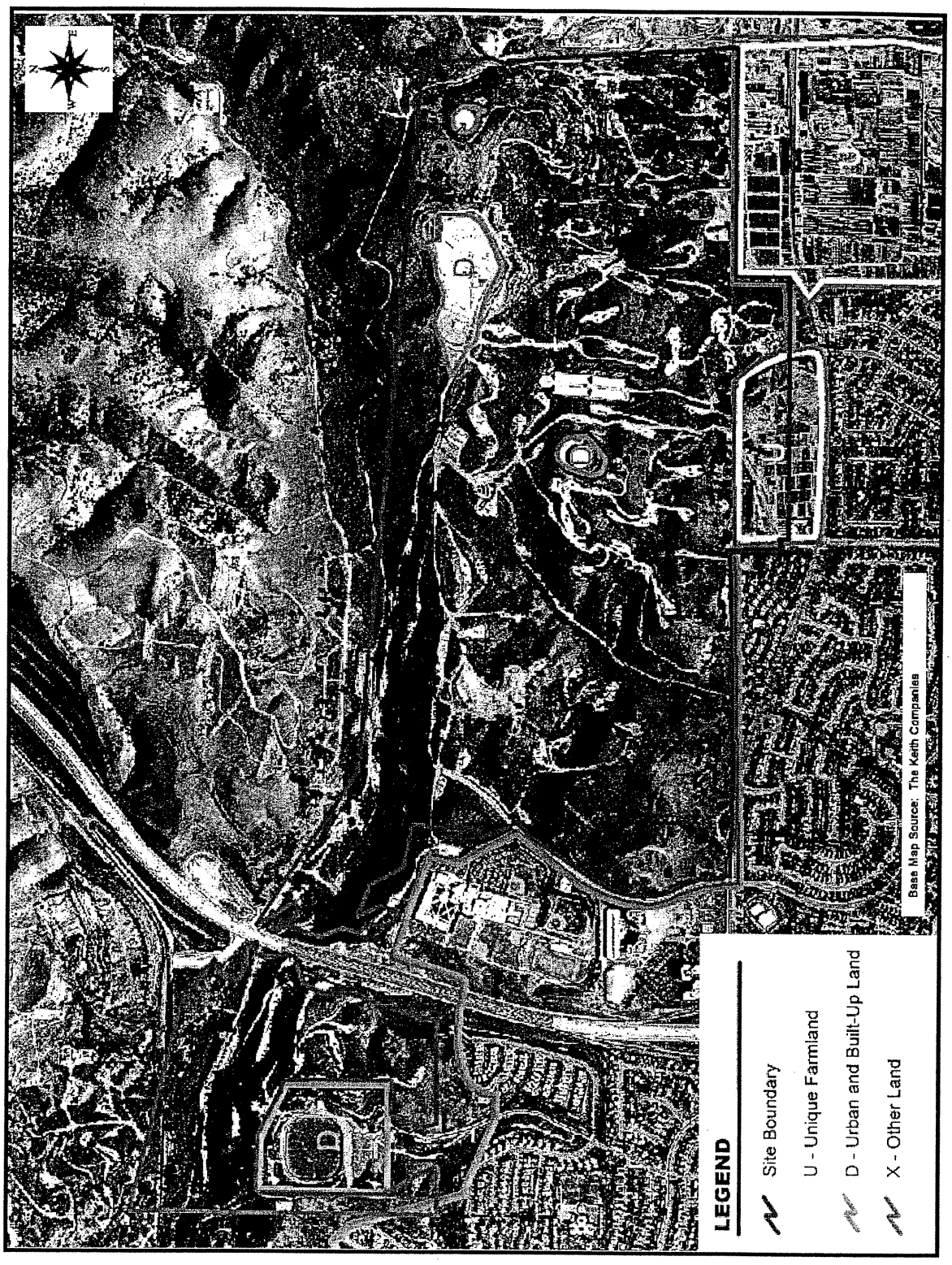

Exhibit 4.2-1
Farmland Map

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4.2.2 Thresholds of Significance

For the purposes of this EIR, the thresholds of significance for evaluating project impacts are based upon suggested criteria from the County of Orange Environmental Checklist and the CEQA Environmental Checklist found within Appendix G of the CEQA Guidelines. The project would result in a significant impact if it would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.

- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use.

4.2.3 Project Impacts Prior to Mitigation

A 18-acre portion of the project site was used until recently for commercial nursery purposes which qualifies as Unique Farmland under the State's Farmland Mapping and Monitoring Program. The project proposes to develop residential uses on the former commercial nursery site. Although the project site is zoned for agricultural use, it is not subject to a Williamson Act contract. Development of the project will convert the site to urbanized uses, and the site will no longer be available for agricultural activities. Conversion of land classified as Unique Farmland to urbanized uses is considered a significant impact.

The nursery operation on the site was recently discontinued but could theoretically be re-established if the proposed project were not approved. However, intensification of agricultural uses on the site would be constrained. Interviews with key agricultural entities indicate that there are a variety of factors that influence the degree to which agriculture can be conducted in Orange County and elsewhere. The economics of agriculture turn on at least five basic factors: (1) the cost of land; (2) the cost of water; (3) the cost of labor; (4) property taxes; and (5) stringent regulations. The high cost of conducting agriculture on privately held land dictates high "cash" crops, such as strawberries and avocados. The County of Orange 1997 Crop Report shows this effect — revenues from agriculture have increased, but largely because of a shift in the type of produce grown.[3] Other factors adversely affecting agriculture are rural crime (e.g., vandalism, crop theft, etc.) and regulation.

The regulation of agriculture bears special mention. The Clean Water Act and the Clean Air Act, as administered through state agency regulations, affect agriculture, and particularly field crops. For example, the PM10 rule affects the amount of suspended particulates from a field, just as that regulation applies to a construction project. Rules administered by the Regional Water Quality Control Board affect

[3] Personal communication with Rick LeFeuvre, Agricultural Commissioner, and Kathy Nakase, County Manager, Orange County Farm Bureau, 12/12/01

nitrates and other runoff constituents, and the ameliorative processes for mitigating these components can increase expenses on some kinds of agriculture, particularly field crops.

The value of the land is also a determinant of its use. Land prices for 1998 in Orange County ranged from about $5,000 per acre in remote canyon areas to over $1,000,000 at the coast. However, land values have increased significantly in the last five years[4]. the purchase of existing agricultural land (which, in a majority of cases, is held for future urban development) would probably be in the range of approximately $300,000 to $600,000 per acre, depending on variables such as location, intended uses, existing land use entitlements, and land constraints. As land values continue to rise in Orange County, so does the rent for agricultural land. Though rent can vary widely depending on factors such as the owner's interests, availability of water, specific climate, compatibility, and past uses, rent for agricultural land can be as much as $2,800 per acre per year, or even more[5].

One of the major constraints facing the maintenance of farmland is the cost of water. Imported water would need to be purchased. The nursery was serviced by a tie-in to a domestic line connected to a City of Brea water line. This represents a key expense that is difficult to bear for the commercial nursery use, let alone standard agriculture. Furthermore, the Unique Farmland category designates land used "for the state's leading crops." The nursery is not such a use.

Though the nursery was designated Unique Farmland, the site was used as a commercial nursery and was never used for growing crops. The area has been vacant for 18 months, and conversion into row crops or another economically feasible agricultural use would be unlikely.

As discussed above, the likelihood of converting the project site to more intensive agricultural uses is remote. Further, if more intensive agricultural operations were pursued, they would likely need to be row crops in order to be economically feasible. Cultivation of row crops would result in potential land use compatibility issues with the existing nearby residential uses because of impacts relating to agricultural operations such as airborne particulates, odors, pesticides/herbicides, and water quality.

4.2.4 Mitigation Measures

No mitigation measures are available for the loss of approximately 18 acres of Unique Farmland. It is an impact because it is specified as such in the Guidelines, although the land has not been used for farming.

[4] Personal communication, Rich Famund, County of Orange, Real Estate Services, 12/13/01

[5] Personal communication, A.G. Kawamura, Orange County Produce, 12/18/01

4.2.5 Cumulative Impacts

The loss of approximately 18 acres of Unique Farmland within the proposed project boundary will contribute incrementally to the conversion of agricultural lands to urbanized uses on a statewide basis. In addition, the adjacent 13-acre tentative tract map proposed south of the project within the City of Brea, if approved, would convert approximately 12 acres of land designated as Unique Farmland to residential development. Collectively, a total of 30 acres of Unique Farmland would be converted to residential uses. This is considered a significant cumulative impact.

4.2.6 Unavoidable Adverse Impacts

The project impact of the loss of 18 acres of Unique Farmland is considered a significant impact for which no mitigation measures are available. This significant unavoidable adverse impact requires the adoption of a Statement of Overriding Considerations by the County of Orange if the proposed project is approved. The Statement of Overriding Considerations shall identify the benefits of the project, which are roughly equivalent to the project's impacts.

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4.3 Population and Housing

This section discusses the potential population, housing, and employment impacts associated with the proposed project. Information in this chapter is based on data from the County of Orange Housing Element (2001); the City of Brea General Plan Housing Element (1991); the Southern California Association of Governments (SCAG), including their Regional Housing Needs Assessment; the U.S. Census Bureau; the California Department of Finance (DOF); and the Center for Demographic Research (CDR) at California State University, Fullerton (CSUF). This section outlines the existing population, employment, and housing trends in the County of Orange and the City of Brea, as well as estimated population growth and issues related to future employment demands created by the proposed project.

4.3.1 Existing Conditions

a. Adopted Population Forecasts

Several agencies provide population forecasts for municipalities in Orange County. These forecasting organizations are briefly described below.

(1) County of Orange

The County of Orange adopts growth forecasts on a regular basis. The most recent set of projections is contained within the 2000 Orange County Projections (OCP-2000), which is published by the Center for Demographic Research (CDR), in partnership with California State University, Fullerton.

The Orange County Projections series uses a multi-stage process that combines several procedures and methodologies. In broad terms, total population, housing, and employment were projected and then allocated to smaller geographic areas based on an analysis of local policy, land use capacity, demographic changes, and assumed market forces. Small area projections were developed for each of the 2,058 polygons formed by the overlay of Traffic Analysis Zones (TAZ), and jurisdiction boundaries. These polygons are basic geographic units that provide the ability to aggregate the projections to jurisdiction, census tract, Community Analysis Area (CAA), Regional Statistical Areas (RSA), TAZ, and County totals. OCP-2000 also takes into account the projected housing units and employment opportunities that may not have been built or occurred.

The Orange County Projections-2000 (OCP-2000) was adopted by the Orange County Council of Governments on June 22, 2000. It is an update of OCP-96. Population, housing, and employment are projected and adopted in 5-year increments from 2005 to 2025 for the 10 Regional Statistical Areas (RSA). OCP-2000 was developed initially for incorporation in the Southern California Association of Governments' growth forecast for the 2001 Regional Transportation Plan. These projections are recognized by the agencies that sponsor the Center for Demographic Research as the uniform data set for use in local planning applications.

The Center for Demographic Research is sponsored by the County of Orange, the Orange County Division of the League of Cities, the Orange County Sanitation District, the Orange County Transportation Authority, the Transportation Corridors Agencies, the Municipal Water District of Orange County, the Orange County Water District, and California State University, Fullerton. The primary goal of the CDR is to provide accurate and timely information regarding population, housing, and employment characteristics to public agencies, local jurisdictions, and regional planning authorities, as well as private citizens and industry.

CDR divides Orange County into 10 RSAs, which are combinations of census tracts utilized for planning purposes. The proposed project is located in RSA A-36 (Neighborhood 8) and RSA B-41 (Neighborhoods 1 through 7). RSA B-41 comprises more than 67,000 acres and is the second largest RSA within Orange County. RSA B-41 is primarily unincorporated county territory, yet includes the cities of Placentia and Yorba Linda, the eastern part of the cities of Brea, Anaheim, and Orange, and parts of the Cleveland National Forest. This area includes Neighborhoods 1 through 7 east of the Orange (SR 57) Freeway. Residential Developments in Anaheim Hills, east Yorba Linda, east Brea, and east Orange will account for most of the projected increase in population and housing within this RSA.

RSA A-36 comprises the northwest corner of Orange County and includes the cities of La Habra and Fullerton and the western portion of Brea. The area includes Neighborhood 8. This RSA is very close to buildout, and potential for residential development is limited; however, large tracts of land in the foothills will be developed as oil production is terminated. In addition, employment is expected to increase in existing activity centers by more than 17,500 jobs over the next 25 years.

(2) City of Brea

As part of its Housing Element, the City of Brea developed forecasts of population, housing, and other growth expected to occur throughout the City. Each city and county in California is required to prepare a Housing Element for its General Plan at least every five years. The City of Brea is currently finalizing its 2000-2005 Housing Element update; however, the projections forecast in that document were adopted by City Council on July 17, 2001 and have not been assessed in this document.

(3) Southern California Association of Governments (SCAG)

The project site is located in Orange County, one of the six counties comprising SCAG. The other counties included in SCAG are Los Angeles, Riverside, San Bernardino, Ventura, and Imperial. The SCAG region contained approximately 15.6 million people in 1994 and was estimated to reach a population of 17 million in the year 2000, which is a 9% growth rate. The population of the SCAG region is projected to further increase by 15% between 2000 and 2010 to 19.5 million, and by another 15% between 2010 and 2020 to 22.4 million[6].

[6] Southern California Association of Governments Website (www.scag.ca.gov/pop.sr.htm), 5/31/00.

b. Existing and Projected Population

As the third most populous county in the state and the second most populous county in southern California, Orange County's 2000 population is estimated at 2.9 million people, or approximately 17% of the 16,999,000 persons residing within the SCAG region. Between 1990 and 2000, the County's population increased by 19%. County projections estimate a population increase of 8% between 2000 and 2010, and 4% between 2010 and 2020. The average number of persons per household for the County is currently 3.063. Refer to Table 4.3-1 for existing and projected population figures by county and city. As shown, population projections are compiled by several agencies. SCAG's data is generally used by local agencies for regional forecasts. SCAG uses Department of Finance (DOF) estimates for current population, housing, and employment and CDR's estimates for future projections through the year 2020. SCAG compiles these numbers and adjusts them to be consistent with local input relative to housing, population, fertility, employment, and land use to come up with existing and projected forecasts for the SCAG area.

Table 4.3-1 - Regional and Local Population Trends

	Southern California Association of Governments[1]		California State Department of Finance[2]		Center for Demographic Research[3]	
Year	Brea (% change)	Orange County (% change)	Brea (% change)	Orange County (% change)	Brea (% change)	Orange County (% change)
1990	32,873	2,410,556	32,873	2,410,668	32,873	2,410,668
2000	35,534 (8%)	2,859,236 (19%)	36,967 (11%)	2,828,351 (17%)	37,131 (13%)	2,865,830 (19%)
2010	36,463 (2%)	3,105,322 (9%)	NA	3,163,776 (12%)	41,410 (12%)	3,105,324 (8%)
2020	36,976 (1%)	3,244,602 (4%)	NA	3,431,869 (8%)	43,862 (6%)	3,244,607 (4%)

NA - not available at time of analysis

Sources:

[1]Southern California Association of Governments Website (www.scag.ca.gov/pop.sr.htm), 5/31/00

[2]State of California, Department of Finance website (www.dof.ca.gov/html/demograph/e-5text.htm), 5/31/00

[3]California State University, Fullerton, Center for Demographic Research Website (www.fullerton.edu/cdr/county.html), 7/9/01

In 1990, the population of Brea was 32,873; the 1986 Brea General Plan projected 33, 538 for that year. Over the past 10 years, the City has experienced an 8% growth rate, increasing by 2,661 people to Brea's current population of 35,534. Currently, Brea residents represent approximately 1.3% of the 2.9 million people residing in Orange County. As shown in Table 4.3-1, Brea's population is projected to increase to 36,463 in 2010 and to 36,976 in 2020. According to the City's Website, population growth rates have slowed considerably over the past few decades. Data collected at 10-year intervals since 1950 show city growth rates at 165%, 117%, 51%, and 18%, respectively. SCAG projections indicate that this trend will continue, with a 2% increase between 2000 and 2010, and 1% growth between 2010 and 2020.

c. Housing

Table 4.3-2 presents projected housing trends for Orange County and the City of Brea. The 1990 housing stock in Orange County consisted of 827,066 units. By 2000, the housing stock in Orange County had increased to 910,009, which represents a 10% growth rate. County housing units are projected to total 1,012,975 (11% increase) by 2010 and by 2020 may total 1,102,277, equating to an additional 9% increase. Approximately 1% of the county housing stock is currently located within the City of Brea. SCAG's year 2000 housing projections estimate current housing supply within Brea at 12,700. The overall vacancy rate for the City as of January 1, 2000 was 3.36%[7]. Over the next 20 years, the City is expected to increase its total housing stock by 6%. Based on the 1999 DOF estimate, the average number of persons per household is 2.85, compared to the 1990 household size of 2.680 and the 1986 Brea General Plan estimated average household size of 2.69. The CDR estimates the average household size in the Brea area at 2.49 persons per household, which is used as a basis for calculations and analysis in this EIR.

Table 4.3-2 - Regional and Local Housing Trends

Data		Single-Family[1]		Multi-Family[1] (% Change)	Total[2] (% Change)
		Detached (% Change) Includes Mobile Homes	Attached (% Change)		
1990	Brea	8,064	779	3,805	12,224
	Orange County	466,354	104,423	304,327	827,066
2000	Brea	8,327 (3%)	799 (0%)	4,149 (9%)	12,700 (4%)
	Orange County	517,696 (11%)	109,176 (5%)	399,214 (31%)	910,009 (10%)
2010	Brea	NA	NA	NA	13,129 (3%)
	Orange County	NA	NA	NA	1,012,975 (11%)
2020	Brea	NA	NA	NA	13,501 (3%)
	Orange County	NA	NA	NA	1,102,277 (9%)

NA - not available at time of analysis

[1]Southern California Association of Governments Website (www.scag.ca.gov/pop.sr.htm), 5/31/00

[2]State of California, Department of Finance website (www.dof.ca.gov/html/demograph/e-5text.htm), 5/31/00)

[3]California State University, Fullerton Website (www.fullerton.edu/cdr/county.html), 7/9/01

The Regional Housing Needs Assessment (RHNA) was developed by SCAG and is one of four plans that create a management system for dealing with growth in the region. Using each county's Growth Management Plan (GMP) as a basis, the RHNA is a tool used to determine the housing needs for each city and unincorporated area within the SCAG region between January 1, 1998 and June 30, 2005. The RHNA model was developed to determine housing needs with a special emphasis on ensuring adequate housing for persons in the very low, low, and moderate income ranges. This assessment allows communities to anticipate growth, so that they can grow in a way that enhances quality of life, improves

[7]State of California, Department of Finance, 2000

access to jobs, transportation, and housing, and does not adversely impact the environment. The RHNA allocates each jurisdiction's "fair share" adjustment of the regional future housing needs by factoring household growth, vacancy need, and replacement need (due to demolition, natural disaster, or conversion of use), to determine the construction need for a community.

SCAG's 1999 RHNA set the City of Brea's current fair share adjustment at 1,052 housing units to adequately house projected population growth for the next 5 years. Of these units, 203 units would be available for very low-income households (19%), 136 for low income (13%), 212 for moderate income (20%), and 502 for above-moderate income households (48%).

d. Employment

It is estimated that there will be approximately 1,667,778 jobs within Orange County in 2005. By 2010 the County's employment is expected to increase to 1,897,350 and by 2020 to 1,975,074 (Table 4.3-3). This equates to a 31% employment rate increase over 20 years as compared to a 16% increase in county population during the same period. In 1990, the City of Brea was estimated to have approximately 19,628 persons in the labor force (employed and unemployed persons age 16 and above). The unemployment rate was 3.3%. That same year, public- and private-sector employers within the City of Brea reported 31,519 employment positions (jobs). By 2000, the City's employment base had increased by 26%, to a total of 39,615. Jobs within Brea are projected to increase by 6% in 2005, by another 9% in 2010, and by another 4% by 2020. This equates to a 21% increase over 20 years, compared to growth of 13% in city population and 15% growth in housing during the same period.

Table 4.3-3 - Employment

	2000	2005 (% change)		2010 (% change)		2020 (% change)	
Orange County	1,502,434	1,667,778	11%	1,897,350	14%	1,975,074	4%
Brea	39,615	42,071	6%	45,797	9%	47,793	4%

Source: Southern California Association of Governments, 2001 Growth Forecast.

The existing oil and gas production facility currently employs 20 full-time employees. In addition, there are up to 10 subcontractors on the site. These employment figures will remain consistent, since there is no plan to discontinue oil production.

e. Jobs/Housing Balance

The concept of jobs/housing balance has been widely discussed by SCAG and SCAQMD over the past decade as a means of achieving regional air quality improvement goals. The current trends within the SCAG region have resulted in the majority of jobs being located in the urban areas of Los Angeles and Orange Counties, while the majority of housing is being constructed in urbanizing regions of Riverside, San Bernardino, and southeast Orange County. The basic jobs/housing concept is directed at minimizing

commute distances, reducing infrastructure needs and costs, mitigating traffic congestion, conserving energy, and improving air quality. SCAG has incorporated jobs/housing balance into its growth forecast, transportation planning, and air quality policies.

The adopted Growth Management Chapter (GMC) of the Regional Comprehensive Plan and Guide (RCPG) includes policy statements that indicate SCAG's support for "balanced" development on a subregional level. Underlying the term "jobs/housing balance" is the concept that a balanced area includes the correct number (or balance) of housing and employment opportunities, so that the majority of the people living in the subregion can also work in the subregion. A subregion is balanced if it has an employment-to-housing ratio of 1.28 in 1994 and a projected employment-to-housing ratio of 1.44 in 2020 (the regional averages). Jobs-rich subregions have ratios greater than the regional average, and housing-rich subregions have ratios lower than the regional average.

The jobs/housing ratio for SCAG's Orange County subregion was 1.45 in 1994, and is projected to increase to 1.92 in 2020. These numbers indicate that the subregion was jobs-rich in 1994 and will remain jobs-rich into the year 2020.

The City of Brea has a current jobs/housing ratio of 3.0 (39,615 jobs/13,174 dwelling units). When compared to the subregional ratio of 1.45, Brea's ratio indicates a "jobs-rich" city, meaning that the city has more job opportunities than housing. In 2010, Brea is projected to have 45,797 jobs and 14,956 housing units. These projections would result in an even higher jobs-to-housing ratio of 3.1. This ratio indicates that the City of Brea will continue to follow the trend of the County by having more jobs than housing opportunities.

The topography of the property is not conducive to an intensive employment area. Moreover, the "jobs-rich" character of this area dictates more housing, not more job opportunities. Therefore, the project offers positive impacts to the imbalance of housing and jobs.

4.3.2 Thresholds of Significance

According to §15358 of the CEQA guidelines, a significant effect on the environment is generally defined as a substantial or potentially substantial adverse change in the physical environment. Using the County of Orange guidelines for thresholds of significance, the proposed project would result in a significant impact if it would:

- Cumulatively exceed adopted regional or local population projections.
- Induce substantial growth in an area directly or indirectly through project in an undeveloped area or extension of major infrastructure.
- Displace existing housing affecting a substantial number of people.

4.3.3 Project Impacts

The County of Orange General Plan provides regulatory guidance for housing and growth estimates. The goals and policies contained in the Housing Element that are relevant to the project are discussed in this section.

This section presents a discussion of the potential impacts related to population and housing associated with the development of the proposed project. Mitigation measures are provided, where appropriate.

The potential impacts associated with the proposed project are evaluated on a quantitative basis through a comparison of the anticipated project population, housing, and employment conditions with the projected regional conditions. Development is to be constructed in phases, based on housing demand and the real estate market.

a. Growth-Inducing Impacts

The implementation of the proposed project will allow for a maximum of 914 units and has the potential to generate approximately 2,276 residents in the County (Table 4.3-4). These numbers are consistent with the adopted plans.

Table 4.3-4 - Population Growth Projections

Neighborhood	Number of Units	Density	Dwelling Units Per Neighborhood Acre	Total Population
1	66	low	4.4	164
2	116	medium	10.0	288
3	233	low	5.4	580
4	182	low	4.3	453
5	116	low	4.5	288
6	106	low	4.0	264
7	55	low	3.2	140
8	40	low	3.2	99
Total	914		4.7 units/net acres	2,276

Section 15126.2(d) of the CEQA Guidelines states that it must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment. The potential impact on population growth is insignificant and unavoidable.

b. Consistency with Population Projections

The Tonner Hills Planned Community would allow for the development of a maximum of 914 residential units. Based on the persons-per-unit ratio specified by the CDR[8], the proposed project has the potential to generate 2,276 residents (Table 4.3-4).

The project site is not located within the City of Brea boundaries; therefore, the increase in population is not included in the projections for the City. As discussed previously, CDR divides Orange County into 10 RSAs. The project site is located in RSA A-36 (Neighborhood 8) and RSA B-41 (Neighborhoods 1-7). Each RSA is further divided into Community Analysis Areas (CAA) and census tract areas define each CAA. CDR compiles population projections for each of these areas as shown in Table 4.3-5. The CDR population estimates for the unincorporated project site are 2.49 persons per dwelling unit, for a total projection of 2,276.

Table 4.3-5 - Population Projections

Data Source	2000	2010	2020	Year 2000 Population Plus Proposed Project
Neighborhood 1-7				
RSA B-41	215,973	275,501	292,482	218,894
CAA 3	12,871	18,163	21,661	15,792
Census Tract 218.15	5,576	10,337	11,058	8,497
Project Population				2,175
Neighborhood 8				
RSA A-36	211,974	223,653	231,797	212,114
CAA 2	27,526	29,440	31,734	27,66
Census Tract 15.02	8,130	8,308	9,234	8,270
Project Population				99

Source: OCP-2000

This new population increase, when added to the existing population, would not exceed the projected population in the RSA, the CAA, or the census tract area for the 2020 buildout year. No impacts would occur.

c. Consistency with Housing Projections

Within the implementation of the proposed project, the Planned Community would allow for the development of a maximum of 914 residential units on approximately 193.9 acres, or approximately 24% of the site.

[8] Center for Demographic Research, Bill Gayk, 11/16/01

The project site is not located within the City of Brea boundaries; therefore, the increase in housing units is not included in the projections for the City. As discussed previously, CDR divides Orange County into RSAs, CAA, and census tract areas. CDR compiles housing projections for each of these areas, as shown in the table below.

Table 4.3-6 - Housing Projections

Data Source	2000 (Dwelling Units)	2010 (Dwelling Units)	2020 (Dwelling Units)	Year 2000 Dwelling Units Plus Proposed Project
Neighborhood 1-7				
RSA B-41	71,674	94,497	104,055	72,548
CAA 3	4,759	6,891	9,055	5,633
Census Tract 218.15	2,178	4,113	5,973	3,052
Project				874
Neighborhood 8				
RSA A-36	75,051	79,094	82,874	75,091
CAA 2	10,266	11,023	12,331	10,303
Census Tract 15.02	3,283	3,365	3,892	3,323
Project				40

Source: California State University, Fullerton, Center for Demographic Research

This new housing increase, when added to the existing housing, would not exceed the projected housing in the RSA, the CAA, or the census tract area for the 2020 buildout year. No impacts would occur.

The project's consistency with housing needs is based on the most recent RHNA prepared by SCAG. Brea's "fair share" adjustment of the regional future housing needs between January 1, 1998 and June 30, 2005 is projected to be 1,052 housing units, although the project site is not included in the City of Brea boundaries. Of these units, 203 units shall be available for very low income households (19%), 136 for low income (13%), 212 for moderate income (20%), and 502 for above moderate income households (48%). This project is a large master planned development with a projected 10-year buildout. Specific development phasing details are unknown at this time; therefore, it is unknown how many of these residential units would be completed within five years for comparison with the RHNA. The County's RHNA calls for the construction of 22,687 housing units. The proposed project is required to comply with all County regulations associated with affordable housing and the General Plan policy for the "development of adequate housing to meet the needs of low- and moderate-income households." No impacts are expected.

d. Consistency with Employment Projections

Implementation of the proposed project will add 914 housing units to the Orange County subregion, which is jobs-rich in character and projected to remain jobs-rich in the future. Therefore, the addition of 914 units at varying densities and prices will have a positive impact on the jobs/housing balance of the subregion. This is consistent with the SCAG's GMC Policy 3.11, which supports provisions and

incentives created by local jurisdictions which promote housing growth in jobs-rich subregions and job growth in housing-rich subregions.

The existing oil and gas operations account for the employment of approximately 20 persons. The proposed project will continue to support this workforce, as there are no plans to discontinue the oil and gas operations.

The proposed project would provide short-term construction jobs during the construction phase and is expected to generate limited long-term employment associated with the 7.7-acre mixed use area, which is proposed to be located at the northeast corner of Lambert Road and Wild Cat Way, and could include retail businesses such as a convenience market, video store, dry cleaners, and other similar uses. The mixed use area is planned to be constructed during the final phase of the project. The expected project employment is estimated at 154 for these uses, which will be consistent with the employment projections for the city or the region. No adverse impacts associated with employment projections are expected.

e. Consistency with County of Orange General Plan Housing Element

As discussed in the land inventory, the unincorporated territory under the jurisdiction of the County has been reduced considerably due to annexations and incorporations. Six new cities in South County have incorporated since 1989, and a number of major annexations occurred. Taken together, these jurisdictional changes resulted in a loss of about 40,000 acres of unincorporated territory.

About 40% of Orange County presently remains unincorporated, representing about 200,000 acres. While it appears to be a large area, only about 27,000 acres of vacant developable land remains in the unincorporated area. Of this total, about two-thirds (17,000 acres) is within city spheres of influence. This includes undeveloped fringe areas as well as urbanized unincorporated "islands". Based on current County land use plans, there is currently a theoretical and demographically based development capacity of about 26,000 additional units in the unincorporated area. An analysis of the project's consistency with the relevant goals and policies of the Orange county General Plan Housing Element is provided below.

- *Goal 1 - Assist with an adequate supply of housing that varies sufficiently in cost, style, tenure, and neighborhood type to meet the economic and social needs of every existing and future resident of the county; and which provides sufficient housing opportunities for employees of county businesses and public service providers to ensure continued economic vitality to the community. (Source: Current Housing Element, Goal 1)*

The proposed project conforms to this goal by providing a range of housing types for many income ranges with ownership and rental options, including rental, single-family attached, traditional single-family clusters, and single-family detached homes. In addition, the mixed use area located at the corner of Lambert Road and Wild Cat Way has an option for high-density affordable housing.

f. Consistency with City of Brea General Plan Housing Element

Although the project lies within the County's jurisdiction, its proximity to the City of Brea warrants an evaluation of consistency with Brea's housing guidelines. The proposed project would be substantially consistent with the overall goals and policies of the City's General Plan Housing Element. An analysis of the project's consistency with the relevant goals and policies is provided below.

- *Goal 1: Assist in the development of adequate housing to meet the needs of low and moderate income households.*

  The project conforms to these policies by providing a range of housing and ownership or rental options within the 914 units proposed to be constructed over the next 10 years. The project also provides a range of housing densities – from medium density at 10 units per acre, to low density at 3.2 units per acre for single-family detached units.

- *Goal 2: Identify adequate housing sites which will be made available through appropriate zoning and development standards and with public services and facilities needed to facilitate and encourage the development of a variety of types of housing for all income groups.*

  The proposed project conforms to this goal by proposing a Planned Community that includes a variety of housing types within the City of Brea's SOI. The proposed project consists of a range of housing types for many income ranges. This project is located on the edge of existing development, and, therefore, public services and facilities to support this development exist nearby. Implementation of the proposed project will add 914 housing units to the Orange County subregion, which is jobs-rich in character and projected to remain jobs-rich in the future. the project will provide housing at a variety of densities and prices, which will have a positive impact on the jobs/housing balance of the subregion. The project site is located close to a regional transportation corridor (the 57 Freeway) and employment centers in northeastern Orange and southeastern Los Angeles Counties.

- *Goal 3: Promote housing opportunities for all persons regardless of race, religion, sex, marital status, ancestry, national origin, or color.*

  Within the proposed project, individual builders are required to comply with all local ordinances and fair housing policies, including state and federal Equal Housing Opportunity guidelines and statutory rules. Although the project is not located within the City of Brea boundaries, the proposed project is consistent with the relevant goals and policies of the Housing Element of the City of Brea General Plan.

4.3.4 Mitigation Measures

As no significant impacts have been identified, no mitigation measures are required or recommended.

4.3.5 Cumulative Impacts

Project and cumulative impacts related to population and housing are not considered significant. SCAG has identified Orange County as a jobs-rich subregion needing additional housing. The construction of 914 residential units in a job-rich market will have a positive impact in balancing the subregions job-to-housing ratio.

4.3.6 Unavoidable Adverse Impacts

Project impacts related to population and housing would be less than significant. No significant unavoidable impacts have been identified.

4.4 Geophysical

This section summarizes the geologic conditions of the project site and vicinity, and discusses the geologic opportunities and constraints that may impact implementation of the proposed development. Information summarized in this section was acquired primarily from the geological reports and geotechnical assessments conducted on the project site. Copies of the geological reports and geotechnical assessments prepared by Earth Consultants International and Leighton & Associates are included in the Technical Appendices of this EIR. Other sources of information are referenced where appropriate in the text.

4.4.1 Existing Conditions

a. Geologic Setting

The proposed project site is located in the Peninsular Range's physiographic province of the Southern California geological region. The existing landform characteristics of this province are defined by a northwest-trending structural grain that is best represented by the series of faults associated with the San Andreas fault system, and by northwest-trending folds that include the Santa Ana Mountains, the Puente Hills, and smaller hills within the Los Angeles basin. Located in the northeastern part of the Los Angeles basin, the project site covers approximately 789.8 acres on the southern flank of the eastern Puente Hills.

The Puente Hills are of a complex, uplifted and faulted anticlinal structure, with the south-dipping Chino Fault Zone on the northeast and the north-dipping Whittier Fault Zone on the southwest. These two fault zones merge with the northwest-trending Elsinore Fault Zone at the east end of the Puente uplift, in Santa Ana Canyon. The La Habra Syncline (buried below alluvial plain sediments) trends parallel to the hills on the southwestern side.

Topographically, the site consists of a series of low hills along its southern boundary, rising to ridges of moderate to steep relief in the central and northern part. Elevations at the site range from approximately 450 feet along the southern project boundary to 800 feet near the northeastern project boundary.

At great depth, the area is underlain by Cretaceous-age igneous rocks. These rocks are overlain by a thick mantle of Tertiary-age marine sediments deposited when this area was under water, between about 15 million and 2 million years ago. In the vicinity of the property, these sediments are estimated to be more than 10,000 feet thick. During the last 2 million to 3 million years, the sediments filling the basin have undergone a complex process of folding and faulting, a result of oblique compression between the North American and the Pacific tectonic plates. The Quaternary-age non-marine sediments capping the older units have also been deformed by these tectonic processes. Uplift and deformation of the sediments underlying the hills began in mid-Pleistocene time and continue today.

b. Local Geologic Structure

The Whittier Fault Zone transects the northern edge of the property. The zone of deformation is very wide in the site vicinity, extending across Tonner Canyon and up the flanks of the hills on the opposite side to the north. The westerly bend in Tonner Creek at this locality is considered to be a result of displacement and/or deflection along the Whittier Fault. Several potentially active and two non-active faults, generally oriented subparallel to the Whittier Fault, have been mapped south of the main active traces (Exhibit 4.4-1).

Geologic structure on the site consists primarily of a southerly-dipping homocline which steepens to near-vertical as it approaches the fault zone at the north edge of the site. Strata of the Fernando and Puente Formations are, in some places, overturned adjacent to the fault zone. Consequently, bedding at the site is generally striking in a westerly direction, subparallel to the fault system, and dips steeply over most of the site. Local variations in the bedding structure are present due to small-scale folding. Most of the bedrock at the site, especially the older units, is moderately to intensely fractured. Shearing along bedding planes is also present.

c. Local Geologic Units

The geologic units that underlie the site, from oldest to youngest, include the Sycamore Canyon Member of the Puente Formation, the Lower and Upper Members of the Fernando Formation, the La Habra Formation, terrace deposits or older alluvium, landslides deposits, colluvium, younger alluvium; and artificial fill. Each of these geological units is described below.

- ***Puente Formation, Sycamore Canyon Member*** - The late Miocene-age Sycamore Canyon Member is exposed along the crest of the ridge, in a westerly trending band between the Tonner and Escondido faults. It consists primarily of massive to thick-bedded, light brown to light gray sandstone and silty sandstone, with thin-bedded sandy to clayey siltstone and lenses of pebble- to cobble-size conglomerate. Clasts within the conglomerate consist of subrounded to well-rounded crystalline rocks. Sandstone beds of the Sycamore Canyon Member are locally rich in petroleum hydrocarbons, and where exposed at or near the surface, oil-stained outcrops and tar seeps are locally present.

- ***Fernando Formation, Lower Member*** - The Lower Member of the Fernando Formation (early Pliocene age) is exposed in a wide band trending westerly across the middle of the site. In the project area this unit consists predominantly of micaceous, brownish gray to greenish gray clayey siltstone and silty fine-grained sandstone, with uncommon silty clay beds. Thin beds and lenses of pebble conglomerate are interbedded locally, and these contain well-rounded pebbles of crystalline rocks. Bedding planes are generally not well developed.

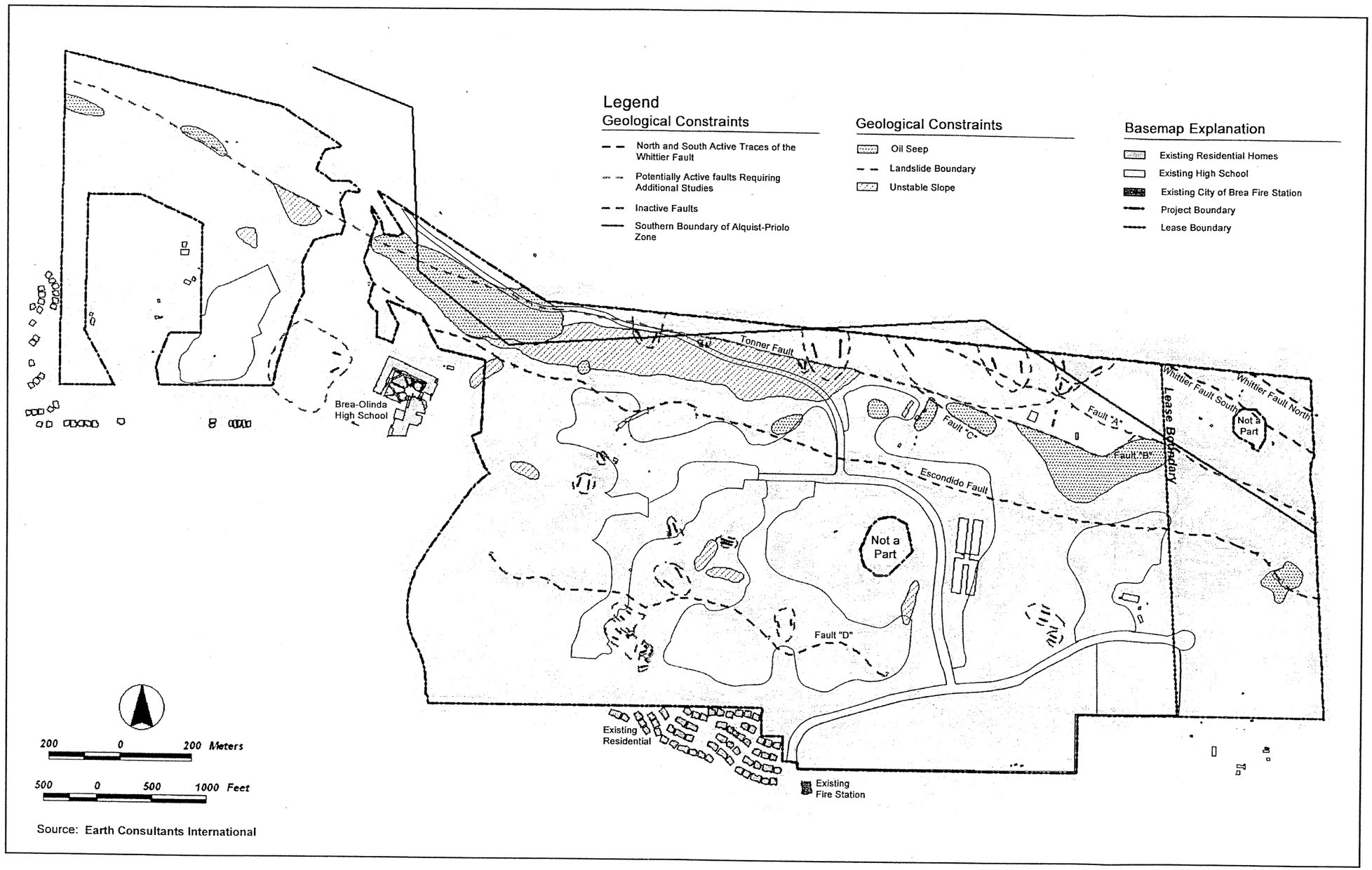

Exhibit 4.4-1
Geological Constraints

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- ***Fernando Formation, Upper Member*** - The late Pliocene-age Upper Member of the Fernando Formation stratigraphically overlies the Lower Member and is present in a relatively thin band trending westerly across the south-central part of the site. The Upper Member is similar in composition to the Lower Member; however, this unit is coarser grained, consisting primarily of interbedded sandstone and conglomerate, with a subordinate amount of siltstone. Bedding is massive to poorly developed.

- ***La Habra Formation*** - The late Pleistocene-age La Habra Formation is present in a thin band trending westerly across the base of the hills in the southern part of the site. It is also present locally at the top of the ridge above Tonner Canyon, where it caps the older units in this area. This unit generally consists of brown to reddish brown sandy to silty conglomerate, although massive silty sand and clayey siltstone occur locally. Non-marine in origin, this unit was formed with sediments eroded from the older geologic units in the local area. Consequently, pebbles and cobbles within the conglomerate consist of well-rounded crystalline rocks, as well as subrounded fragments of sandstone and siltstone. Platy siltstone fragments are derived primarily from the Puente Formation exposed in the hills to the north. Bedding in the La Habra Formation is crudely developed.

- ***Terrace Deposits or Older Alluvium*** – Late Pleistocene-age older alluvium consists of alluvial fan sediments that were deposited by precursors to the present-day streams that drain the site. This unit is exposed in the area of low relief at the southern boundary of the site. These sediments consist of light brown to orange brown, unconsolidated to semi-consolidated, poorly sorted sand and silty sand, locally with lenses of coarse sand and gravel. The older alluvium has been dissected by modern streams, and in some areas, it has a well-developed soil profile, including a clay-rich argillic horizon that is locally more than 6 feet thick. The argillic soil horizons are generally hard to very hard, may contain calcium carbonate coatings, and can be alkaline (pH > 7). Bedding is commonly massive, except for local well-bedded lenses of sand and gravel. Older alluvium is generally firm below the upper few feet, although deeply weathered and porous areas are present locally. In the eastern part of the site (in the vicinity of the public use area) the natural moisture content of this unit is typically low.

- ***Landslide Deposits*** – Several landslides have been mapped at the site. The largest landslide complex is located along the northeastern boundary of the site, within and adjacent to the Whittier Fault. This landslide involves bedrock of the Puente Formation, and has failed northward into Tonner Canyon. Several smaller, relatively shallow landslides have been mapped along the north-facing slope of Tonner Canyon, and within the steeper walls of Cable Canyon. Surficial landsliding has occurred throughout the site, commonly where natural slopes have been undercut by erosion or by man-made excavations. Landslide deposits usually have a mixed, jumbled appearance, particularly around the margins. The head scarp area commonly contains a deposit of colluvium and jumbled bedrock. Areas where the original bedrock structure has been retained may

occur locally within the slide mass. Landslide debris is generally compressible, and may not meet minimum slope-stability standards.

- ***Colluvium*** - Colluvium is the loose soil and weathered rock debris that typically erodes off ridges and hillsides and accumulates in shallow drainage swales, at the base of slopes, and along the margins of drainage channels. At the site, the colluvium consists of dark brown to black sandy and /or silty clay, with the sand and silt content varying depending on the parent bedrock type. Colluvial sediments at the site typically grade laterally into alluvial deposits and may range in thickness up to about 30 feet. Colluvial deposits are typically loose, poorly sorted, and often contain organic matter.

- ***Younger Alluvium*** - The alluvial (stream-deposited) sediments found within the modern stream channels at the project site consist of unweathered, unconsolidated, poorly sorted, light to medium brown, fine-to medium-grained sand, silt and clay, with scattered, crudely stratified gravel lenses. The alluvial deposits may be as much as 25 to 35 feet thick. These deposits are generally of low density and may contain organic matter.

- ***Artificial Fill*** – Artificial fill occurs throughout the project site, along roadways, oil well pads, and as canyon fills. These deposits typically consist of locally derived materials and are considered to be uncontrolled (no engineering observation and compaction testing).

d. Regional Faulting and Seismicity

The two principal seismically induced hazards to property in the southern California region are damage to structures and foundations due to strong ground shaking, and surface rupture of earth materials along fault traces. An earthquake occurs when the elastic strain energy that has accumulated in the bedrock adjacent to a fault is suddenly released. The energy released propagates in the form of seismic waves that radiate great distances in all directions from the earthquake epicenter. The strong ground motion or shaking produced by these seismic waves is the primary cause of earthquake damage. The amount of shaking at a given location depends on the earthquake size (magnitude), distance from the earthquake source (epicenter), and the local geologic conditions, which can either amplify or attenuate the earthquake waves.

The project site is situated in a seismically active region of southern California dominated by the intersection of the northwest-trending San Andreas Fault system and the east-west trending Transverse Ranges Fault system. These fault systems accommodate the majority of the geological strain produced by the gradual, yet powerful, movement between the Pacific and the North American tectonic plates. As a result, numerous faults that have been mapped in the southern California region could produce significant ground shaking at the site. The faults listed in the table below have the potential to generate earthquakes with magnitudes greater than 7.0 and Modified Mercalli Scale seismic intensities of VII or greater at the project site (see Table 4.4-2 for a summary of the Modified Mercalli Intensity Scale). Between 1850 and 1993, there were 12 recorded earthquakes of magnitude 6.0 or greater within 50 miles

of the project site. The project site is located within Seismic Zone 4 of the Uniform Building Code (1997 Edition).

Table 4.4-1 - Summary of Known Active Faults with the Potential to Impact the Site

Seismic Source (Name of Fault)	Maximum Credible Magnitude[1]	Seismic Intensity[2]	Approximate Distance from Project Site (miles)
Chino	7.0	X	8
Cucamonga	7.0	IX	13
Elsinore	7.5	IX	22
Elysian Park Seismic Zone	7.0	IX	15
Glen Helen-Lytle Creek- Claremont	7.0	VIII	29
Newport-Inglewood	7.0	IX	18
Palos Verde-Coronado Bank	7.5	IX	25
San Andreas (Mojave)	8.3	IX	32
San Andreas (San Bernardino Mountains)	8.0	IX	32
San Gorgonio-Banning	7.5	VII	36
Sierra Madre-San Fernando	7.5	VIII	14
Whittier-North Elsinore	7.5	XI	0

[1] Maximum Credible Magnitude - the maximum earthquake that appears capable of occurring under the currently known tectonic framework.

[2] Roman numerals correspond to the Modified Mercalli Scale for Earthquake Intensity presented in Table 4.4-2.

Source: Earth Consultants International, Review of Geologic Conditions, 3/13/00

Table 4.4-2 - Modified Mercalli Scale for Earthquake Intensity

Intensity Scale	Effects
XII XI	Damage total or nearly total, practically all works of construction are greatly damaged or destroyed. Roads, rails, and underground utilities severely damaged.
X IX	Major damage, including partial to complete collapse of weak masonry and frame buildings and moderate damage of stronger structures.
VIII VII	Moderate damage, including toppled chimneys, cracked stucco, frames shifted on foundations. Damage more severe to weak walls and masonry.
VI	Minor damage, including cracks in chimneys and walls. Furniture moved and items knocked off shelves.
V IV	Felt by most people, some awakened from sleep. Some objects are moved. No structural damage.
III	Felt indoors by some people.
II, I	Not generally felt by people.

The Whittier Fault is potentially capable of producing the most intense ground accelerations at the site. A maximum credible earthquake (largest possible earthquake – worst case scenario) that the Whittier Fault is thought capable of generating – magnitude 7.5 – would produce seismic shaking with Modified Mercalli Intensities of XI at the site. Other faults that have the potential to generate strong ground motions at the site include the Elysian Park thrust and the Chino, San Jose, Cucamonga, and Elsinore Faults.

The most recent and potentially significant seismic activity within the project area was recorded Friday, December 14, 2001 at 4:01 a.m. Pacific Standard Time by Caltech Seismological Laboratory of Pasadena, California. The magnitude of the earthquake measured 3.9 on the Richter Scale. The epicenter of the quake was recorded five miles southwest of the city of Chino, which is less than three miles northeast of the proposed Tonner Hills Planned Community project. Despite this minor yet noticeable seismic activity, no geological or structural damages were recorded within the project area.

e. Local Faulting

The California Department of Conservation, Division of Mines and Geology (CDMG) passed the Alquist-Priolo (AP) Earthquake Fault Zone Act in 1972 to protect structures from the hazards of surface ground rupture by preventing the construction of buildings for human occupancy across an active fault. The Act requires state zoning of active faults in addition to local review and regulation of development within these zones. An "active fault," as defined by state law, is a fault that has been proven by direct geologic evidence to have ruptured the ground surface at least once within the last 11,000 years. A fault that has been proven through direct geologic methods to have not moved within the last 11,000 years is classified as not active. Potentially active faults are those faults that have moved within the last two million years (Quaternary period), but have not been studied in sufficient detail to be classified as active or not active. Below are a list of active and inactive faults located within the Project site. The following data are summaries derived from geotechnical studies and geological reports conducted on-site by Earth Consultants International (ECI) and Leighton and Associates. Comprehensive studies and reports are provided in the Technical Appendices of this EIR.

(1) Whittier Fault

The Whittier fault zone is considered one of the most prominent structural features of the Los Angeles Basin. The fault zone extends from the Santa Ana River at the southeast margin of the Puente Hills, to Turnbull Canyon near the City of Whittier at the northwest, a distance of approximately 38 km (24 miles). Southeast of the Santa Ana River, the Whittier Fault merges with the Elsinore fault.

In the study area, the Whittier Fault zone consists of at least two main active splays and several secondary faults. The two most recently active branches of the Whittier Fault extend across the northeastern corner of the project site and are located within the Alquist-Priolo Earthquake Fault Zone (Exhibit 4.4-1 on page 4.4-3). The southern of these two segments has been studied in detail in the Brea-Olinda oil field, east of Valencia Avenue. This fault trace has ruptured the ground surface several times

in the last 11,000 years. The two most recent breaks occurred between 1,400 and 2,200 years ago, and between 3,000 and 3,100 years ago, respectively. These values give a minimum recurrence interval of 760 (+640, -274) years between earthquakes on this fault. A minimum of at least 1,400 years has passed since the last surface-rupturing event occurred on the Whittier Fault.

The locations of the two known active traces of the fault were taken into consideration when designing the proposed project. There is no project residential development proposed on or within the proximity of the Whittier Fault or the Alquist-Priolo Zone. The nearest proposed development (Neighborhood 1) is located greater than 1,400 feet southwest of the southern active trace of Whittier Fault and 500 feet southwest from the Alquist-Priolo Zone.

As analyzed above, several faults secondary to the main traces have been mapped on the project site. At least four of these fault strands have been mapped along the northern and northeastern portions of the site. These fault traces have not been studied to determine their recency of activity, and are therefore considered potentially active. These faults include the Tonner Fault (first mapped by Kinney in 1940), and three unnamed faults referred to here as Faults A, B and C. Two other faults (Escondido Fault and Fault D) have been identified farther south, within the area of the proposed development. These two faults have been studied to determine whether they are active, and each is discussed below.

(2) Tonner Fault

The Tonner fault extends in a westerly direction across the entire northern portion of the project site and runs parallel to the southern boundaries of the Alquist-Priolo Zone while overlapping one another along the northwestern portion of the project site (Exhibit 4.4-1 on page 4.4-3). A section of this fault was exposed during grading for the gas processing facility. In the remainder of the site, slope creep and dense vegetation currently obscure the fault at the surface. However, its surface trace has been inferred by numerous active tar seeps that appear to be controlled by this fault. The recency of activity of this fault has not been determined, and is therefore currently considered potentially active.

There is no project residential development proposed across the mapped trace of this fault. The northernmost portion of Neighborhood 5 is closest to the Tonner Fault, which is located approximately 50 feet south of the fault.

(3) Faults A and B

Fault A runs parallel to and south of the main traces of the Whittier Fault. Fault B is a short northeast-trending fault that connects Fault A to the Tonner Fault. The faults extend across portions of the graded pad where Unocal, the previous owner, constructed a gas processing facility now owned and operated by Nuevo Energy, the project applicant. Fault A and the Tonner Fault appear to control, in part, the large landslide complex that is present on the north-facing slope above Tonner Canyon. The activity of Faults A and B was not determined during grading; therefore, the faults are considered potentially active and Leighton (1992) established building setbacks from them (the gas facility is located within the Alquist-

Priolo Zone but it is exempt under the Alquist Priolo Earthquake Fault Zone Act due to its industrial use designation). East of the graded pad, Fault A has not been well located, although it correlates closely with a fault identified by both Kinney (1940) and Durham and Yerkes (1964).

There is no project development proposed within Faults A and B. The nearest proposed development (Neighborhood 1) is located approximately 500 feet south of Fault B (Exhibit 4.4-1).

(4) Fault C

Fault C (Exhibit 4.4-1 on page 4.4-3) is an inferred short fault splay in the north-central portion of the site, adjacent to where the oil field operations buildings are currently located. The fault was interpreted from aerial photography analysis, and in the field, the fault is suggested by the presence of an isolated oil seep in this area. This inferred fault has not been studied, so its existence, location, and recency of activity have not been determined.

There is no project development proposed across the mapped trace of this fault. The nearest proposed development (Neighborhood 5) is located approximately 100 feet south of Fault C.

(5) Escondido Fault

The Escondido Fault extends across the north-central portion of the project site and was originally mapped by Kinney (1940) as the contact between the Sycamore Canyon Member of the Puente Formation and the Fernando Formation (Exhibit 4.4-1 on page 4.4-3). The mapped surface location of this fault correlates closely with a lineament observed in aerial photographs. In the field, the fault trace is generally obscured by heavy vegetation, but its location can be inferred because bedding in this area of the site is generally overturned and dips to the north along the entire strike of the fault. Furthermore, near the fault zone, the siltstone beds of the Fernando Formation are intensely folded and often broken.

This fault was exposed in a trench excavated for the purpose of evaluating the fault's recency of activity. ECI (1997) observed that two unbroken argillic soil horizons that are more than 11,000 years old extend across the fault. Therefore, the fault has not moved in the last 11,000 years, and is not active. This supports Kinney's (1940) observations that the Escondido Fault locally does not extend to the surface, and that in the western portion of the site, the fault is buried by Pleistocene-age sediments assigned to the La Habra Formation.

The Escondido Fault extends across and bisects portions of Neighborhoods 1, 5 and 6, and continues through the northeastern corner of the public use area. Seismic impacts of this fault on the proposed project site are further analyzed in greater detail below in Section 4.4.3, Project Impacts, below.

(6) Fault D

Fault D extends in a westerly direction through the south-central portion of the site, through portions of proposed Neighborhoods 4 and 7 (Exhibit 4.4-1 on page 4.4-3). This feature forms a strong lineament in aerial photographs of the site. In the field, the lineament appears to locally correlate with a lithologic contact between interbedded conglomerate and siltstone on the south and predominantly siltstone on the north. Although none of the published geologic maps show a fault in this portion of the site, because of its strong geomorphic expression, ECI recommended that trenching studies be conducted to evaluate whether the lineament is fault-controlled. In 1997excavated two trenches were excavated to evaluate the existence, location, and if possible, recency of activity of this fault.

Active faults were not exposed in either trench. Structural setbacks from this lineament to mitigate the hazard of surface fault rupture are therefore not required. Both trenches did expose a claystone bed 1 to 5 feet thick that is locally highly sheared. This claystone bed is likely to have a high expansion potential. Structures placed directly upon this bed may experience structural distress as a result of expansion of the clay in a vertical (upwards) direction.

Fault D extends across portions of Neighborhoods 4 and 7. Seismic impacts of this fault on the proposed project site are further analyzed in greater detail below in Section 4.4.3, Project Impacts, below.

f. Liquefaction

Liquefaction is a geologic process that causes various types of ground failure. Liquefaction typically occurs in loose, saturated sediments of primarily sandy composition, in the presence of ground accelerations over 0.2g. When liquefaction occurs, the sediments involved have a total or substantial loss of shear strength, and behave like a liquid or semi-viscous substance. Liquefaction can cause structural distress or failure due to ground settlement, a loss of bearing capacity in the foundation soils, and the buoyant rise of buried structures. The excess hydrostatic pressure generated by ground shaking can result in the formation of sand boils or mud spouts, and/or seepage of water through ground cracks.

The majority of the project site is elevated and underlain by bedrock and is not susceptible to liquefaction. Areas that are susceptible to liquefaction are those underlain by loose alluvial soils. In canyons where structural fills are to be placed, the compressible alluvium is generally removed as part of standard grading and soil engineering practices. Where this occurs, a canyon-bottom subdrain system is constructed, and the alluvial soil is replaced as compacted fill. This process eliminates the liquefaction potential in these areas. However, where alluvial soils are not completely removed and there is shallow ground water, there is the potential for liquefaction to occur.

Preliminary geotechnical studies conducted on the property indicate that alluvium on-site generally lacks a high, continuous, static water table. Ten borings were drilled in the alluvial areas to a depth of 60 feet, or to a shallower depth if bedrock was encountered. Of these borings, only four encountered ground water. In each case, the ground water was perched on the bedrock, at the base of the alluvium. Two of

these borings were located in Tonner Canyon, one was located in Wildcatter's Park, and one was located in the southeast part of Neighborhood 2.

In Neighborhood 2, the depth to ground water was 48 feet. Since the finish grade elevation in this area of Neighborhood 2 will be 10 to 25 feet higher, the potential for damage from liquefaction at this location is low and mitigation may not be needed. In the park site the depth to ground water was 38 feet. No additional grading is currently planned for the park. Consequently, there is a potential for liquefaction at this location; however, because of the planned use, liquefaction may not be an issue. In Tonner Canyon the depth to ground water was 21 feet and 29 feet. The future entry road to the project crosses this area, and only very minor fill depths are proposed. Therefore, a potential for liquefaction-related damage to the road may be present. Further detailed geotechnical analysis will be needed prior to grading in order to determine the liquefaction potential in these areas and to provide recommendations for mitigation of any potential adverse effects to the development. The geotechnical analysis should be based on historic high ground water elevations and anticipated increases in the ground water elevation due to the planned residential development.

The seismic Hazard Zone Maps for this region do not indicate the presence of potentially liquefiable soils in the project area.

g. Slope Stability

Bedrock landslides, as well as surficial soil slumps, slides, debris flows and soil creep, are relatively common occurrences in the Puente Hills. Natural slope stability is dependent on numerous factors, including soil composition, slope steepness, slope height, seismic activity, human activities, ground water, and structural features (e.g., bedding, jointing, faulting). Within the project area, the steeply dipping bedrock and the general lack of well-developed bedding planes is favorable for gross stability. Conditions that undermine stability of the slopes on-site include the fractured condition of the bedrock (particularly near faults) and the presence of weak planes within the rock, such as clay beds and shears, especially when combined with steep slope gradients. The California Division of Mines and Geology (CDMG) Relative Landslide Susceptibility Map for the Puente Hills, places nearly all of the site within a "generally susceptible area." This category is characterized as hillside terrain that does not currently contain a large number of slides, but the slopes are at or near their stability limits due to the combination of weaker materials and steep slopes. The CDMG Seismic Hazard Zone Maps that include the site have identified many of the slopes within the project area as being susceptible to seismically induced landsliding.

The project has been designed to avoid the impacts of the large landslide complex on the north-facing slope above Tonner Canyon. Further, the proposed design will eliminate some of the unstable slopes by mass grading. However, many of the natural ridges, canyons, and slopes are to remain as open space. In areas where development is planned adjacent to natural slopes, improvements may be susceptible to slope damage from future slope failures. Manufactured slopes may also be susceptible to failure if unstable conditions are exposed or enhanced by the man-made excavations.

h. Soil Engineering Characteristics

Soil engineering characteristics, such as compressibility, expansion potential, and corrosion will play a significant role in the development of the proposed planned community. The bedrock units at the site are not considered to be compressible. However, large amounts of potentially compressible soils are present, including topsoil, younger alluvium, colluvium, landslide debris, uncontrolled fills, and the upper part of the older alluvium. Topsoil blankets the ridges and slopes on-site, generally to a depth of 1 to 3 feet. Topsoil grades into deeper soils, termed colluvium, on the lower flanks of slopes, and in drainage swales. Along the larger canyons, colluvium grades into younger alluvium of considerable thickness. Man-made fills are scattered throughout the site as cut-and-cast roads, side-hill fills for well pads, and canyon fills. All of these materials are typically of low density and may compress under the weight of proposed fills and structures. Settlement and the rate of settlement in these materials can vary greatly, depending on many factors. These factors include soil characteristics (such as texture and grain size), compressibility (natural moisture and density), the thickness of the compressible layer, the amount of fill placed over the compressible material, the rate at which the load is applied, and drainage.

Collapse (or hydroconsolidation) is another form of settlement wherein relatively dry materials of low density will compress when subject to additional loading and the addition of water (usually in the form of landscape water). Surficial deposits such as dry sandy alluvium are the most susceptible to this hazard. At the adjacent Olinda Ranch project, it was found that the younger and older alluvium contained sandy intervals with a low natural moisture content. Based on consolidated testing in the laboratory, the older alluvium, except in minor, localized areas, was not collapsible. The younger alluvium, however was found to be very collapsible in some areas. Such conditions may exist locally on the Tonner Hills site.

The expansion potential of the earth materials will vary greatly throughout the site. In general, the older alluvium, as well as the sandstone and conglomerate bedrock will have a low expansion potential. Siltstone and clayey siltstone will most likely be in the moderate range. All bedrock units, including the La Habra Formation, typically include a relatively minor amount of highly expansive clay layers. The younger alluvium and colluvium are locally clayey, and will therefore generally fall in the moderate range.

Two types of soil corrosion are present in this area, one is sulfate attack on concrete and the other is corrosion of pipelines and foundation elements made of ferrous metals. Geologic formations composed of sediments deposited in deep ocean basins (such as the Puente and Fernando Formations) often contain soluble sulfate in concentrations than can corrode concrete. Preliminary laboratory testing did not reveal any high sulfate concentrations, however testing of soils at final grade will be needed to confirm this. Extensive laboratory testing on soils at the adjacent Olinda Ranch project indicated that most of the soil types on that site were classified as corrosive to severely corrosive to ferrous metals. Since the same or similar geologic units are present at Tonner Hills, it is likely that they are highly corrosive also.

i. Tar Seeps

The Tonner Hills project is located within the Brea-Olinda Oil Field, one of the oldest and most prolific oil-producing regions in California. As with many of the oil discoveries in the late 1800's, the field was first recognized by the abundance of oil seeps at the surface. The present-day wells in the field are tapping into oil and gas deposits at depth that occur in structural traps formed by folding and faulting of the sedimentary rock units adjacent to the Whittier fault zone. In the northern and north-central portions of the site, adjacent to, but south of the Whittier fault, oil-bearing strata of the Puente Formation have been folded upward by compression along the fault. Where erosion has exposed this unit at the surface, there are localized active and semi-active oil seeps and dry tar-stained sands. In the southern portion of the site, the oil-bearing geologic units are found at great depth, beneath non-oil bearing sediments.

The existing seeps are present in a relatively narrow band trending across the northern part of the site in a west-northwesterly direction. They appear to be fault-controlled, as for the most part they are confined between the Tonner and Escondido faults. In the eastern and central part of the site they are generally present at or near the top of the ridge above Tonner Canyon. The exception to this is the small seep area located farther down the south-facing flank of the ridge, near Valencia Avenue. In the western part of the site, the seeps are located near the bottom of Tonner Canyon. When the oil reaches the surface, it loses its mobility as the volatile constituents evaporate, and the oil thickens into tar and asphaltum. The thickness of the asphaltum ranges from a few inches to several feet.

Surficial geologic units that overlie the oil-bearing bedrock may also contain oil, typically in localized areas where the oil has migrated along permeable layers in the sediments or along permeable pathways. Permeable layers of alluvium become stained as stream channels cut down through oil-bearing bedrock and the oil migrates laterally into the channels. Such conditions have been observed in the eastern portion of the site, south of Well 68 in the Columbia Lease.

At the adjacent Olinda Ranch project, significant portions of the grading encountered oil-bearing bedrock, as well as localized areas consisting of soils stained with naturally occurring hydrocarbon. The heaviest concentrations and the most frequent occurrence of seepage were present in the sandstone, pebbly sandstone and conglomerate beds of the La Habra and Puente Formations. Although locally saturated with oil, the sands and gravels commonly did not show a steady flow of oil, even after exposure to the hot summer sun for many days. The greatest portion of the active seepage appeared to be localized and from fractures in the bedrock. It was also noted that a large part of the oil-impregnated bedrock did not actively seep. Seepage rates varied considerably over time. Typically, a seep would flow most rapidly when freshly cut, gradually slowing as the exposure time lengthened. The heaviest seepage occurred in a canyon on the eastern part of the site. A subdrain outlet in this area produced about 1.5 gallons per day during the time period it was monitored. Other seeps at the site produced considerably less oil, producing only a cupful to a few gallons over several months (including hot summer months). Seepage rates were also affected by the consistency of the oil, which in general appeared to be slightly thicker than motor oil. A few isolated seeps contained very thick oil that flowed very slowly. Several abandoned oil well casings acted as a conduit for the migration of crude oil and natural gases to the surface.

Widespread exposures of the older alluvium capping the oil-bearing bedrock at Olinda Ranch generally did not contain oil. The unit consisted primarily of massive (non-stratified) silty fine sand estimated to be at least 100,000 years old. Oil seepage from the older alluvium, which was minor in occurrence, was from fractures, man-made features such as well casings, or other penetrations such as deep rodent holes or tree roots.

Oil and gas seeps have been of great interest in petroleum exploration, however the movement of hydrocarbons through soil and rock is a complex and poorly understood process. Migration is generally vertical, but it can also be lateral, especially if a seal or barrier is encountered. It is generally agreed that seeps occur predominantly along high permeability pathways, such as faults, fractures, bedding planes, and pore networks. Diffusion is thought to occur under certain conditions, but is not a primary migration mechanism, and in fact is not considered to be a likely mechanism for larger hydrocarbons.

Seepage expression can be a function of many factors besides the presence of reservoir rock near the surface. Seepage requires energy, and a number of sources have been suggested including hydrostatic pressure, gas pressure, capillary action and differential compression at depth. Surface seepage rates appear to be significantly affected by temperature (seeping more heavily on hot summer days), however this is probably due primarily to the melting of the tar seal that develops over the seep on cooler days. Seepage can also be affected by changes in the subsurface oil and gas accumulations, changes in reservoir pressures, changes in the water table, or more subtle changes such as in the barometric pressure. Catastrophic events such as earthquakes can have almost immediate effects on oil migration patterns. Consequently, near-surface migration and seepage is a dynamic process and some seeps have been known to appear and disappear over short periods of time.

j. Methane Gas

The Brea Olinda oil field is known to have locally high concentrations of methane gas. Methane is a naturally occurring gas that typically forms as a byproduct of bacterial digestion of organic matter in sediments (such as a swamp, landfill, dairy pasture, or oil-rich soils). Methane produced at or near the surface is generally at low pressures. Methane and other natural gases can also occur at great depth, where they are formed as a result of thermal (heat) alteration of petroleum and/or organic matter in the rocks. This thermogenic methane derived from oil-production zones is generally at high pressures. At Olinda Ranch, it was found that most of the methane was of the biogenic type and that its occurrence was closely associated with the near-surface oil seeps. In limited areas, reservoir gases were detected adjacent to casings of abandoned oil wells. In localized areas of Olinda Ranch, the older alluvium was stained with hydrocarbon. The staining was manifested as greenish-gray "halos" around several well casings, and irregular, but discrete patches that were not clearly tied to a source. The moist stained soils typically had a strong hydrocarbon odor, while areas of dry staining were odorless. Since these stained areas were not tied to a surface source (such as a spill), they were interpreted to be a result of gas migration from below.

A detailed methane analysis is further analyzed and discussed in Section 4.15, Hazards of this EIR.

k. Volcanic Events

No volcanic flows or ash-fall deposits have been mapped or recorded on the project site or its vicinity. The closest volcanic dome, of Quaternary or possibly Pliocene age, is located approximately 55 miles to the southeast in the Temecula area of southern California.

4.4.2 Thresholds of Significance

For the purposes of this EIR, the thresholds of significance for evaluating project impacts are based upon suggested criteria from the CEQA Environmental Checklist (Appendix G of the CEQA Guidelines). The project would result in a significant impact if it would expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death:

- Project would result in or expose people to impacts involving local fault rupture.
- Project would result in or expose people to impacts involving seismicity, ground shaking or liquefaction.
- Project would result in or expose people to impacts involving soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.
- Project would result in or expose people to impacts involving landslides or mudslides.
- Project would result in or expose people to impacts involving erosion, changes in topography, or unstable soil conditions from excavation, grading or fill.
- Project would result in or expose people to impacts involving subsidence of the land.
- Project would result in or expose people to impacts involving expansive soils.
- Project would result in or expose people to impacts involving unique geologic or physical features.

4.4.3 Project Impacts

Significant geologic conditions affect the proposed project. Potential geologic hazards in the project area include fault rupture during an earthquake, potential strong ground shaking and its secondary effects, slope instability, compressible/collapsible soils, expansive and corrosive soils, tar seeps, and methane gas. The mitigation measures presented below, or similar alternate measures recommended by the project's geotechnical subconsultants, shall be implemented to reduce geological impacts to less than significant levels.

a. Fault Induced Ground Rupture

(1) Primary Fault Rupture

Primary ground rupture refers to fissuring and offset of the ground surface along a fault that breaks the ground during an earthquake. Primary ground rupture typically results in a relatively small percentage of the total damage in an earthquake, but being too close to a rupturing fault can cause severe damage to structures. Fault rupture is a significant potential impact on the northern portion of the proposed project, due to the presence of the Whittier Fault Zone. In the eastern Puente Hills, the Whittier Fault Zone comprises a series of short, discontinuous, northwest-trending, echelon faults, and a complex pattern of subordinate folds and faults. Several active, potentially active, and non-active strands of the Whittier Fault traverse the project site, as shown in (Exhibit 4.4-1). An active fault is defined as a fault that has had surface displacement within Holocene time (approximately the last 11,000 years). There is a potential for primary fault rupture in the area where active strands of the Whittier Fault are present. Surface rupture due to a nearby earthquake on the Whittier Fault could potentially damage structures or facilities. In compliance with the Alquist-Priolo Earthquake Fault Zone Act, the Tonner Hills Planned Community development has been situated more than 1,400 feet from the nearest known active trace of the Whittier Fault.

Based on the geotechnical report prepared by Earth Consultants International (ECI) on February 10, 2000, two non-active faults (Escondido Fault and Fault D) run across the proposed project site through Neighborhoods 1, 4, 5 and 7. Despite the fact that both faults are determined to be non-active faults, there is the potential of structural distress on buildings situated directly on bedrock cut surfaces. On-site side-hill fill situated on steep natural slopes may be subject to deformation during a strong seismic earthquake. Implementation of mitigation measures analyzed in Section 4.4.4 below will reduce potential seismic impacts and structural distress to levels of impact that are less than significant.

(2) Secondary Fault Rupture

Secondary fault rupture refers to ground surface displacements along faults or other planes of weakness other than the main traces of active regional faults. Unlike regional faults, these secondary faults are not capable of generating earthquakes on their own. Movement along these faults generally occurs in response to movement on a nearby regional fault. Such planes of weakness include splays, branches, and tears off of the main fault, as well as flexural slip or bedding plane faults (slippage along bedding planes). A striking example of flexural slip along bedding planes occurred during the Northridge earthquake, when numerous bedding plane faults ruptured across the surface of newly graded roads and pads in a subdivision near Santa Clarita. The ruptures were accompanied by uplift and warping of the nearby ground. Because of the presence of steeply dipping bedding planes, secondary fault rupture poses a potentially significant impact at the site.

b. Seismic Ground Shaking

There is no realistic way to avoid seismic shaking. However, the hazard of seismic shaking at the project site is not significantly greater than the surrounding areas or other hillside areas in southern California. Strong earthquake-induced ground shaking could be triggered by seismic activity on any of the faults listed in Exhibit 4.4-1 and could result in damage to buildings and infrastructure. Seismic performance goals generally expect that some property damage will be sustained in a moderate to large earthquake, but damage should be repairable and not life-threatening. For residential development, structures should be able to:

- Resist minor earthquakes with no damage.
- Resist moderate earthquakes with some nonstructural damage.
- Resist major earthquakes with some structural damage, but with a low likelihood of collapse.

Design of structures in accordance with the current *Uniform Building Code* will promote safety and reduce the damaging effects of seismic shaking, thereby reducing impacts to a less-than-significant level. Single-family wood-frame structures generally perform well during an earthquake. However, asymmetrical floor plans should be avoided because these kinds of buildings tend to twist in addition to shake laterally. Building wings tend to act independently during an earthquake, resulting in differential movements and cracking. Split-level foundations are also not likely to perform as well during a near-source earthquake.

c. Secondary Seismic Hazards

Several secondary phenomena are associated with strong seismic shaking, especially in areas with a relatively shallow ground water table, and underlain by loose, granular deposits. These phenomena are discussed below.

(1) Liquefaction

Liquefaction occurs when loose, cohesionless, water-saturated soils (generally fine-grained sands) are subjected to strong seismic ground motion of significant duration. These soils essentially behave like liquids, losing all bearing strength. Structures built on these soils may tilt or sink when the soils liquefy. Liquefaction more often occurs in earthquake-prone areas underlain by young alluvium where the groundwater table is less than 50 feet below the ground surface. The State Seismic Hazard Zone Maps for this region do not indicate the presence of potentially liquefiable soils in the project area. This is because most of the site is elevated and underlain by bedrock. However, preliminary geotechnical studies indicate localized areas underlain by loose alluvium may be susceptible to this hazard. Therefore, liquefaction is potentially significant for a small portion of the site. Future detailed geotechnical studies for the project should determine if a liquefaction hazard in these areas does exist, quantify any ground deformation that may result, and provide remedial recommendations.

(2) Seismically Induced Settlement

Strong ground shaking can cause settlement by allowing sediment particles to become more tightly packed, thereby reducing pore space. Unconsolidated, poorly packed alluvial deposits are especially susceptible to this phenomenon. Artificial fills, if not adequately compacted, may also experience seismically induced settlement. Given that there are several areas on-site mantled with uncontrolled artificial fill and with thick alluvial sediments, the seismic settlement at the site is considered a potentially significant impact.

(3) Ground Lurching

Certain soils have been observed to move in a wave-like manner in response to intense seismic ground shaking, forming ridges or cracks on the ground surface. At present, the potential for ground lurching to occur at a given site can be predicted only generally. Areas underlain by thick accumulations of colluvium appear to be more susceptible to ground lurching than bedrock. Under strong seismic ground motion conditions, lurching can be expected within loose, cohesionless soils, or in clay-rich soils with a high moisture content. Generally, only lightly loaded structures such as pavement, fences, pipelines and walkways are damaged by ground lurching; more heavily loaded structures appear to resist such deformation. Because of the presence of colluvium, ground lurching due to seismic shaking is considered to pose a potentially significant impact at the site.

(4) Seismically Induced Landsliding

Strong earthquake-generated ground motions can worsen existing unstable slope conditions, particularly if coupled with saturated ground conditions after an intense rainfall period. The most common types of earthquake-induced landsliding in terrain similar to that of the project area are soil slips, shallow slumps, and shallow slides. These types of failures are most commonly associated with steep natural slopes and road cuts. The 1989 Loma Prieta and the 1995 Northridge earthquakes showed that reactivation of larger deep-seated landslides is also possible. Because of the steep natural slopes on the project site, many of which are to remain adjacent to the developed areas, seismically induced landsliding poses a significant impact at the site.

(5) Deformation of Sidehill Fills

Sidehill fills are artificial fill wedges typically constructed on natural slopes to create roadways or level building pads. Deformation of sidehill fills was noted in earlier earthquakes, but this phenomenon was particularly widespread during the Northridge earthquake. Older, poorly engineered road fills were most commonly affected, but in localized areas, building pads of all ages experienced deformation. The deformation was usually manifested as ground cracks at the cut/fill contacts, differential settlement in the fill wedge, and bulging of the slope face. The amount of displacement on the pads was generally 3.5 inches or less, but this resulted in minor to severe property damage. This phenomenon was most common in relatively thin fills (30 feet or less) placed near the tops or noses of narrow ridges.

(6) Ridgetop Fissuring and Shattering

Linear, fault-like fissures occurred on ridge crests in a relatively concentrated area of rugged terrain in the Santa Cruz Mountains during the Loma Prieta earthquake. Shattering of the surface soils on the crests of steep, narrow ridgelines occurred locally in the 1971 San Fernando earthquake, but was widespread in the 1994 Northridge earthquake. Ridgetop shattering (which leaves the surface looking as if it was plowed) by the Northridge earthquake was observed as far as 22 miles away from the epicenter. In the Sherman Oaks area, severe damage occurred locally to structures located at the tops of relatively high (greater than 100 feet), narrow (typically less than 300 feet wide) ridges flanked by slopes steeper than about 2.5:1 (horizontal:vertical). It is generally accepted that ridgetop fissuring and shattering are the result of intense amplification or focusing of seismic energy due to local topographic effects. Because of the proximity to the Whittier Fault, as well as the proposed locations of some residential neighborhoods at or near the top of steep ridges, this secondary hazard is considered to be potentially significant.

d. Slope Stability

(1) Gross Slope Stability

Gross slope stability refers to deep-seated failures, such as the large landslide complex on the north-facing slope above Tonner Canyon. Deep-seated failures can occur on natural or man-made slopes. The potential for slope failure is dependent on many factors and their interrelationships. Some of the most important factors include slope height, slope steepness, shear strength, and orientation of weak layers in the underlying geologic units, as well as pore water pressures. Joints and shears, which weaken the rock fabric, allow penetration of water leading to deeper weathering of the rock along with increasing pore pressures, increasing the plasticity of weak clays, and increasing the weight of the land mass. For engineering of earth materials, these factors are combined in calculations to determine if a slope meets a minimum safety standard. The generally accepted standard is a factor of safety of 1.5 or greater (where 1.0 is equilibrium, and less than 1.0 is failure). Although existing landslides are not widespread in the project area, it is probable that many of the steeper hillsides do not meet the minimum factor of safety, and slope stabilization may be needed when these slopes are adjacent to developed areas. Graded slopes or graded/natural slope combinations must also meet these minimum engineering standards.

The geologic structure is generally favorable with respect to potential bedding plane failures. Bedrock units that underlie the site are very steeply dipping, and in some areas are near vertical. The potential hazard of slope failure then becomes one of several other types. These types include large rotational failures of steep, high slopes and smaller wedge-type failures resulting from the intersection of bedding planes and fractures or faults (similar to those that have occurred on the Orange Freeway slope adjacent to Brea Olinda High School). These types of failures could involve natural slopes, graded slopes, or combinations of both.

Although 2:1 or flatter slopes can be grossly unstable if the underlying geologic unit is weak, more often a substandard factor of safety is due to slope gradients steeper than 2:1. There are several areas in Neighborhoods 4, 6, and 7 where existing slopes descending below daylight cut lots are steeper than 2:1. In some cases this is due to natural stream erosion; in other areas, natural slopes have been made steeper by excavations for roads, well pads, and other facilities. For example, in the canyon to be preserved between Neighborhoods 4 and 7, the canyon walls in several areas are as steep as 1:1, and range up to about 115 feet high. Numerous small slope failures have already occurred on these slopes. Steep natural slopes can also pose a hazard to daylight fill lots (those lots formed by filling next to an ascending natural slope). Such conditions are present in localized areas of Neighborhoods 1, 4, 5 and 7, which have ascending natural slopes ranging up to 160 feet in height. Consequently, without mitigation, gross slope instability is considered a significant impact to the site.

Gross stability of the natural and proposed slopes should be analyzed prior to grading by the soil engineer and engineering geologist. Conclusions and recommendations should be supported by additional geologic mapping and subsurface investigation as needed. Unstable slopes can be mitigated by redesign, such as flattening the slope gradient, lowering the height of the slope, or changing the slope orientation. Potential instability can also be mitigated by earthwork measures such as engineered buttresses or

retaining walls. Stabilization of slopes in accordance with current soil engineering standards and practices should reduce the impact of gross slope instability to a level of non-significance.

(2) Surficial Slope Stability

Surficial slope failure refers to shallow slides, generally less than about 15 feet deep, of which there are many types. The most common types are described below.

- ***Slope Creep*** - Slope creep in general involves deformation and movement of the outer soil or rock materials in the face of the slope, due to the forces of gravity overcoming the shear strength of the material. Soil creep is the imperceptibly slow and relatively continuous downslope movement of the soil layer on moderate to steep slopes. Creep is most common in soils that develop on fine-grained bedrock units. Rock creep is a similar process, and involves permanent deformation of the outer few feet of the rock resulting in folding and fracturing. Rock creep is most common in highly fractured, fine-grained rock units, such as siltstone and claystone.

  Creep also occurs in graded fill slopes. This is thought to be related to the alternate wetting and drying of slopes constructed with fine-grained, expansive soils. The repeated expansion and contraction of the soils at the slope face leads to loosening and fracturing of the soils, thereby leaving the soils susceptible to creep. While soil creep is not catastrophic, it can cause damage to structures and improvements located at the top of the slope.

- ***Earth Flow*** - This type of slope failure is a persistent, slow-moving, lobe-shaped slump that typically comes to rest on the slope not far below the failure point. Earth flows commonly form in fine-grained soils (clay, silt and fine sand), and are mobilized by an increase in pore water pressure caused by infiltration of water during and after winter rains. Earth flows occur on moderate to steep slopes, typically in the range of about 15 to 35 degrees.

- ***Soil Slip*** - This type of failure is generated by strong seismic shaking or winter storms, and is widespread in the steeper slope areas, particularly after winters with prolonged and/or heavy rainfall. Failure occurs on canyon sideslopes, and in soils that have accumulated in swales, gullies and ravines. Slope steepness has a strong influence on the development of soil slips, with most generated on slopes between the range of about 27 to 56 degrees.

- ***Debris Flow*** - This type of failure is the most dangerous and destructive of all types of slope failure. A debris flow (also called mudflow, mudslide, and debris avalanche) is a rapidly moving slurry of water, mud, rock, vegetation and debris. Larger debris flows are capable of moving trees, large boulders, and even cars. As with soil slips, the development of debris flows is strongly tied to exceptional storm periods of prolonged rainfall. Failure occurs during an intense rainfall event, following saturation of the soil by previous rains.

A debris flow most commonly originates as soil slip in the rounded, soil-filled "hollow" at the head of a drainage swale or ravine. The rigid soil mass is deformed into a viscous fluid that moves down the drainage, incorporating into the flow additional soil and vegetation scoured from the channel. Debris flows also occur on canyon walls, often in soil-filled swales that do not have topographic expression. The velocity of the flow depends on the viscosity, slope gradient, height of the slope, roughness and gradient of the channel, and the baffling effects of vegetation. Even relatively small amounts of debris can cause damage from inundation and/or impact. Recognition of this hazard led FEMA to modify its National Flood Insurance Program to include inundation by "mudslides."

Watersheds that have been recently burned yield greater amounts of soil and debris than those that have not burned. Erosion rates during the first year after a fire are estimated to be 15 to 35 times greater than normal, and peak discharge rates range from 2 to 35 times higher. These rates drop abruptly in the second year, and return to normal after about 5 years. In addition, debris flows in burned areas are unusual in that they can occur in response to small storms and do not require a long period of antecedent rainfall. These kinds of flows are common in small gullies and ravines during the first rains after a burn, and can become catastrophic when a severe burn is followed by an intense storm season.

Because of the natural drainage swales and the steep natural slopes that will remain adjacent to developed areas, surficial slope instability is considered a significant impact without remediation.

Surficial stability of the natural and proposed slopes should be analyzed prior to grading by the soil engineer and engineering geologist. Conclusions and recommendations should be supported by additional geotechnical data as needed. Surficially unstable slopes can be mitigated by redesign, such as flattening the slope gradient, or by earthwork measures such as constructing the outer part of the slope with a stabilization fill blanket. For surficial instability on natural slopes adjacent to the development, catchment areas or diversion structures are generally used. These include such structures as debris walls along the toes of slopes and basins at the mouths of larger drainages. Slope stabilization or the incorporation of protective devices into the design of the project should reduce the impact of surficial slope instability to a level of non-significance.

e. Compressible Soils

A significant amount of compressible soils (younger alluvium and colluvium) is present, primarily within the existing canyons and tributary drainages. Other potentially compressible soils include the upper few feet of the older alluvium, landslide debris, topsoil, and uncontrolled fills. These materials vary widely in density; however, settlement could occur if fill embankments or structures are placed directly on them. Dry, sandy intervals within the older or younger alluvium may be subject to collapse upon the addition of landscape water. These soils will have a significant impact on development of the site.

f. Expansive Soils

Expansive soils are soils or sedimentary rock that shrink or swell as the moisture content changes. Clayey materials can change significantly in volume, which can lead to uplift or cracking of foundation elements or other rigid structures, such as sidewalks, driveways and patios. The bedrock and surficial soils at the site will have a wide range of expansion potential, but are generally expected be in the low to moderate range. Soils with a high to very high expansion potential are expected to be minor in occurrence. Since moderately to highly expansive soils are likely to be present on the site, this is a potentially significant impact.

g. Corrosive Soils

Limited testing indicates that the on-site soils are generally not corrosive to concrete; however, additional sulfate testing should be performed as development proceeds. The soils on-site are expected to be highly corrosive to ferrous metals, based on testing of similar soils at the adjacent Olinda Ranch project. In addition, due to the varied sediment types throughout the project area, soil corrosion potential may vary significantly across the project area. Corrosive soils will have a significant impact on pipelines and foundation elements made of ferrous metals.

h. Tar Seeps

Surface oil seepage is a natural phenomenon that occurs in numerous areas of California, both onshore and offshore. In southern California, there are numerous communities in the counties of Los Angeles, Ventura, and Santa Barbara that contain natural oil seeps. The most well-known examples are located in the Rancho La Brea area of the City or Los Angeles and in the cities of Santa Barbara and Carpenteria. Development in these areas presently includes commercial, residential, schools and parks. The crude oil emanating from the seeps is not classified as a hazardous substance by the State of California. The seeps are, however, generally considered to be unsightly and a "nuisance hazard."

The Tonner Hills Planned Community minimizes development in those portions of the site where the heaviest oil seeps have been observed at the surface. However, the northern portion of Neighborhood 5 encroaches into a small area where surface oil seeps have been previously mapped. Further, the planned cuts in Neighborhoods 5 and 6, either for design cuts or over-excavation, may encounter oil-bearing soils, and possibly seeping oil. In addition, a portion of the Tonner Canyon entrance road crosses a mapped oil seep area (see Exhibit 4.15-3 on page 4.15-29).

At the adjacent project, Olinda Ranch, the oil seepage encountered during grading was treated in several ways. The primary mitigation measure consisted of over-excavation a minimum of 15 feet below final grades. This mitigation measure was aimed at retarding the upward migration of oil by placing a relatively dense soil layer over the oil-bearing bedrock. This method was chosen based on the observation that the relatively homogeneous older alluvium at the site had not been impregnated with oil, even where it was directly overlying oil-bearing bedrock.

Second, where areas of more concentrated seeps were observed during grading, subdrains were installed at the base of the fill cap. The purpose of the subdrains was to create a preferred underground pathway for the oil to migrate to collection vaults located in open space areas. Three abandoned oil well casings that were providing a conduit for oil to reach the surface were also provided with oil collection systems. The collection vaults were vented so that natural gases could escape to the atmosphere. The vaults will be cleaned out as needed with a vacuum truck. A clarifier was installed for a subdrain in the eastern canyon bottom that was producing a significant amount of water in addition to a small amount of oil. The clarifier, as well as two of the vaults, are presently collecting oil from the subdrain systems.

The adjacent development's site grading began in 1997, which implemented the overexcavation measures and constructed subdrains. To date, this tar seep mitigation has been successful. Historically, tar seeps, which are prevalent throughout southern California, were mitigated simply by being covered with sand. The proposed mitigation measures for Tonner Hills will greatly reduce residential exposures to tar seeps.

Oil seeps and oil-bearing bedrock can have significant impacts on the grading logistics, schedules and cost. Further, due to the dynamic and changing nature or hydrocarbon seepage, it should be recognized that the occurrence of oil seepage in the future cannot be entirely eliminated. However, with the implementation of remedial measures, the hazards associated with oil seepage can be reduced to an insignificant level.

i. Methane Gas

Methane gas is present in localized areas of the project site. A naturally occurring gas, methane typically forms as a byproduct of bacterial digestion of organic matter, and therefore occurs ubiquitously, although generally at very low concentrations, in the air we breathe. If free of impurities, methane is colorless and odorless, and under normal atmospheric conditions, does not pose a health hazard. However, at high concentrations, this gas is flammable, and at concentrations of between 55,000 and 140,000 parts per million, it is explosively combustible.

Natural gases migrate upward through permeable sediments and/or structures, eventually reaching the surface and mixing with the atmosphere. However, man-made structures such as pavement and building foundations can prevent gas from venting to the atmosphere. Methane is lighter than air and can accumulate in the upper reaches of poorly ventilated structures, such as crawl spaces and attics. Eventually, if the gases are not vented, their concentrations can reach explosive limits, posing a significant explosion and fire hazard.

Please refer to Section 4.15, Hazards for a detailed discussion of methane impacts, including remedial mitigation measures.

j. Reservoirs

The existing East Side Reservoir and Valencia Reservoir water tanks are located near the proposed development areas, and an additional water tank is proposed as part of the project. One of the existing water tanks is located in the northeast corner of the project boundary within the Alquist-Priolo Zone for the Whittier Fault, and is located within a few feet of an active trace of the fault. The proposed water tank would be built in the same area. The other existing water tank is located approximately 500 feet north of Neighborhood 4. Based on the proposed development patterns and the existing topography below the tank sites, it is possible that in the event of tank failure, some inundation of Neighborhoods 1, 2, and 4 could occur.

The Humble Reservoir is located approximately 600 feet northwest of Neighborhood 8. Because of the topography of the area, rupture of this reservoir does not pose a significant threat of inundation to Neighborhood 8. Most of Neighborhood 8 is topographically higher than the reservoir, and a ridge on the east side of the reservoir would direct flow from the reservoir south into an unnamed southerly channel.

A tank farm associated with the on-site oil facility and oil production is proposed to be located in the northeast corner of the project boundary. This tank farm would be located within the Alquist-Priolo Earthquake Fault Zone and would be bisected by a trace of the Whittier Fault. In the event of tank rupture from an earthquake on the Whittier Fault, the local topography would most likely direct all flow into Tonner Canyon, away from the planned residential neighborhoods.

A strong seismic event on the active strands of the Whittier Fault could damage water tanks within and near the development. This could result in inundation of Neighborhoods 1, 2 and/or 4. The existing and planned water tanks located adjacent to the Whittier Fault and within the Alquist-Priolo Earthquake Fault Zone have the greatest potential for rupture or serious damage from an earthquake on the fault. Tank rupture or collapse would result in significant impact to the development.

4.4.4 Mitigation Measures

G-1 **Fault Investigations** - Prior to issuance of the grading permit, the project applicant shall ensure that development throughout the project area shall include geologic investigations performed by a California-licensed geologist or engineering geologist to document the location, orientation, recency of activity, and direction of anticipated offset for active or potentially active faults that impact the development area. In particular, the precise location and activity of the Tonner Fault should be determined because of its proximity to future home sites (approximately 50 feet). Appropriate setbacks from designated active faults should be included in project planning and design and a report should be submitted to the Manager, Subdivision and Grading.

The fault investigations should include an evaluation of the potential for secondary ground rupture.

G-2 **Geotechnical Investigation and Report** - Prior to the issuance of a grading permit, the project applicant shall submit a geotechnical report to the Manager, Subdivision and Grading, for approval. The report shall be prepared by a California-registered engineering geologist and licensed civil engineer with experience in soil engineering, and shall include technical information and recommendations in the format required by the County of Orange Grading Manual.

G-3 **Liquefaction and Related Ground Deformation** - Prior to issuance of a grading permit, the project applicant shall ensure that the geotechnical investigation fully characterizes the presence and extent of liquefiable soils, and shall submit a report to the Manager, Subdivision and Grading. The project is not within a state-delineated Seismic Hazard Zone for liquefaction; however, the state maps may not show all potentially liquefiable areas. Therefore, a site-specific analysis of the liquefaction potential in areas of the property underlain by alluvium should be included in future detailed geotechnical investigations. In order to assist in this analysis, the state has published specific guidelines for evaluating and mitigating liquefaction (California Division of Mines and Geology Special Publication 117, 1997). In general, the liquefaction investigation identifies the depth, thickness, and lateral extent of any liquefiable layers that would affect the project site. If such layers exist, an analysis is then performed to estimate the type and amount of ground deformation that might occur, given the seismic potential of the area.

Mitigation measures generally fall into two categories: ground improvement or foundation design. Ground improvement measures include removal and recompaction of low density soils, removal of excess ground water, in-situ ground densification, and other types of ground improvement (such as grouting or surcharging). Special foundations that may be recommended range from deep piles to reinforcement of shallow foundations (such as post-tensioned slabs). The type (or combinations of types) of mitigation depends on the site conditions and on the nature of the proposed project (California Division of Mines and Geology, 1997).

G-4 **Slope Stability** – Prior to issuance of the grading permit, the existing slopes that will remain adjacent to development areas should be investigated and analyzed for gross stability in accordance with current soil engineering standards. Graded slopes (including cut, fill, and cut-over-fill slopes) and graded/natural slope combinations will also require investigation and analysis. Grossly unstable slopes can be stabilized by buttressing, flattening the slope gradient, lowering the height of the slope, constructing the slope with geogrid reinforcement, or by combinations of these methods. Where slopes cannot be stabilized, building setbacks will be imposed.

Developed areas adjacent to ascending natural slopes, and in particular those areas adjacent to ascending natural drainages, will require protection from surficial failures. There are three approaches to this: 1) the potential debris and sediment can be removed from the natural slope; 2) the potential debris and sediment can be contained in some kind of catchment device, or 3) the potential debris and sediment can be diverted to open space areas. The first alternative requires

grading of the natural slope, and often includes placement of some kind of subdrainage system. Therefore, catching and/or diverting the debris (option 2 and/or 3) is most often used. This can be accomplished by constructing catchment basins in larger canyons and constructing debris walls along the toes of the slopes. Debris walls are typically about 4 feet high and are designed either for impact or diversion. Another alternative is to elevate the daylight fill lots above the toe of the slope several feet, thereby creating a catchment area at the toe. This may be used by itself or in combination with a wall. All of these methods have been successfully used on hillside developments in the Puente Hills. Buttressing may be required for natural slopes that are shown by geotechnical studies to be especially prone to surficial failures, or those that are already impacted by failures. If the hazard cannot be mitigated, building setbacks would be imposed.

Specific recommendations for remediation of slope instability shall be included in the geotechnical report for the project, which shall be submitted for review and approval to the Manager, Subdivision and Grading.

G-5 **Compressible/Collapsible Soils** - Prior to issuance of the grading permit, a geotechnical soil analysis shall be performed to characterize the presence of compressible and/or collapsible soil within the project site. The findings and specific recommendations shall be included in the geotechnical report for the project and shall be submitted for review and approval to the Manager, Subdivision and Grading. Compressible soils are routinely removed and recompacted in proposed fill areas. Where perimeter fill slopes descend into natural canyons, the compressible soils are not only removed under the fill slope, but for a specified distance beyond the toe of the fill slope. This provides support for the slope and mitigates the potential for settlement. The removal area generally extends beyond the grading design at a minimum 1:1 projection (if landslides are present, a 1.5:1 or 2:1 projection is used). A 1:1 projection means the bottom of the removal extends beyond the toe to a horizontal distance equal to the depth of the removal bottom below the toe. Consequently, this distance is primarily dependent on the thickness of the compressible soils, but is also dependent on the gradient of the natural slope below the fill (the steeper the slope, the farther the removal is extended).

G-6 **Expansive and Corrosive Soils** - Prior to issuance of the grading permit, and as part of the geotechnical investigation performed by a California licensed geologist and geotechnical engineer, the presence and extent of potentially expansive and corrosive soils within the project site shall be characterized. The best defense against expansive soils in new developments is to avoid placing expansive soils near the surface. If this is unavoidable, building areas with expansive soils are typically "presaturated" to a moisture content and depth specified by the soil engineer, thereby "pre-swelling" the soil prior to constructing the structural foundation or hardscape. This method is often used in conjunction with designing stronger foundations that can resist small ground movements without cracking. Good surface drainage control is essential for all types of improvements, both new and old.

Testing for chemical properties is routinely conducted by the soils engineer, particularly at the completion of site grading when final grade soils can be sampled. The impact of sulfate-rich soils on concrete can be mitigated by using special cement mixtures. The impact of corrosive soils on pipes and other metal structures in contact with the ground is generally mitigated by wrapping

or covering the structure with a non-corrosive protective material. In extreme cases, a corrosion engineer should be consulted.

G-7 **Tar Seeps** - The potential for naturally occurring crude oil seeps cannot be completely eliminated; however, it can be greatly reduced by the implementation of the following remedial measures.

- Prior to the issuance of a grading permit, a thorough analysis and preliminary remediation plan shall be prepared by the geotechnical consultant to reduce impacts of future oil seepage to a level of non-significance. The plan shall be submitted for review and approval to the Manager, Subdivision and Grading. For the residential areas, remedial grading will be required to reduce the potential for future oil seepage at finished grades. This could include deeper overexcavation, thereby placing a thick fill column between the seep and finish grade; a subsurface drainage and capture system; and/or higher compaction standards.

- Prior to issuance of a grading permit, oil well abandonment plans should be evaluated to determine potential impacts that the closing of wells may have on natural gas pressures and surface oil seepage rates.

- During grading, the geotechnical consultant shall observe and map all excavations for oil seepage. The geotechnical consultant shall provide specific remedial recommendations based on the actual conditions encountered. Remedial recommendations shall include a means by which to reduce the potential for future landscape irrigation water to form a perched ground water table on the oil-bearing bedrock or fill.

- During grading the location of any subsurface, utility lines shall be overexcavated a minimum of 2 feet below the base of the line in bedrock or soils with naturally occurring hydrocarbon. The geotechnical consultant shall evaluate any utility line located in oil-bearing areas for its potential to provide a pathway for oil migration (i.e., via the permeable bedding sands). Oil-bearing fill materials shall not be placed as utility line backfill.

- During grading, the geotechnical and/or environmental consultant shall evaluate the need for clarifiers in order to reduce the potential of water carrying crude oil to impact the site.

- Prior to issuance of building permits, the geotechnical consultant shall issue an as-graded report documenting the location of naturally occurring oil and any remedial measures installed and prepare a monitoring and maintenance plan for tar seep drainage and collection systems. The report and plan shall be submitted for approval to the Manager, Subdivision and Grading, and the Manager, Current Planning, for approval.

- The oil seep analysis and mitigation shall be performed by a California registered engineering geologist and soil engineer. All reports, work plans, and mitigation plans shall be submitted to the Manager, Subdivision and Grading, for review and approval.

G-8 **Reservoirs** - Prior to issuance of the grading permit, the flow directions, flow volumes, and inundation levels shall be estimated by the design civil engineer for the project and submitted to the Manager, Subdivision and Grading, for approval. If necessary, engineered devices or structures should be considered to redirect any potential flow away from residential neighborhoods. If feasible, the water tanks should be relocated outside the Alquist-Priolo Earthquake Fault Zone. The presence or absence of faults should be determined by conducting a detailed geologic investigation.

G-9 **Observation and Testing** – Prior to issuance of building permits, a final report summarizing the observation and testing performed during grading by the geotechnical consultant and for the project shall be submitted to the Manager, Subdivision and Grading, for approval.

G-10 **Grading** - All grading shall be performed in accordance with the County of Orange Grading and Excavation Code, the County of Orange Grading Manual, and the appropriate sections of the Uniform Building Code.

4.4.5 Cumulative Impacts

Cumulative impacts associated with geological conditions resulting from the proposed project development in the vicinity and surrounding uses include short-term impacts as the result of increases in erosion due to grading activities. Proposed on-site development and in the surrounding areas would expose persons and property to potential impacts due to seismic activity. Construction in accordance with the standards of the *Uniform Building Code* will reduce the potential for significant structural impacts due to seismic activity to the maximum extent feasible. The development of the Tonner Hills Planned Community will not significantly impact regional or cumulative geologic conditions.

4.4.6 Unavoidable Adverse Impacts

Implementation of the recommended mitigation measures specified above will reduce the potentially significant geological impacts to a less-than-significant level.

Strong seismic shaking is endemic in southern California, and future residents of Tonner Hills will not be exempt from this risk if it occurs. However, all feasible mitigation measures identifiable at this point have been incorporated and means to identify additional measures at future appropriate levels have been recited in the mitigation measures. The only unavoidable adverse impact is the exposure of people and property to this statewide risk.

4.5 Hydrology and Drainage

This section analyzes the surface drainage and on-site hydrological conditions relevant to the development of the Tonner Hills Planned Community. Issues concerning water quality, water supply, and distribution systems are discussed in Section 4.6, Water Quality and Section 4.17, Utilities and Services Systems. The following analysis is based on geotechnical reports prepared by Chambers Group, Inc., hydrology studies prepared by The Keith Companies, and Phase I and Phase II reports prepared by Harding ESE. A copy of each report is found in the Technical Appendices of this EIR.

4.5.1 Existing Conditions

a. Regional Setting

The proposed project is situated along the northwestern portion of Chino Hills and the southeastern edge of Puente Hills. The existing drainage pattern from the Puente Hills flows into the Loftus Diversion Channel and the Fullerton Creek, which both flow into the San Gabriel River, and is in the jurisdiction of the Santa Ana Regional Water Quality Control Board. Neither the existing surface water nor the groundwater generated by the project area flows into the Santa Ana River. The project site is situated along an east-to-west sloping ridge and is bounded by Tonner Canyon to the north and La Habra Valley to the south. The project site comprises a series of hills and ridges with elevation levels ranging from 450 feet above sea level along the southern project boundary up to 800 feet above sea level along the northeastern project boundary.

b. Existing On-Site Regulatory Drainage

The topography of the site is steep and rugged, with a prominent ridge line along the north boundary. General on-site drainage begins at the northerly ridge tops and flows southerly in various well-defined natural open drainage ditches toward the existing Lambert Road. The surface runoff is then picked up by various existing culverts, with headwalls and inlets, along Lambert Road and continues to flow south in the existing drainage system (Exhibit 4.5-1).

The existing sediment composition that forms Puente Hills is relatively impermeable and has a slow fluid infiltration rate as the result of non-water-bearing rock. The combination of the sediment composition of Puente Hills and the low precipitation rate of the coastal basin results in limited groundwater development in the project area[9]. Due to its ridgetop location at the northerly edge of the project area, the project site does not receive additional drainage water from outside its boundaries. One exception to this is a drainage pipe under Valencia Avenue that conveys stormwater from the neighboring Olinda Heights project to the east. This drainage remains in close proximity to Valencia Avenue and drains

[9] Phase 1 Site Assessment, QST environmental Inc., 7/9/98

through the Aera Oil property located at the northeast corner of Valencia Avenue and Lambert Road before ultimately crossing Lambert Road.

Stormwater runoff flows either from the high ridge to the north into Tonner Canyon, or southward through the natural canyons to ultimately drain beneath Lambert Road.

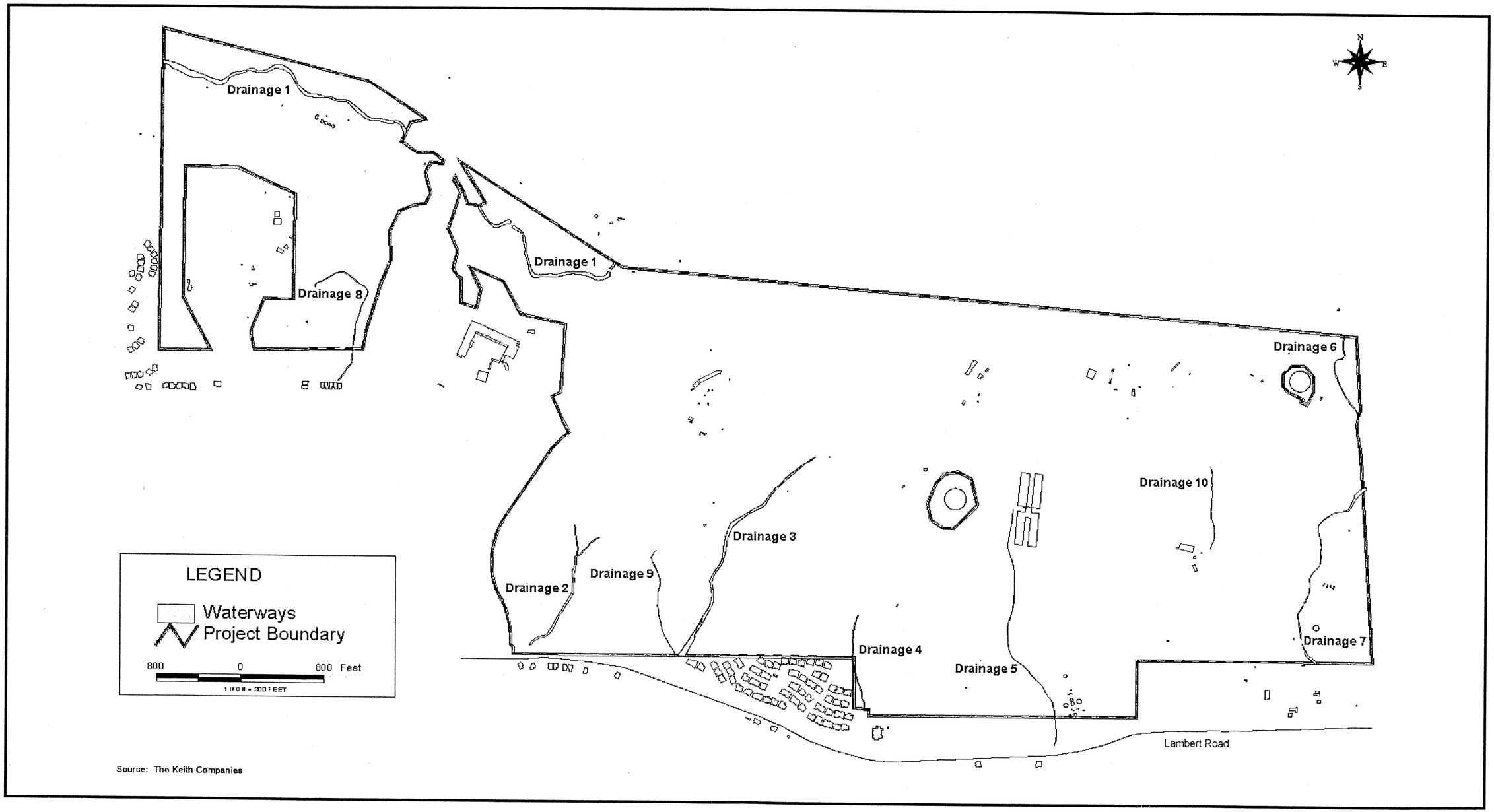
Existing on-site drainage within the project boundaries flows in a southerly and westerly direction. The project site consists of ten existing drainage courses that are of concern to the regulatory agencies (U.S. Army Corps of Engineers or California Department of Fish and Game) (Exhibit 4.5-1). Nine of the ten courses are designated as seasonal drainage courses and contain only stormwater runoff. Six of the courses are designated by the U.S. Geological Survey as "blue-line" streams. The hydrology analysis includes calculations and flows for Tentative Tract 16047, which is adjacent to the project site but not a part of the Tonner Hills development.

(1) Tonner Creek (Drainage 1)

Tonner Creek contains 2.85 acres of wetland area subject to the U.S. Army Corps of Engineers (Corps) jurisdiction. Tonner Creek contains 7.07 acres of riparian habitat subject to the California Department of Fish and Game (CDFG) jurisdiction. The current drainage flows of Tonner Creek are contained within its steep banks. Riparian vegetation located on the banks of Tonner Creek (primarily willow and mule fat plants) and subject to CDFG jurisdiction are not Corps-defined wetlands and are therefore not subject to Corps jurisdiction. Therefore, CDFG jurisdiction (7.07 acres) extends beyond Corps jurisdiction (2.85 acres), which accounts for the greater areal extent of CDFG jurisdiction. The proposed project would avoid the majority of Drainage 1 wetland and riparian habitats. An existing paved road will be improved into Tonner Creek Road, resulting in the reconstruction of a bridge designed to mitigate impacts to Tonner Creek (Drainage 1).

(2) Drainage 2

Drainage 2 contains 0.55 acre of Corps and CDFG jurisdiction. Drainage 2 is an unvegetated channel with no riparian habitat subject to CDFG jurisdiction or Corps-defined wetlands. The drainage contains mainly upland vegetation. The west fork of Drainage 2 consists of a 4-foot ordinary high-water mark, while the east fork contains a 2.5-foot-wide ordinary high-water mark. Downstream in the main channel, there is evidence of a 12-foot ordinary high water mark that was mostly caused by the heavy rain years of the El Niño in 1997 and 1998. Drainage 2 flows across the proposed Mixed Use area and would affect 0.25 acres of Corps and CDFG jurisdictions within Drainage 2, none of which are Corps-defined wetlands or riparian habitat. Of the 0.25 acres of affected Corps and CDFG jurisdiction, 0.07 acre is a result of fuel modification.



Source: The Keith Companies

Exhibit 4.5-1
Existing Drainage Courses

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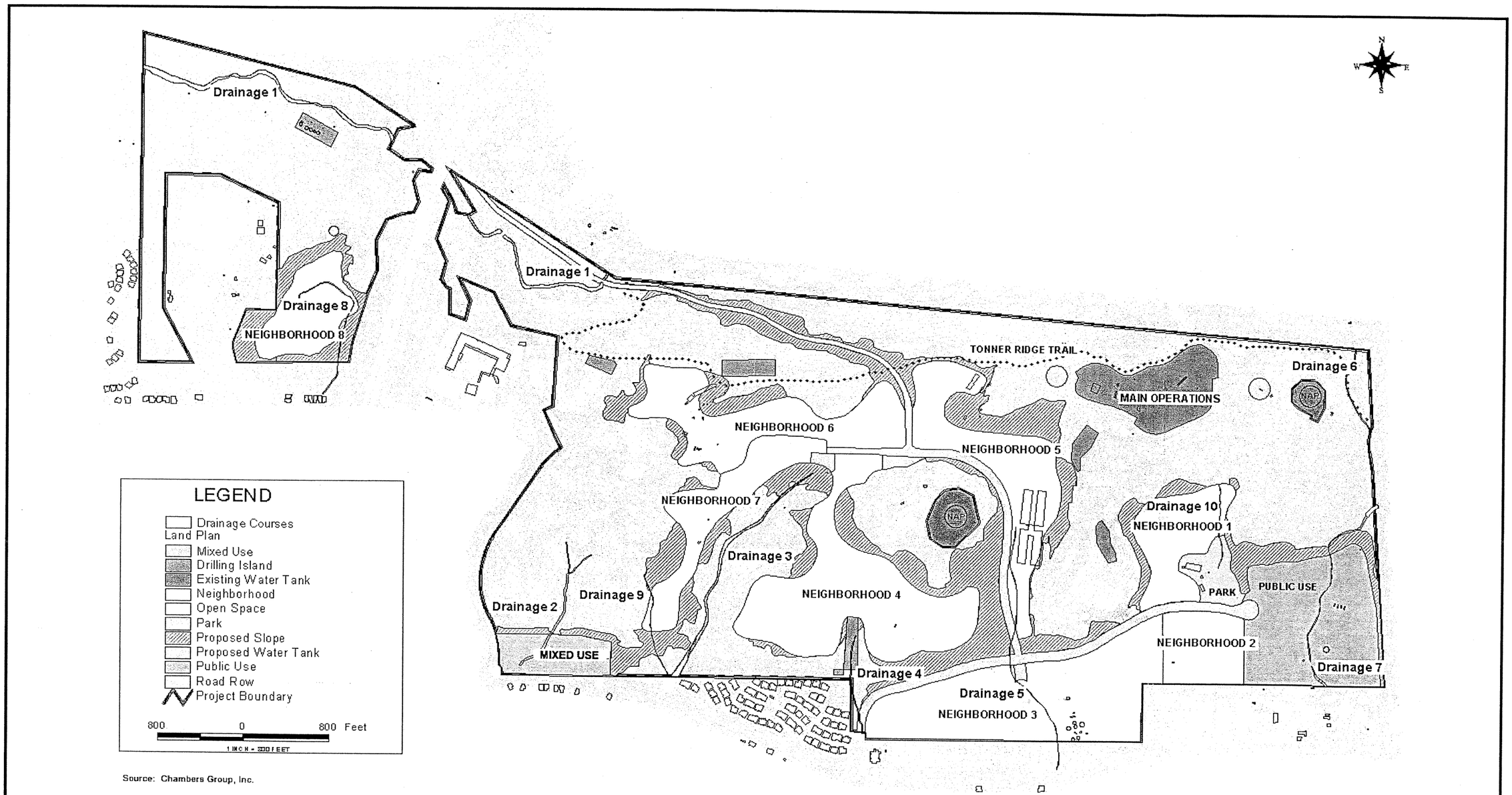

Source: Chambers Group, Inc.

Exhibit 4.5-2
Drainage Courses with Proposed Project

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(3) Cable Canyon (Drainage 3)

Cable Canyon contains 1.31 acres of Corps jurisdiction, none of which are wetlands, and 6.52 acres of CDFG jurisdiction. Flora species recorded on the bottom channel of Cable Canyon included mule fat, giant reed (*Arundo donax*), castor bean (*Ricinus communis*), bristly ox-tongue (*Picris echioides*), jimson weed (*Datura wrightii*), and Mexican elderberry (*Sambucus mexicana*). This canyon contains a large walnut (*Juglans californica* var. *californica*) and pepper tree (*Schinus molle*) woodland. Cut banks along with cracked mud at the channel's lowest portion indicated that water flow was evident on-site. The proposed project would affect 0.05 acre of Corps jurisdiction, none of which are wetlands, and 1.87 acres of CDFG jurisdiction, 1.82 acres of which are riparian habitat. Of the 1.82 acres of affected CDFG jurisdiction, 0.48 acre is a result of fuel modification.

(4) Drainage 4

Drainage 4 contains 0.17 acre of Corps and CDFG jurisdiction. Drainage 2 is an unvegetated channel with no riparian habitat subject to CDFG jurisdiction or Corps-defined wetlands. The drainage contains mainly upland vegetation. Drainage 4 is situated at the proposed main entrance of the planned community and would affect 0.03 acre of Corps and CDFG jurisdictions within Drainage 4, none of which are Corps-defined wetlands or riparian habitat.

(5) Drainage 5 (Previously Permitted – Not a Part of the Proposed Project)

Drainage 5 ranges between 3 and 5 feet wide, is approximately 2,400 feet in length on-site, and contains 0.19 acres of California Department of Fish and Game jurisdiction. Drainage 5 does not contain water except during storm events and does not support riparian vegetation. The banks of the drainage support upland vegetation, including eucalyptus, coastal sage scrub, and exotic weeds (e.g., black mustard). Drainage 5 has been previously permitted by the Army Corps of Engineers, the California Department of Fish and Game, and the County of Orange due to the urgency associated with soil remediation activities in this area and is not a part of this proposed project. Drainage 5 and its adjacent slopes contain hazardous wastes, including lead, asbestos, polychlorinated biphenyls (PCBs), and total petroleum hydrocarbons (TPH). The accumulation of waste is associated with the oil operations and drilling activities over the past 100 years where over 300 oil wells have been drilled on the project site and 210 wells are currently still active. Soil samples from Drainage 5 were analyzed in the hazardous waste site assessment conducted by Environmental Science & Engineering Inc. The analysis determined that Drainage 5 contained lead and asbestos concentration levels that are categorized as "hazardous" by the State of California. According to the Orange County Health Care Authority (OCHA), the waste identified in Drainage 5 will require remediation prior to the use of this property as a residential community. The presence of these hazardous wastes poses a potential threat to mitigate these potential impacts. Soil excavation from Drainage 5 will be subjected to soil remediation activities. A detailed mitigation plan for impacts associated with Drainage 5 was prepared by Chambers Group, Inc. in May 2000 and is available for review in the Appendix to this EIR. Impacts to Drainage 5 have been previously permitted

by streambed alteration agreement number 5-060-00 and by nationwide permit number 20 (permit No. 200001421-YJC).

(6) Drainage 6

Drainage 6 is located along the northeastern boundary of the site and contains 0.16 acre of Corps and CDFG jurisdiction, all of which are Corps-defined wetlands and riparian habitat. The vegetation within Drainage 6 is mainly dominated by arroyo willow, castor bean, and poison oak. The proposed project will avoid all of Drainage 6.

(7) Drainage 7

Drainage 7 contains 0.39 acres of Corps jurisdiction, of which 0.05 acre is Corps-defined wetlands. Drainage 7 contains 0.83 acre of CDFG jurisdiction, of which 0.49 acre is riparian habitat. However, of the 0.49 acre of riparian vegetation within Drainage 7, 0.34 acre consists of exotic invasive Giant reed *(Arundo donax)*. The remaining 0.15 acre of riparian vegetation consists of mule fat. Hydrological evidence included cut banks and sediment deposits; however, the southern portion of the drainage did not meet hydric soil criteria for a Corps-defined wetland. The northern portion of the drainage site consists of 0.06 acre of wetland vegetated with cattails (*Typha* sp.). The proposed project would affect 0.20 acre of Corps jurisdiction, none of which is wetlands, and 0.52 acre of CDFG jurisdiction, of which 0.32 acre consists of riparian vegetation.

(8) Drainage 8

Drainage 8 is located in the western portion of the project site and contains 0.18 acre of Corps jurisdiction, none of which are wetlands, and 0.34 acre of CDFG jurisdiction, of which 0.15 acre is riparian habitat. It is depicted as a blue line stream on the USGS topographic map but appears to have been altered since the 1981 photo-revision of the USGS map. The area, which was shown as a steep canyon on the USGS map, is now a broad, low-lying area that contains a narrow ordinary high-water mark through the center of the basin. Dominant vegetation included mule fat, coyote brush (*Baccharis pilularis*), golden bush (*Isocoma menziesii)*, and fennel (*Foeniculum vulgare*). The soil condition is dry and sandy with a soil color of 10YR 4/3, which does not meet the hydric soil criterion of a Corps-defined wetland. The proposed project would affect 0.13 acre of Corps jurisdiction within Drainage 8, none of which is wetlands, and 0.19 acre of CDFG jurisdiction, of which 0.06 acre is riparian habitat.

(9) Drainage 9

Drainage 9 contains 0.07 acre of Corps and CDFG jurisdiction. Drainage 9 is an unvegetated channel with no riparian habitat subject to CDFG jurisdiction or Corps-defined wetlands. The drainage supports upland vegetation. The proposed project would affect 0.06 acre of Corps and CDFG jurisdictions within Drainage 9, none of which is Corps-defined wetlands or riparian habitat. Of the 0.05 acres of affected Corps and CDFG jurisdiction, 0.01 acre is a result of fuel modification.

(10) Drainage 10

Drainage 10 contains 0.04 acre of Corps and CDFG jurisdiction. Drainage 10 is an unvegetated channel with no riparian habitat subject to CDFG jurisdiction or Corps-defined wetlands. The drainage supports upland vegetation. The proposed project would affect all of Drainage 10.

(11) Summary

Of the ten drainages with regulatory significance located on-site, seven would be affected by the proposed project (i.e., Drainages 2, 3, 4, 7, 8, 9, and 10), and three would remain unaffected (i.e., Drainages 1, 5, and 6, with Drainage 5 being previously impacted and permitted). Nine of the ten drainages ultimately flow southward to the Loftus Diversion Channel, an Orange County Flood Control District (OCFCD) facility. This drainage in turn flows into Fullerton Creek, which south-southwest into Coyote Creek. Water from this creek and its tributaries drains into the San Gabriel River. The tenth drainage is Tonner Creek (Drainage 1), which flows into Brea Creek, that also flows to Coyote Creek.

Corps jurisdiction located on the Tonner Hills project site totals approximately 5.73 acres of waters of the United States, including adjacent wetlands (Table 4.5-1). Of the 5.73 acres of Corps jurisdiction on-site, approximately 0.76 acre would be impacted by the proposed project, none of which is Corps-defined wetlands.

CDFG jurisdiction located on the Tonner Hills project site totals approximately 15.75 acres, including 14.39 acres of riparian habitat (Table 4.5-1). Of the 15.75 acres of CDFG jurisdiction on-site, approximately 2.95 acres would be impacted by the proposed project, of which 2.20 acres is riparian habitat. Of the 2.95 acres of affected CDFG jurisdiction, 0.56 acre is a result of fuel modification.

Table 4.5-1 - Tonner Hills Corps of Engineers and CDFG Jurisdictions

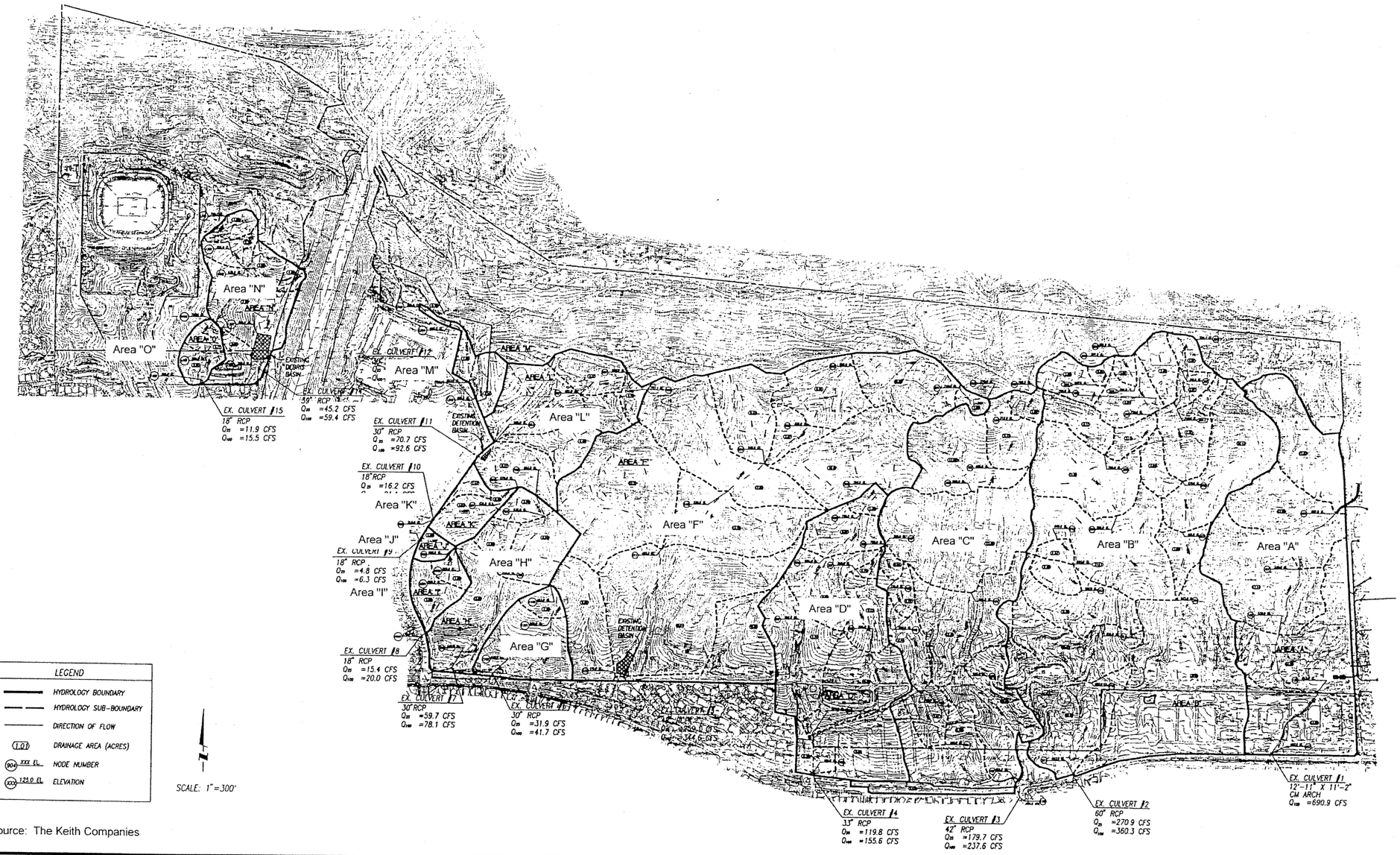
Existing Drainage courses	Total U.S. Water (acres)	U.S. Army Corps of Eng. Jurisdictional Area Wetlands Habitat (acres)	Calif. Dept. of Fish and Game Jurisdictional Area (acres)	Riparian Habitat (acres)
Drainage 1* (Tonner Creek)	2.85	2.85	7.07	7.07
Drainage 2	0.55	0	0.55	0
Drainage 3	1.31	0	6.52	6.52
Drainage 4	0.17	0	0.17	0
Drainage 5	Previously permitted (not part of the proposed project)			
Drainage 6	0.16	0.16	0.16	0.16
Drainage 7	0.39	0.05	0.83	0.49
Drainage 8	0.19	0	0.34	0.15
Drainage 9	0.07	0	0.07	0
Drainage 10	0.04	0	0.04	0
Total Acres	5.73	3.06	15.75	14.39

*Two existing bridges cross Tonner Creek.

c. Existing Hydrological Conditions – Pre-Development

The topography of the project tributary area is steep and rugged with a prominent ridgeline along the project's northern boundary. On-site drainage patterns begin along the northerly ridge tops and flow southerly into various naturally defined open ditches and drainage slopes, which ultimately drain into Lambert Road and Wild Cat Way.

The existing project site consists of 14 tributary areas that flow into Lambert Road and other adjacent roadways (Exhibit 4.5-3).



Source: The Keith Companies

Exhibit 4.5-3
Existing Drainage Areas

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Table 4.5-2 - Existing Drainage Flow Area Summary

Drainage Area	Tributary Area	Q25 (cfs)	Q100 (cfs)
A	293.5	-	690.9
B	158.41	270.9	360.3
C	90.52	179.7	237.6
D	55.1	119.8	115.6
F	152.60	259.1	344.6
G	11.5	31.9	41.7
H	23.4	59.7	78.1
I	5.6	15.4	20.0
J	1.6	4.8	6.3
K	6.2	16.2	21.1
L	29.06	70.7	92.6
M	4.91	11.5	15.0
N	20.5	45.2	59.4
O	4.0	11.9	15.5

Q25 = 25 year storm event, Q100 = 100 year storm event

- **Drainage Area A** flows into an existing 13'x11' feet box culvert located along Lambert Road (Exhibit 4.5-3). The tributary area for this drainage includes regulatory Drainages 6 and 7. The 100-year peak flow at the Lambert Road culvert is estimated to be 690.9 cfs (cubic feet per second). Of the 293.5 acres tributary to the Lambert Road crossing, 70.6 acres are from the Tonner Hills project, and the remainder is from the adjacent Olinda Heights project and the Olinda Alpha landfill.

- **Drainage Area B** flows into a 60-inch Reinforced Concrete Pipe (RCP) situated approximately 450 feet east of Sunflower Street. Flow enters this pipe by way of a series of inlets located east of this location. The upper reaches of this tributary area include regulatory Drainage 10. The 25-year peak flow for this drainage area at the Lambert Road crossing is estimated to be 270.9 cfs. The existing 60-inch RCP has the capacity to accept peak flow generated by the 25-year storm event. The farthest downstream inlet consists of a 60-inch RCP that accepts approximately 70.9 cfs, while the remaining 4 inlets situated upstream accepts approximately 200 cfs.

- **Drainage Area C** currently flows into a 42 inch RCP situated along Lambert Road. The tributary area for this drainage includes regulatory Drainage 5. The 25-year peak flow at Lambert Road for this drainage area is estimated to be 179.7 cfs. The existing 42-inch RCP does not have the design capacity to accommodate this flow. This storm drain's design capacity is capable of handling 126 cfs. Excess stormwater flow of 53.7 cfs will travel on the surface down Sunflower Street.

- **Drainage Area D** flows to a 33-inch RCP on Kramer Boulevard approximately 350 feet north of the intersection with Lambert Road. The tributary area for this drainage includes regulatory Drainage 4. The 25-year peak flow at Lambert Road for Drainage Area D is estimated to be 119.8 cfs. The existing 33-inch RCP has the design capacity to accept this flow.

- **Drainage Area F** flows into an existing detention basin just north of the project boundary and outflows through a 48-inch RCP. The 25-year peak flow into the detention basin is estimated to be 259.1 cfs. The existing 48-inch RCP constricts the outflow from the basin, reducing the 25-year peak flow leaving the site to 172 cfs. The tributary area for this drainage includes regulatory drainages 3 and 9.

- **Drainage Area G** flows to a 30-inch RCP at Lambert Road. Drainage Area G has a 25-year peak flow of 31.9 cfs. The 30-inch RCP has sufficient capacity for this flow.

- **Drainage Area H** flows to a 30-inch RCP at the intersection of Lambert and Associated Roads. Drainage Area H has a 25-year peak flow of 59.7 cfs. The 30-inch RCP has the capacity to accept this flow. The tributary area for this drainage includes regulatory Drainage 2.

- **Drainage Areas I, J and K** all flow to a 36-inch RCP along Wildcat Way. Areas I, J and K have a 25-year peak flow of 15.4 cfs, 4.8 cfs, and 16.2 cfs, respectively. The 36-inch RCP has the capacity to accept the flows of all three drainage areas.

- **Drainage Area L** has a 25-peak flow of 70.7 cfs. The existing 30-inch RCP has the capacity to accept 82.0 cfs. The 30-inch RCP has the capacity to accept this flow.

- **Drainage Area M** flows to a 30-inch RCP with a 25-year peak flow of 11.5 cfs. The 30-inch RCP has the capacity to accept this flow.

- **Drainage Area N** with a 25-year peak flow of 45.2 cfs flows to a basin at the northern end of Carmichael Drive and outflows to a 39-inch RCP. The 39-inch RCP has the capacity to accept this flow. The tributary area for this drainage includes regulatory Drainage 8.

- **Drainage Area O** with a 25-year peak flow of 11.9 cfs flows to a debris basin and outflows to an 18-inch RCP just west of Buchanan Court. The 18-inch RCP has the capacity to accept this flow.

d. Flooding

The project site is tributary to the Loftus Diversion Channel (Facility No. A06) of the Orange County Flood Control District. The project site does not receive additional water source from outside of its boundaries, with the exception of the drainage from the adjacent landfill that enters the site in Drainage A, due to the ridge top at the northern edge of the site. The proposed project will increase runoff and has the potential to adversely impact facilities of the Orange County Flood Control District.

The Flood Insurance Rate Map (FIRM) is the most widely used flood map reference. Flood risk data presented on FIRMS are based on historic, meteorologic, hydrologic, and hydraulic data, as well as open-space conditions, flood control works and development. To prepare FIRMs that illustrate the extent of flood hazards in a flood-prone area, the Federal Emergency Management Agency (FEMA) conducts engineering studies referred to as Flood Insurance Studies (FISs). Using information gathered in these studies, FEMA engineers and cartographers delineate Special Flood Hazard Areas (SFHAs) on FIRMs. SFHAs are those areas subject to inundation by a flood that has a 100-year or 500-year flood.

As currently designated in the County of Orange Flood Insurance Rate Map (FIRM), the project site is not subject to flooding in the event of a 100-year storm (Exhibit 4.5-4).

(1) Site Inundation

Three new water reservoir storage tanks are proposed in this project and will serve the entire Tonner Hills Planned Community project area. One reservoir will be located on the property west of Oil Facility "G" as shown in Exhibit 4.5-5. The reservoir will provide water storage for the 750 zone, which will have a high water elevation of 750-feet and a maximum storage capacity of approximately 4.0 MG (million gallons). This 4.0 MG reservoir capacity will also include the equalization storage for the Southern California Water Company (SCWC) Placentia System as well as for Tonner Hills Planned Community storage requirements.

A second proposed reservoir will be situated in the northeast portion of the property currently occupied by the green waste recycling facility (Exhibit 4.5-5). This reservoir will have a maximum storage capacity of approximately 0.5 MG or 500,000 gallons with a high water elevation of 830-feet.

A third proposed reservoir will be situated along the northern portion of Neighborhood 8, west of the Orange (SR 57) Freeway. This storage tank will have a maximum storage capacity of approximately 0.24 MG or 240,000 gallons. The reservoir will be located in the 750 zone or a high water elevation of about 750-feet.

The existing 60-million-gallon covered reservoir operated by the Metropolitan Water District (MWD) Southern California is located directly northwest of proposed Neighborhood 8. The Cities of Brea, La Habra, and Fullerton share the capacity of the reservoir. MWD also maintains a small retention basin south of the reservoir and a paved access road to the reservoir (Exhibit 4.5-5).

Two existing 10-million-gallon water tanks are located within the boundaries of the proposed project site east of the Orange (SR 57) Freeway. The East Side Reservoir is located near the center of the project site, and the Valencia Reservoir is situated near the northeast corner of the site. Both tanks are owned and operated by the City of Brea (Exhibit 4.5-5). The potential impact of a strong magnitude earthquake occurring within the project area resulting in the rupture of the existing and proposed water tanks inundating the near-by neighborhoods is deemed significant. But with the implementation of strict structural and safety standards applied to the development and maintenance of these water structures through mitigation measures analyzed below, hydrology and drainage impacts will be reduced to less than significant levels.

(2) Erosion Control

The project is required to prepare a Storm Water Pollutant Prevention Plan (SWPPP) to provide adequate erosion control measures to prevent or reduce the discharge of contaminants into storm water from stockpiled soils and construction materials. The objectives of the SWPPP are to identify the sources of sediments and other pollutants from the construction site that affect the quality of stormwater discharges, and to describe the practices to reduce sediments and other pollutants in stormwater discharges generated from the construction site. The SWPPP is further analyzed in Section 4.6, Water Quality, of this EIR.

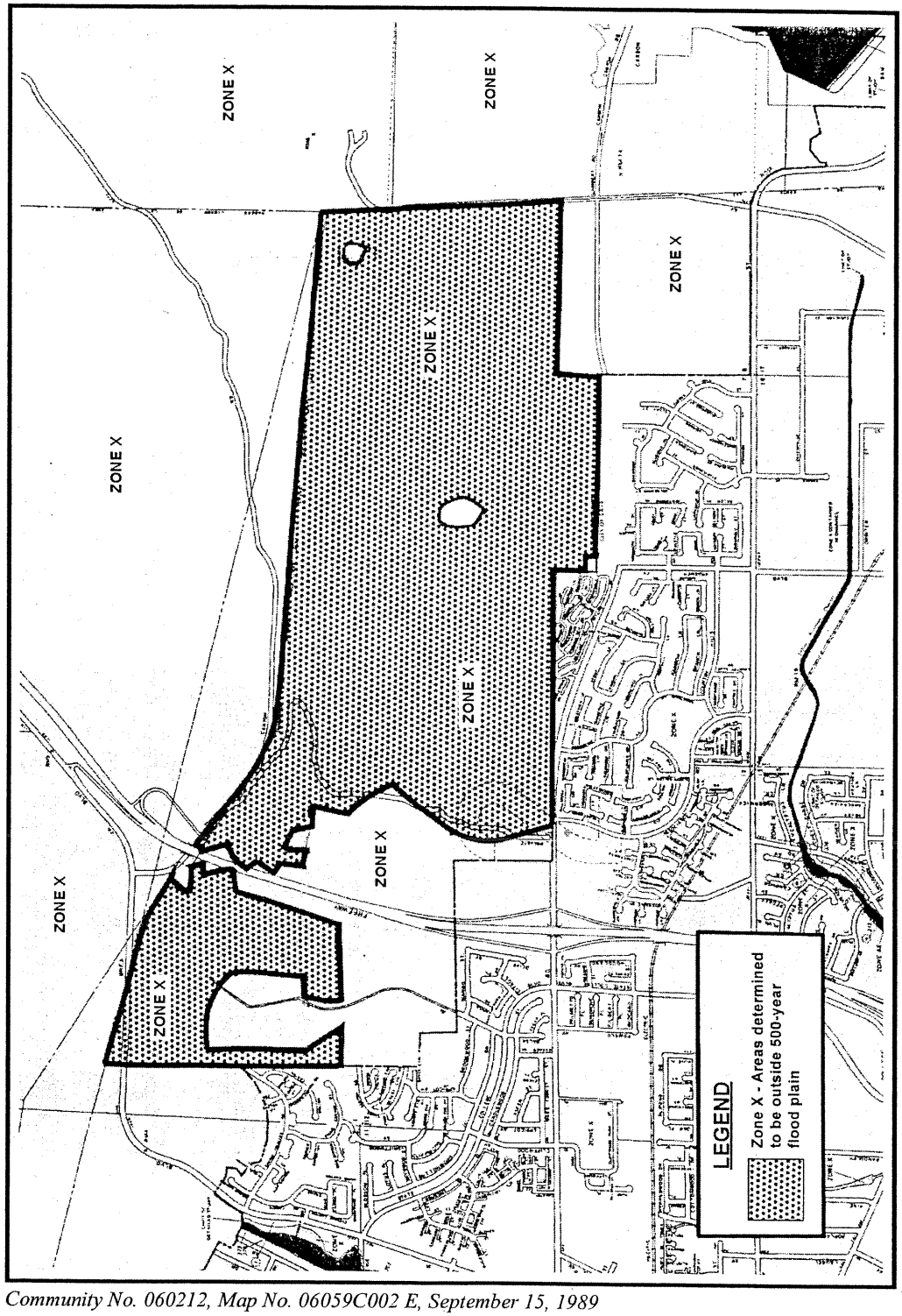
4.5.2 Thresholds of Significance

For the purposes of this EIR, the thresholds of significance for evaluating project impacts are based upon suggested criteria from the CEQA Environmental Checklist (Appendix G of the CEQA Guidelines) and policies of the County of Orange. The project would result in a significant impact if it would:

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on-site or off-site.

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in a substantial increase in the rate or amount of surface runoff in manner which would result in flooding on-or off site.

- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.



Community No. 060212, Map No. 06059C002 E, September 15, 1989

Exhibit 4.5-4

County of Orange Flood Insurance Rate Map (FIRM)

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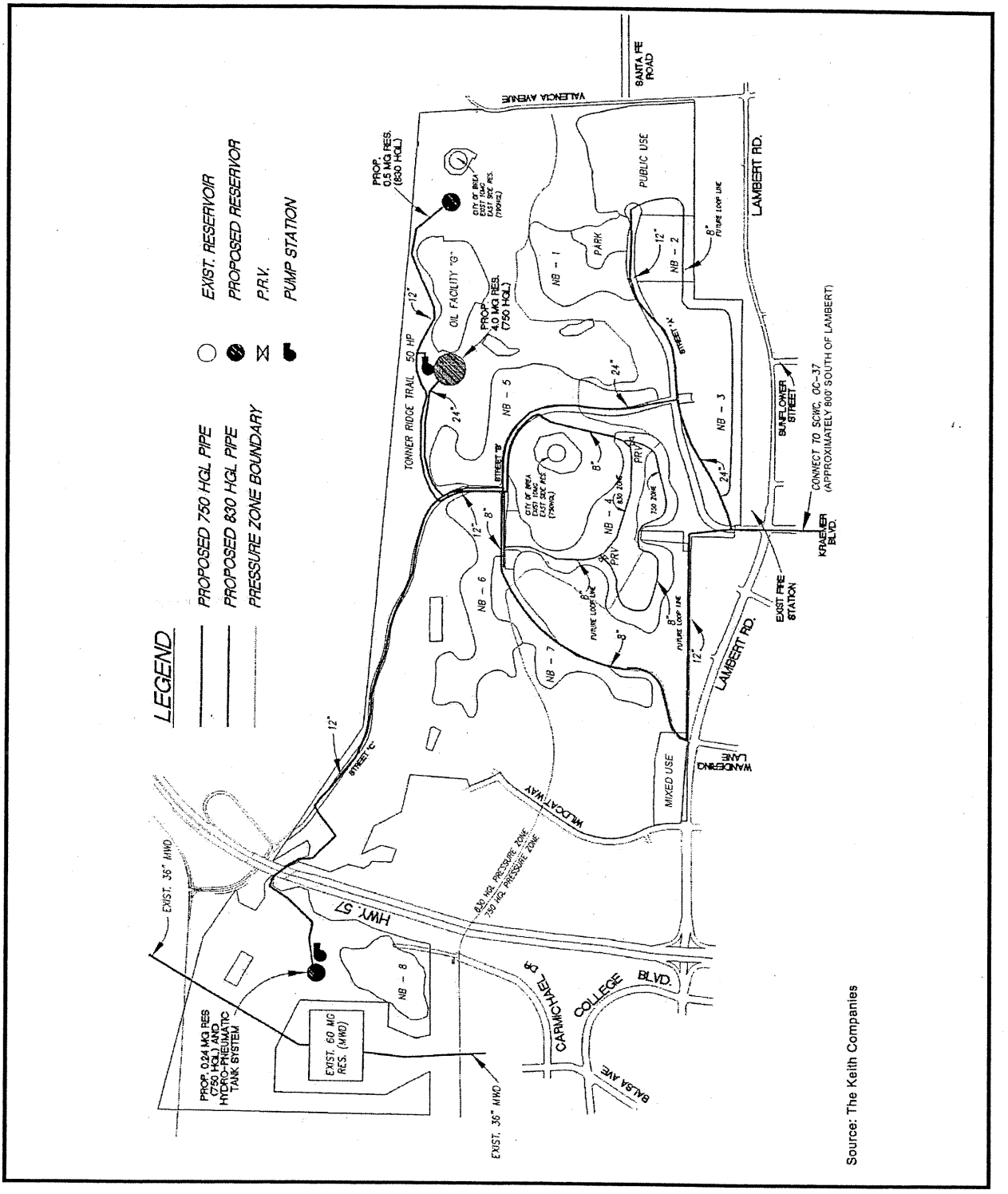

Exhibit 4.5-5
Project Reservoir Tanks Location

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- Place within a 100-year hazard area structures that would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, or seiche, tsunami or mudflow.

4.5.3 Project Impacts

Implementation of the Runoff Management Plan (RMP) prepared by The Keith Companies on April 5, 2002 for the proposed Tonner Hills Planned Community will ensure that potential hydrology and drainage impacts will be mitigated to below levels of significance. The primary objective of the RMP is to conform to the standards and regulations established by the Orange County Flood Control District (OCFCD). In accordance with the County of Orange and OCFCD standards, the intent of the RMP is to assure that the post-development peak 25-year discharge rate downstream of all existing and proposed culverts along Lambert Road will not exceed the pre-development discharge rates.

Tonner Hills Planned Community Runoff Management Plan (RMP) and its hydrological calculations are prepared in conformance with the Orange County Hydrology Manual (1986). The criteria and methods used in the manual are intended to yield high confidence (85% confidence interval) peak discharges and volumes that are appropriate for most flood control design purposes. The concept behind the 85% interval means that for any return period storm, there is only a 15% probability that the peak discharge for a particular return period flood event will be exceeded.

a. Proposed Hydrological Conditions – Post-Development

Tonner Hills Planned Community storm drain system design will provide hydrological protection against a 25-year storm event for all structures and facilities proposed in the planned development. To satisfy this criterion, existing detention basins will be modified along with the modification of existing land formation to act as a detention basin in order to reduce peak flow rates. Nine proposed drainage areas identified in the project's Runoff Management Plan (RMP) would channel flow into the storm drain systems along Lambert Road (Exhibit 4.5-6).

Table 4.5-3 - Proposed Drainage Flow Area Summary

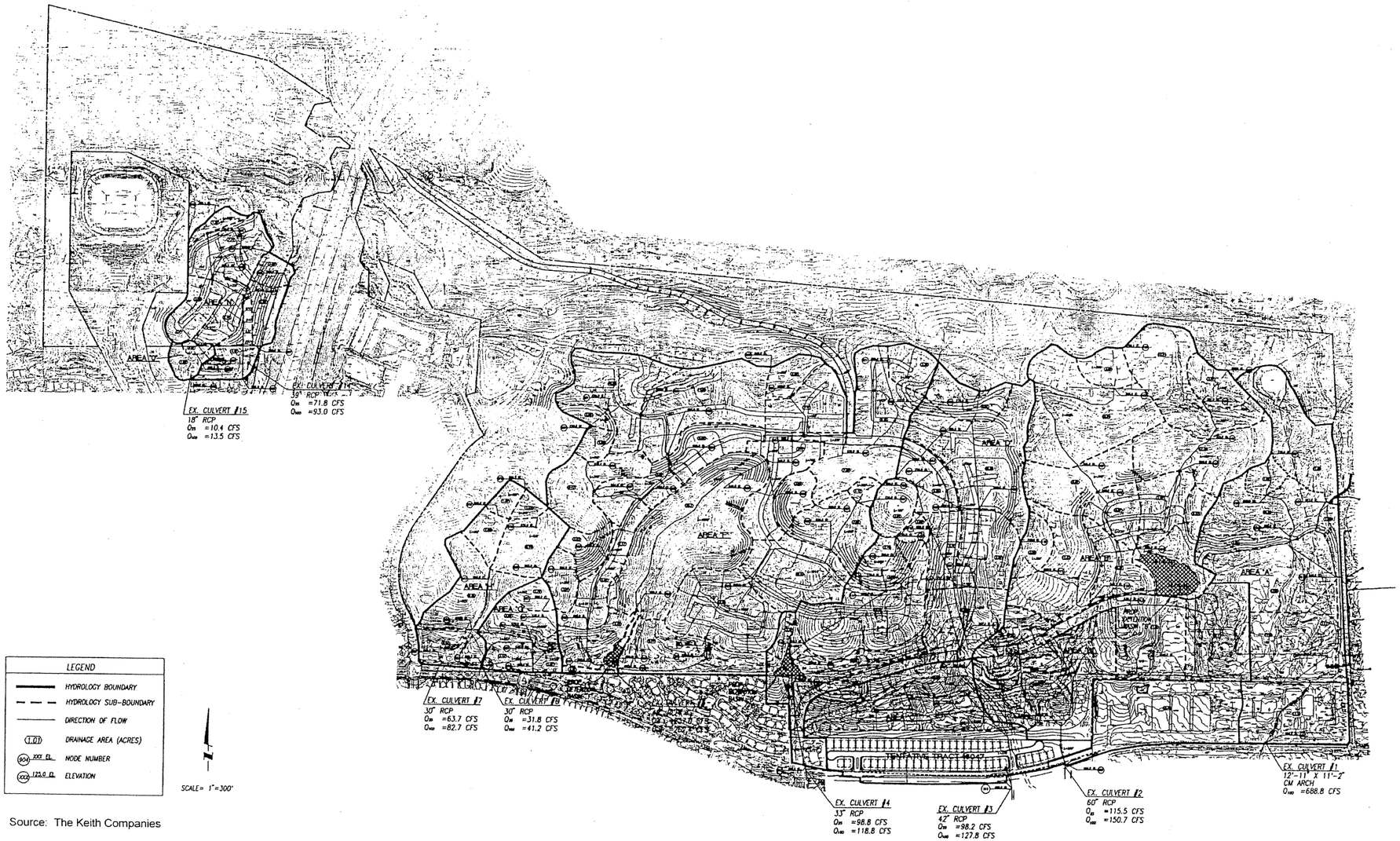
Drainage Area	Tributary Area	Q25	Q100
A	288.4	-	688.8
B & B1	164.4	115.5	150.7
C	39.5	98.2	127.8
D	89.7	98.8	118.8
F	174.5	237.0	-
G	10.7	31.8	41.2
H	24.6	63.7	82.7
N	25.5	71.8	93.0
O	2.4	10.4	13.5

Q25 = 25 year storm event, Q100 = 100 year storm event

- **Drainage Area A** – The only development proposed in this drainage is the Public Use area. While the actual use in this area is not yet set, it will probably be some type of park use, such as active play fields. Some increase in impervious area is to be expected, but to a lesser extent than other development types. To offset the addition of impervious area, the drainage area for this drainage is decreased from 293.5 acres to 288.4 acres. With this change in drainage area, there is no impact on the quantity of flows in this drainage as it leaves the project site. The 100-year peak flow is estimated at 688.8 cfs. The peak flow is accepted by the 12'11"x11'2" box culvert. Regulatory drainage 6 will not be affected by the proposed project. Regulatory drainage 7 will most likely be filled in during construction of the Public Use Area, and replaced as an open channel paralleling Valencia Avenue.

- **Drainage Area B** - The 25-year peak flow of 313.6 cfs is greater than the flow that is handled by the existing storm drain. To reduce the flow entering the existing storm drain, an existing park will be modified as Detention Basin "B". Even with additional flows added downstream of this basin, a significant reduction in flows is realized. The total flow going into the existing storm drain (60-inch RCP) is 229.2 cfs after detention for the 25-year storm is 115.5 cfs. For the 100-year storm the reduction in peak as a result of detention is from 409.4 cfs to 150.7 cfs. These flows are less than half of flows predicted for the existing condition. Regulatory Drainage 10 will be filled in and replaced with an underground storm drain as part of the proposed project..

- **Drainage Area C** - The tributary area for Drainage Area C has been reduced from 90.5 acres in the existing condition to 39.5 acres in the proposed condition. This reduction in area effectively reduces the peak runoff from a 100-year storm to the capacity of the downstream storm drain without detention. This will reduce an existing flooding problem downstream, where roughly half of the existing 100-year peak flow exceeds the capacity of the storm drain and surface flows down Sunflower Street. Regulatory Drainage 5 will be completely filled in by the proposed project and replaced by underground storm drains. The areas and flows calculated for Area C include the proposed development of Tentative Tract 16047 immediately south of the proposed Tonner Hills project.



Source: The Keith Companies

Exhibit 4.5-6
Proposed Project Drainage Area

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- **Drainage Area D** – The tributary area for Area D increases from 55.1 acres to 89.7 acres as part of the reduction to Area C mentioned above. As a result of this increase, as well as the development of the watershed, the 25-year peak flow is greater than the flow that can be handled by the existing storm drain. To reduce the flow entering the existing storm drain, an existing detention basin will be enlarged to reduce the peak flow from developed area. A peak flow of 209.9 cfs will be entering the detention basin during a 25-year storm. With detention, the 25-year peak flow at the connection to the existing 33-inch RCP is expected to be 98.8 cfs. For the 100-year storm the flows as a result of detention will reduce from 273.9 cfs to 118.8 cfs. These detained flows represent a 20 to 30 percent reduction over existing conditions. Regulatory drainage 4 will be filled in and replaced with an underground storm drain as part of the proposed project.

- **Drainage Area F** - The tributary area for Area F increases from 152.6 acres to 174.5 acres as part of the reduction to Area C mentioned above. As a result of this increase, as well as the development of the watershed, the 25-year peak flow is greater than the flow that can be handled by the existing storm drain. The 25-year peak flow is estimated to be 295.3 cfs. The 100-year peak flow is estimated to be 388.4 cfs. The existing 48-inch RCP does not have the capacity to accept these flows; the capacity of the 48-inch RCP is 280 cfs. The existing detention basin at the project boundary will be expanded to reduce these flows to less than the capacity of the existing storm drain. The peak flows after detention are 237.0 cfs for the 25-year storm and 262.4 cfs for the 100-year storm. These detained flows represent a 10 to 30 percent reduction over existing conditions. As part of the proposed project, the upper 200 feet of regulatory drainage 3 will be filled in and replaced with an underground storm drain. Nearly all of regulatory drainage 9 will be similarly filled and replaced with an underground storm drain.

- **Drainage Area G** - This area includes a portion of the proposed commercial site at the corner of Lambert Road and Wildcat Way. The remainder of the drainage remains in its natural state. The flow from this area is nearly the same as existing conditions, and is within the capacity of the existing 30" RCP at Lambert Road.

- **Drainage Area H** - This area includes the remainder of the proposed commercial site at the corner of Lambert Road and Wildcat Way. Runoff for this area increases from 59.7 cfs to 63.7 cfs for a 25-year storm and from 78.1 cfs to 82.7 cfs for a 100-year storm. This small increase in flow is within the capacity of the capacity of the existing 30' RCP at Lambert Road, so no further mitigation is proposed. The lower 400 feet of regulatory drainage 2 will be filled and replaced with an underground storm drain.

- **Drainage Area N** - The 100-year peak flow entering the existing 39-inch RCP is 93.0 cfs. The existing 39-inch RCP is able to handle the 100-year peak flow based on Sheet 11 of the Storm Drain Plans for Tract 12563 from the City of Brea. The debris basin from the existing condition in Area N will be filled to accommodate for proposed development. Eliminating the debris basin will not cause flooding downstream. Upon hydraulic analysis of the downstream storm drain system, it seems that downstream storm drain system was designed with the consideration for future development. Regulatory drainage 9 will be filled in and replaced with an underground storm drain as part of the proposed project.

Storm drain improvements will be designed to provide protection at the level required by the Orange County Local Drainage Manual. The proposed development will eliminate the majority of the flood impacts on Sunflower Street. Surface flow that currently travels down Sunflower will be confined to the proposed storm drain system during the 25-year storm event. Peak flow rates of the existing project area will be significantly reduced as a result of the proposed development of detention Basins B, D and F that will serve the Tonner Hills Planned Community. The development of the proposed planned community will not produce an increase in runoff impacts. Downstream storm drain facilities will provide similar or greater hydrological protection than that of the existing condition. With the implementation of the Runoff Management Plan (RMP), the proposed project will have a less than significant impact to hydrology and drainage.

As mentioned earlier, the impact of the proposed development on the Loftus Diversion Channel (Orange County Flood Control Facility A06) is a concern. The Loftus Diversion Channel is a regional facility that runs roughly east to west approximately 2/3 of a mile south of Lambert Road from the extension of Voyager Avenue to Associated Road. After crossing Associated Road, the channel turns to the southwest and parallels Associated Road to the crossing of the State Route 57 freeway. After crossing the freeway the channel drains into the U.S. Army Corps of Engineers' Fullerton Creek Reservoir at Craig Regional Park.

As mentioned above, the project proposes to use on-site detention basins in drainages B, D, and F to decrease the peak flow leaving the site, and thereby not negatively impacting the downstream local storm drains. Detention basins work by constricting the outflow from a basin to less than the inflow. As the inflow continues to increase up to the peak flow, the outflow does not increase as rapidly, and the volume of water that cannot leave is stored, or detained, in the basin. After the peak of the storm has passed, the inflow decreases until the inflow to the basin is the same as the outflow. At this point in time, the basin storage is at its highest volume, and up to this time, the outflow has been increasing. After this point the outflow and the storage volume decrease as the basin drains. This represents a new peak flow, with a later time to peak. Before the new time to peak, the instantaneous inflow to the basin was always greater than the outflow. After the time to peak, the instantaneous inflow is always less than the outflow.

While this detention is very effective at decreasing the peak flow in local storm drains, detention can actually increase flows when the local drainage enters a larger regional facility. This phenomena occurs because the time to peak in the regional facility is generally much later than the time to peak in the local drainages. With detention, the contribution of local drainages to the regional facility can be higher at the time the regional channel is nearing its peak flow than without detention.

However, in the case of the Loftus Diversion Channel, the time to peak isn't that dramatically different than the local drainages. At the furthest downstream point of connection with flows from this project, the total channel tributary area is 2,089 acres, of which 637 acres, or 30%, is from the Tonner Hills project. The time to peak in the channel is on the order of magnitude of 10 to 15 minutes later than the times to peak of the connecting drainages. The proposed detention basins also delay the time to peak of the local drainages by approximately 10 to 15 minutes. The result is that when the local drainages experience higher instantaneous flows caused by detention, the peak in the Loftus Diversion Channel will have already passed. Based on this, the development of Tonner Hills and the detention of flows will not have a negative impact on the Loftus Diversion Channel.

b. Short-Term Impacts

Approximately 5.5 million cubic yards of remedial grading associated with the proposed development of residential, commercial and park pads along with supporting roadway grades will occur during the construction phases of the proposed project. The potential for increased erosion and sedimentation will occur as a result of substantial amounts of cut, fill and grading activities as the direct result of the proposed development. The removal of native vegetation will be associated with grading and the potential exposure of large areas of barren soil will result in the increase in erosion and sedimentation impacts on down gradient streams, thereby increasing the deposition of sediment runoffs into drainage channels and ending up in City-maintained storm drain systems. Erosion impacts are most serious along freshly graded slopes during the rainy season.

The development of Tonner Hills Planned Community will consist of construction activities that will result in topographical disturbance to land five acres and greater. As a result, under the guidelines established by the Regional Water Quality Control Board, Santa Ana Region 8, the proposed project must obtain water quality impact coverage under the National Pollutant Discharge Elimination System (NPDES), General Construction Activity Permit. The NPDES requires the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) to mitigate potential short-term water quality impacts during construction. The project's SWPPP is further analyzed in the Water Quality section of this EIR.

c. Long-Term Impacts

Overall on-site surface runoff velocities, volume, and peak flow rates will increase due to the increase of impervious surfaces associated with project development. Tonner Hills Planned Community consists of proposed storm drainage systems sized to accommodate and mitigate long-term surface runoff drainage impacts. The project also includes guidelines to reduce and mitigate drainage and erosion impacts throughout the development site. These guidelines include preserving and enhancing natural drainage courses where applicable, installing debris basins, using energy dissipating devices where grading is undertaken in hillside areas, designing development areas that result in surface drainage to be directed to street frontage, improving easements with a minimum of control devices, and designing drainage systems that will not result in soil erosion on adjacent lots or cause potential downstream flooding or damage.

Implementation of the project's Runoff Management Plan (RMP) prepared by The Keith Companies on October 12, 2001 will ensure that long-term Best Management Practices (BMP) will be identified for incorporation into the project to mitigate potential water quality impacts associated with stormwater runoff into storm drains. The project's BMP is further analyzed in Section 4.6 of this EIR.

Existing on-site drainage patterns and waterways will be substantially affected from the extensive grading activities associated with the proposed development. As illustrated in Exhibits 4.5-1 and 4.5-2, several existing drainages will be graded and filled by the proposed development. Drainage 5, 7, and 10 will be completely or nearly completely filled by development of Neighborhoods 1, 3, and 5 and the

public use area respectively. Drainage 2 and 8 will be partially graded and filled by development of the commercial area and Neighborhood 8, respectively. Peak storm flows caused by the proposed project could potentially exceed the design capacity of both on-site and downstream conveyance channels resulting in a potentially significant impact.

d. Flooding

As depicted on the County of Orange Flood Insurance Rate Map (Exhibit 4.5-4), the project site is designated as "Zone X." "Zone X" flood areas have been determined to be outside of the 500-year flood plain; therefore, the project site is not located within any flood zone. As a result, development on-site will not be subjected to flooding in the event of a 100-year storm event.

Located west of the Orange (SR 57) Freeway, northwest corner of Neighborhood 8, the Humble Reservoir has a maximum capacity of 60 million gallons (MG) and is operated by the Metropolitan Water District (MWD) of Southern California. Two additional 10-million-gallon water tanks owned and operated by the City of Brea also exist on the project site (Eastside and Valencia Reservoirs). The proposed project includes the construction of two additional water tanks to provide additional domestic water supply to support the proposed and neighboring residential homes. Due to the location of the tanks along potentially active earthquake faults in the area, the significant potential flooding impact as a direct result of water tank rupture and damage from seismic events does exist. In the event of water tank rupture, some inundation will occur in Neighborhoods 1, 4 and 5. The Humble Reservoir is located approximately 600 feet northwest of Neighborhood 8. Rupture of this reservoir does not pose a significant likelihood of inundation, because the majority of Neighborhood 8 is topographically higher than the reservoir and a ridge on the east side of the reservoir would directly flow from the reservoir either to the north into Tonner Canyon or to the south into an unnamed southerly channel. Potential for significant impacts does exist.

Based on the project's Runoff Management Plan (RMP), the proposed project would redistribute in a 30% reduction of drainage area as compared to the existing condition (Table 4.5-4). The drainages east of the S.R.57 freeway has decreased by 0.6 acres, which will drain northerly to Tonner Creek. This area is small enough to be considered negligible. The drainages west of the freeway have increased by 3.3 acres. This area comes out of the drainage below the Humble Reservoir.

Table 4.5-4 - Drainage Area Comparison (Existing vs. Proposed)

Drainage Basin	Existing Area (acres)	Developed Area (acres)	Difference	
			(acres)	%
A	293.5	288.4	-5.1	-2%
B	158.4	164.4	6.0	4%
C	90.5	39.5	51.0	-56%
D	55.1	89.7	34.6	63%
F	152.6	174.5	21.9	14%
G	11.5	10.7	-0.8	-7%
H	23.4	24.6	1.2	5%
L	29.0	21.5	-7.5	-26%
N	20.5	25.5	5.0	24%
O	4.0	2.4	-1.7	-42%
Total	838.5	841.2	2.7	

For the three drainages that have increased drainage area (B, D, and F) detention basins are provided to mitigate for the expected increase in peak discharge. These detention basins will require routine maintenance to be effective for the life of the project. Typically this maintenance includes regular removal of vegetation and trash that could clog the outlet works and less frequently (about every 5 to 10 years) removing silts that have settled in the basin. Regular maintenance will also be required at the debris basins to remove the sands and gravels deposited after significant storms. The Master Homeowners Association is proposed to be the entity responsible for this maintenance. To assure that the maintenance will take place a Community Service Area will be formed.

4.5.4 Mitigation Measures

HD-1 Prior to the recordation of a subdivision map for development (except maps for financing and conveyance purposes only) and prior to the issuance of any grading permits, the following drainage studies shall be submitted to and approved by the Manager, Subdivision and Grading and the Manager, PFRD/Program Development Division:

a. A drainage study of the project including diversions, off-site areas that drain onto and/or through the project, and justification of any diversions; and

b. When applicable, a drainage study evidencing that proposed drainage patterns will not overload existing storm drains; and

c. Detailed drainage studies indicating how the project grading, in conjunction with the drainage conveyance systems including applicable swales, channels, street flows, catch basins, storm drains, and flood water retarding, will allow building pads to be safe from

inundation from rainfall runoff that may be expected from all storms up to and including the theoretical 100-year flood.

HD-2 a. Prior to the recordation of a subdivision map for development (except maps for financing and conveyance purposes only) and prior to the issuance of any grading permits, the applicant shall, in a manner meeting the approval of the Manager, Subdivision and Grading:

1) Design provisions for surface drainage; and
2) Design all necessary storm drain facilities extending to a satisfactory point of disposal for the proper control and disposal of storm runoff; and
3) Dedicate the associated easements to the County of Orange to ensure adequate maintenance access, if determined necessary.

b. Prior to the issuance of any certificates of use and occupancy, said improvements shall be constructed in a manner meeting the approval of the Manager, Subdivision and Grading and Manager, Construction.

HD-3 Prior to the recordation of a subdivision map for development or prior to the issuance of any grading permit, whichever comes first, and if determined necessary by the Manager, Subdivision and Grading, the applicant shall record a letter of consent from the upstream and/or downstream property owners permitting drainage diversions and/or unnatural concentrations. The form of the letter of consent shall be approved by the Manager, Subdivision and Grading Services, and the Manager, PFRD/Program Development Division, prior to recordation of the letter.

HD-4 Prior to the recordation of a subdivision map for development (except maps for financing and conveyance purposes only), the subdivider shall participate in the applicable Master Plan of Drainage in a manner meeting the approval of the Manager, Subdivision and Grading, and the Manager, PFRD/Program Development Division, including payment of fees and the construction of the necessary facilities.

HD-5 a. Prior to the approval of a site development permit per Zoning Code §7-9-113, the applicant shall submit an Elevation Certificate to the Manager, Current Planning Services, identifying the base flood elevation and certifying that the planned elevation of the lowest floor, including basements, is at least one (1) foot above the Base Flood Elevation (BFE). *(Note: to eliminate FEMA requirements for flood insurance, the lowest elevation of any part of the structure, not only the lowest floor, must be above the BFE.)*

b. Prior to the issuance of certificates of use and occupancy for any building, the applicant shall complete Section "E" of the Elevation Certificate, identifying the Base Flood Elevation (BFE) and certifying the as-built lower floor, including basement, as constructed, is at least one (1) foot above the BFE, in a manner meeting the approval of the Manager, Building Inspection Services. *(Note: to eliminate FEMA requirements for*

flood insurance, the lowest elevation of any part of the structure, not only the lowest floor, must be above the BFE.)

HD-6 Prior to the issuance of any certificates of use and occupancy, the applicant shall not grant any new easements over any property subject to a requirement of dedication or irrevocable offer to the County of Orange or the Orange County Flood Control District, unless such easements are expressly made subordinate to the easements to be offered for dedication to the County. Prior to granting any of said easements, the subdivider shall furnish a copy of the proposed easement to the Manager, Subdivision and Grading, and the Manager, PFRD/Program Development Division, for review and approval. Further, a copy of the approved easement shall be furnished to the Manager, Building Inspection Services, prior to the issuance of any certificate of use and occupancy.

HD-7 Prior to the recordation of a subdivision map for development (except maps for financing and conveyance purposes only), the subdivider shall not grant any development-related easements (i.e., oil production related easements are excluded) over any property subject to a requirement of dedication or irrevocable offer to the County of Orange or the Orange County Flood Control District, unless such easements are expressly made subordinate to the easements to be offered for dedication to the County. Prior to granting any of said easements, the subdivider shall furnish a copy of the proposed easement to the Manager, Subdivision and Grading, for review and approval.

HD-8 Prior to the issuance of any grading permits, applicant shall delineate on the grading plan the floodplain which affects the property, in a manner meeting the approval of the Manager, Subdivision and Grading.

HD-9 Prior to the recordation of a subdivision map for development, applicant shall delineate on the final map and the project grading plan the floodplain which affects the property, in a manner meeting the approval of the Manager, Subdivision and Grading.

HD-10 Prior to the issuance of any grading permits, applicant shall submit a Runoff Management Plan (RMP) to the Manager, Subdivision and Grading, and the Manager, Flood Control Programs, for review and approval.

HD-11 Prior to the issuance of any grading permits for phased improvements, applicant shall submit drainage calculations indicating that the proposed drainage improvements are adequate to mitigate for project impacts as stated in the Runoff Management Plan to the Manager, Subdivision and Grading, and the Manager, Flood Control Programs, for review and approval.

HD-12 Prior to the recordation of a subdivision map for development (except maps for financing and conveyance purposes only), the applicant shall, in a manner meeting the approval of the Manager, Subdivision and Grading, and the Manager, Flood Control Programs, initiate the formation of a Community Service Area covering the same area as the Master Homeowners Association for the purpose of maintaining the on-site drainage facilities.

HD-13 During grading and construction activities for the water reservoir storage tanks, all grading and site preparation shall comply with the County Grading Ordinance and the Uniform Building Code (for seismic criteria) and be approved by the Manager, Subdivision and Grading. Water storage tank design shall comply with the American Water Works Association (AWWA) Standard d-100 for structural design and seismic requirements. The design plans shall be submitted to the Manager, Building Inspection Services, for approval.

4.5.5 Cumulative Impacts

Future development within the project area (including areas surrounding the project site) will increase impervious surfaces, thereby reducing groundwater recharge and increasing the potential for flooding in the area. Cumulative development in the project area will result in alterations to the drainage pattern and flow rates in the project vicinity. Impacts will be mitigated on a project-by-project basis by construction of project-specific drainage improvements. With implementation of regional drainage plans, combined with future project-specific improvements, cumulative impacts upon drainage and flood control are not anticipated to be significant.

Cumulative development in the project area and areas surrounding the project site will increase the quantities of urban pollutants that enter local drainage systems. These impacts can be reduced to a less than significant level through proper landscaping design and maintenance methods, adherence to waste disposal requirements, and implementation of National Pollutant Discharge Elimination System (NPDES) Best Management Practices.

4.5.6 Unavoidable Adverse Impacts

Implementation of the recommended mitigation measures specified above will reduce the potentially significant impacts relating to drainage and flooding to a less than significant level. The proposed project will not result in unavoidable adverse impacts to hydrology and drainage.

4.6 Water Quality

The development of the Tonner Hills Planned Community would alter existing drainage patterns on-site. The amount of impervious surfaces would increase, potentially altering the amount and rate of water flows through and from the site. The project has the potential to result in a significant increase of urban and stormwater runoff, which could significantly impact water quality of downstream resources depending on the manner in which water quality measures and proposed stormwater infrastructure are designed and constructed. The following analysis is based on technical studies prepared for the Tonner Hills Planned Community project, including a project specific Runoff Management Plan (RMP) prepared by The Keith Companies (April 2002), the Remedial Action Plan (RAP) prepared by Harding ESE (December 16, 1999), the Phase I Environmental Site Assessment prepared by QST Environmental Inc. (January 9, 1998), and a Phase II Environmental Site Assessment prepared by QST Environmental Inc. (January 21, 1999). A copy of each technical study is found in the Technical Appendices of this EIR.

4.6.1 Existing Conditions

Existing contaminants on-site are prevalent throughout the project's watershed basins. Naturally occurring oil seeps have been identified adjacent the northern boundary of the site. These oil seeps are more predominant during warm weather. During warm, dry weather, much of the percolated oil is volatized, leaving an inert tar. These areas are a potential existing contributor to hydrocarbon pollution.

Several impacted areas have been recognized on-site that are currently contributing to water quality pollution. These sites have been categorized as contaminated with hydrocarbons and metals.

There are numerous areas of documented landslide areas and unstable slopes. These areas are a potential erosion hazard, which could contribute the water quality pollutant of sediment to downstream water bodies. Additional geological/hazard impacts pertaining to the project are further analyzed in Section 4.4, Geophysical, and 4.15, Hazards, of the EIR.

a. Surface Water

Six designated natural drainage courses "blueline" streams and several natural watercourses and riparian areas are located throughout the project site. Natural surface water flows predominantly towards the south and west of the project site. Existing drainage from the site is captured through 10 drainage channels located throughout the site. Surface water flows from the eastern portion of the site primarily drain off Drainages 5, 6, and 7 which then flows into the Loftus Diversion Channel (Facility No. A06) of the Orange County Flood Control District and then joins Fullerton Creek to the west. Surface water flows from the western portion of the site drain into Drainages 1, 2, 3, and 4 and would initially affect Fullerton Creek more directly. Fullerton Creek flows southwesterly and eventually joins Coyote Creek, which ultimately joins the San Gabriel River and flows to the Pacific Ocean. The 10 drainage channels located on-site are discussed in greater detail in Section 4.5, Hydrology and Drainage, of this EIR.

On-site stormwater surface runoff currently splits along Tonner Ridge and runs in an east-west direction along the northern end of the project site. Urban runoff along the northern portion of Tonner Ridge flows northerly into Tonner Creek, while flows from the southern portion of the property drain southerly into existing storm drains under Lambert Road.

Coyote Creek, San Gabriel River, and their associated watersheds are within the jurisdictional boundaries of the California Los Angeles Regional Water Quality Control Board (Region 4). The project site is within the jurisdictional boundaries of the California Santa Ana Regional Water Quality Control Board (Region 8).

b. Groundwater

The project area is situated along the outer reaches of the Yorba Linda Hydrologic sub-area of the La Habra Ground Basin. The proposed project site is situated on relatively impermeable sediments that form the Puente Hills. The combination of slow fluid infiltration rate and the low precipitation rate of the coastal basin in the project area contributes to limited groundwater development on-site. The groundwater exists only in zones beneath the arroyo watercourses, or as discontinuous perched water zones in the sediments. The project site overlays the La Habra-Yorba Linda groundwater basin. Separated from the Lower Santa Ana River Basin, the La Habra-Yorba Linda groundwater basin is bordered on the south by the Norwalk Fault Zone and is functionally associated with the San Gabriel River.

Based on the local topography and orientation of drainages emanating from Puente Hills, groundwater is assumed to flow to the south and southwest at a gradient comparable to that of the local arroyos. Precipitation runoff and groundwater from the southern Puente Hills region contribute to the recharge of the Gage, Jefferson, Lynwood, Silverado and Sunnyside aquifers.

Groundwater was found at a depth of approximately 85 feet below the ground surface during a site assessment conducted at the southwest corner of Lambert and Associated Roads in 1987. A study conducted by GeoSyntec Consultants in 1993 evaluated the presence and concentration, if any, of groundwater contaminants situated immediately down gradient of the Olinda Alpha Landfill. The study suggested that the Whittier Fault acts as an effective natural barrier for the migration of leachate generated by the landfill.

c. Wastewater

There are currently 210 active oil wells on-site, in addition to idle wells, abandoned wells, and water injection wells. Two active tank farms, which process the crude oil, are situated on the project site. For the purposes of the tank farm, "process" refers to the practice of separating the water from crude oil and storing the oil. During the oil extraction process, large quantities of wastewater are also extracted as part of the crude oil's byproduct. Oil separators are used to retain the crude oil while separating and discharging the wastewater byproduct into existing sewer lines located throughout the project site, which all connects into the Olinda lateral sewer line. This sewer line ultimately connects and flows into the

Orange County Sanitation District's (OCSD) sewer system, which is treated and released into the Pacific Ocean. Although the discharge is treated to approved OCSD standards, the discharge does contain trace amounts of residual pollutants that are below the levels of significance.

In the 1999-2000 fiscal year, OCSD had allocated Neuvo Energy a maximum allowable industrial wastewater discharge volume of 420,000 gallons per day (gpd). Currently, oil operations actual discharge is approximately 28,000 gpd which is consistent with the OCSD 2001 allocation threshold. The proposed Tonner Hills Planned Community project is estimated to generate 418,560 gpd of residential, mixed use, and open space "urban" wastewater. Pollutant levels from "urban" wastewater contains significantly lower chemical pollutant levels and has a higher treatment rate per OCSD standards than "industrial" wastewater. The proposed planned community and ongoing oil operations will create an estimated 446,560 gpd of discharge. The proposed project will have a lesser impact to wastewater than previous oil operations. Additional wastewater analysis is provided in Section 4.17 of this EIR.

d. Regulatory Compliance

Surface water quality is subject to federal, state, and local water quality requirements administered and enforced by:

- The U.S. Environmental Protection Agency (EPA);
- The California State Water Resources Control Board (SWRCB);
- The California Regional Water Quality Control Board-Santa Ana Region (RWQCB); and
- The County of Orange.

The federal Clean Water Act (33 U.S.C. §§1251, et seq.) is the principal federal statute governing water quality. The goal of the Clean Water Act is to protect the physical, chemical, and biological integrity of the waters of the United States. The Clean Water Act requires the state to adopt water quality standards for water bodies and have those standards approved by EPA. Water quality standards consist of a designated use or uses for a particular water body, along with water quality criteria based upon these uses (40 CFR §131.3(i)). Designated uses of water bodies describe the appropriate uses of that water body, such as contact recreation, warm water wildlife propagation, and municipal or drinking water uses. Water quality criteria are set concentrations or levels of constituents — such as lead, suspended sediments, and fecal coliform bacteria — or narrative statements which represent the quality of water that support a particular use.

Numeric water quality criteria for receiving waters have been established by the EPA in the form of the National Toxics Rule (NTR) (40 CFR §131.36) and the California Toxics Rule (CTR) (40 CFR §131.38). The NTR and the CTR provide water quality criteria that apply to receiving waters with certain beneficial uses specified for them. The CTR implementation plan does not apply to stormwater discharges; instead, those discharges are regulated through municipal stormwater permits and state stormwater permits.

Discharges of pollutants into waters of the United States are not allowed, except in accordance with the permitting program of the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) (33 U.S.C. §1342.(p)). Authority to implement and administer the NPDES program in California largely has been delegated by EPA to the State Board and the Regional Boards. Pursuant to the NPDES program, permits have been issued which apply to storm water discharges from large municipal storm sewer systems, specific industrial activities, and large construction activities. The County holds an NPDES permit governing their storm sewer systems. Also, the State has issued a NPDES permit relating to construction sites over five acres in area. The project is within the jurisdiction of the Santa Ana Regional Water Quality Control Board. In January 2002 the SARWQCB issued new NPDES requirements under Order #R8-2002-0010 and adopted a new Third Term NPDES Permit #CA5618030. The County, and subsequently the project, will be required to comply with the new waste discharge requirements.

Narrative and numeric water quality objective criteria are contained in the Basin Plan, issued by the Regional Water Quality Control Board (RWQCB). The Basin Plan establishes designated uses and water quality objectives for the surface waters in the basin. The Municipal Separate Storm Sewer System Permit (MS4) relies primarily on the Orange County Drainage Area Management Plan (DAMP) which sets forth Best Management Practices (BMPs) and other water quality control measures to establish effluent limits for storm water discharges to the municipal storm drain system. The DAMP was written to meet permitting requirements by the RWQCB and is administered by Orange County. The DAMP is the principal policy and guidance document for the countywide NPDES Stormwater Program, and is designed to achieve compliance with Basin Plan standards through BMPs. BMPs are procedures designed to minimize the release of pollutants.

National Pollutant Discharge Elimination System (NPDES) permits require effluent limits necessary to meet water quality standards for pollutants that may cause or contribute to an exceedance of a State Water Quality Standard (40 CFR §122.44). NPDES permits may establish enforceable effluent limitations on discharges, require monitoring of discharges, designate reporting requirements, or require the permittee to implement BMPs. BMPs may be used in addition to numeric effluent limitations, or, in some cases, in lieu of numeric effluent limitations (40 CFR §122.44(k)). When application of numeric effluent limitations is technically infeasible, such as in permits governing storm water discharges, effluent limitations are expressed as BMPs.

Where, despite the issuance of NPDES permits containing effluent limitations, water quality standards are not being achieved and the beneficial uses are not being met, the Clean Water Act requires identifying and listing that water body as "impaired" under Section 303(d). Once a water body has been deemed "impaired" a Total Maximum Daily Load (TMDL) must be developed for that water body. A TMDL is an estimate for the total load of pollutants, from point, nonpoint, and natural sources that a water body may receive without exceeding applicable water quality standard. Once established, the TMDL is allocated among current and future dischargers into the water body. Impaired waters (as listed in the Los Angeles RWQCB 303(d) list) relevant to the proposed project are the Coyote Creek and the San Gabriel River (Reach 1). Although the project site is located within the jurisdiction of the Santa Ana RWQCB, these TMDLs may apply to this project inasmuch as the proposed project ultimately discharges into the Coyote Creek and the San Gabriel River (Reach 1). MS4 permits currently include narrative

requirements for the implementation of BMPs that will result in maximum extent practicable (MEP) protection of the beneficial uses of the receiving waters.

4.6.2 Thresholds of Significance

For the purposes of this EIR, the thresholds of significance for evaluating project impacts are based upon suggested criteria from the CEQA Environmental Checklist (Appendix G of the CEQA Guidelines) and policies of the County of Orange. The project would result in a significant impact if it would:

- Violate any water quality standards or waste discharge requirements.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table.
- Otherwise substantially degrade water quality.

4.6.3 Project Impacts

The development of the Tonner Hills Planned Community will not adversely impact storm water quality with the implementation of mitigation measures analyzed below in Section 4.6-4. Short-term water quality impacts may be associated with the construction phases of the project, while long-term water quality impacts may be characterized by the permanent future impacts as the direct result of project implementation.

a. Surface Water

The proposed Tonner Hills Planned Community development will change the characteristics of stormwater runoff. Many of the existing completed, idle, and/or plugged and abandoned wells will be replaced by open space areas, or residential areas. This will result in reduced potential contaminants from oil-producing related activities. The potential for existing natural contaminants runoff via stormwater transportation will be addressed by post-development measures.

b. Groundwater

Harding ESE (Engineering Science & Engineering, Inc.) has prepared a Remedial Action Plan (RAP) for the Stearns Property within the Brea-Olinda Oil Field of the Tonner Hills Planned Community dated December 16, 1999. The purpose of the RAP is to outline the clean-up levels and procedures used to reduce chemical concentration in the soil to levels acceptable to the Orange County Health Care Agency and the California Regional Water Quality Control Board (RWQCB) Santa Ana Region. Chemicals identified and mitigated under the RAP include total petroleum hydrocarbons, benzene, polychlorinated

biphenyls, lead, copper, volatile organic compounds, arsenic, and asbestos. The presence of petroleum hydrocarbons, volatile organic compounds, metals, and polychlorinated biphenyls and the potential for residual contamination to cause groundwater degradation are identified and remediated under the RAP. In-depth analysis of the RAP in reference to groundwater remediations are further discussed in Section 4.15, Hazards of this EIR along with a copy of the RAP provided in the technical appendices.

c. Wastewater

The practices of discharging wastewater by-product to the Orange County Sanitation District (OCSD) sewer system has been discontinued in conjunction with this development and changes in oil field operations. The wastewater will be reinjected to the site to enhance oil recovery of the oil-bearing formations, and to eliminate off-site discharge. This practice will substantially reduce environmental impacts from the previous practice. Water quality impacts from this action are threefold: OCSD treatment systems have been relieved of a burden, allowing them to further treat waste from other new developments; the Pacific Ocean will benefit from a reduction of "treated" wastewater discharge (and associated pollutant load); and the oil producing facilities on-site become more self-sufficient, reducing potential contaminant transportation off-site. Overall, the type of wastewater will change from industrial to a mix of household with 6% industrial.

d. Construction (Short-Term Impacts)

The majority of the site will have little or no construction activity. The Open Space Planning Areas and existing and proposed oil production areas total 71% of the site. A full range of construction activities can be expected for the Development Planning Areas and the collector streets (29% of the site).

Table 4.6-1 analyzes the activities that may occur on the site during the construction stage, which have the potential to contribute sediment and other pollutants to either storm water or non-storm water discharges. Additionally, the table demonstrates the category of pollutants to which each activity may potentially contribute.

Table 4.6-1 - Potential Pollutants from Construction Activities

Activity	Potential Pollutant Category		
	Sediment/ Erosion	Non-Sediment	Non-Storm Water
Demolition of existing structures	X	X	
Earth work (e.g., grading; trenching; and excavation, import, export, and stockpiling of soil)	X		
Construction of erosion control measures (e.g., desilting basins, storm drain system, and sand bag dikes)	X	X	
Underground Utility Installation	X	X	
Concrete waste management (including rock crushing and concrete or pavement recycling)	X	X	
Street sweeping and cleaning	X	X	X
Vehicle and construction equipment storage, cleaning, maintenance, fueling, and stored fuel management		X	X
Dewatering			X
Management of contaminated soils	X	X	
Solid and hazardous waste management (including disposal)		X	
Material delivery and storage	X	X	
Portable sanitary and septic waste management		X	

Table 4.6-2 analyzes construction material and equipment which may have a potential to contribute to the discharge of pollutants to either storm water or non-storm water discharges. Where applicable, general classes of materials are meant to include the specific.

Table 4.6-2 - Potential Pollutants from Construction Materials and Equipment

Materials/Equipment	Potential Pollutant Category		
	Sediment/ Erosion	Non-Sediment	Non-Storm Water
Concrete and concrete slurry		X	
Curing compounds		X	
Petroleum products		X	
Natural earthen materials (including sand and sandblast grit, gravel, and topsoil)	X	X	
Packaging materials		X	
Paints and solvents		X	
Plaster and other products		X	
Construction debris		X	
Cleaning solutions and detergents		X	
Air conditioning condensate		X	X
Acids		X	

Materials/Equipment	Potential Pollutant Category		
	Sediment/ Erosion	Non-Sediment	Non-Storm Water
Antifreeze		X	
Adhesives		X	
Portable toilet waste		X	
Waste water from dewatering operations		X	X
Equipment parts and fluids (including hydraulic fluid and batteries)		X	
Domestic wastes, food containers, and cigarettes		X	
Demolition equipment	X	X	
Earth moving equipment (including bulldozers, scrapers, and compactors)	X	X	
Water trucks	X	X	X
Concrete trucks	X	X	
Street cleaning trucks (including sweepers)	X	X	X
Delivery and materials trucks	X	X	
Cranes	X	X	
Personal vehicles	X	X	

The National Pollutant Discharge Elimination System ("NPDES") General Permit for Storm Water Discharges Associated with Construction Activity ("General Permit") (State Water Resources Control Board Order No. 99-08-DWQ, NPDES No. CAS000002) requires the development and implementation of a SWPPP for many construction sites. This SWPPP specifies the implementation of Best Management Practices ("BMPs"), as appropriate, to control the discharge of pollutants to surface waters.

The Storm Water Pollution Prevention Program (SWPPP) has two major objectives: 1) To help identify the sources of sediment and other pollutants that affect the quality of storm water discharges, and 2) To describe and ensure the implementation of BMPs to reduce or eliminate sediment and other pollutants in storm water as well as non-storm water discharges.

BMPs are the schedule of activities, prohibitions of practices, maintenance procedures, and other management practices that reduce or eliminate pollutants in storm water discharges and authorized non-storm water discharges. BMPs include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, waste disposal, and drainage from raw material storage. BMP implementation must take into account changing weather conditions and construction activities, and various combinations of BMPs may be used over the life of the project to maintain compliance with the Clean Water Act. The General Permit gives the owner the discretion to determine the most economical, effective, and possibly innovative BMPs to achieve the performance-based goals of the General Permit.

There are two general categories of BMPs: structural BMPs and non-structural BMPs. Structural BMPs involve the specific construction, modification, operation, maintenance, or monitoring of facilities to minimize the introduction of pollutants into the drainage system or to remove pollutants from the drainage system. Non-structural BMPs are activities, programs, and other non-physical measures that will contribute to the reduction of pollutants from non-point sources to the drainage system. In general, non-structural BMPs are source control measures.

Table 4.6-3 discusses the titles and basic descriptions of the BMPs that might be used on the project site to control sediment and erosion pollution.

Table 4.6-3 - Sediment and Erosion Control BMPs

Sediment and Erosion Control BMP	General Description
ESC 1: Scheduling	Sequencing the project to reduce the amount and duration of soil exposed.
ESC 2: Preservation of Existing Vegetation	Controlling erosion through preserving existing trees, shrubs, and/or grasses.
ESC 10: Seeding and Planting	Stabilizing soil with vegetation including hydroseeding, trees, shrubs, sod, etc.
ESC 11: Mulching	Stabilizing soil with mulch, soil binders, and sealants.
ESC 20: Geotextiles and Mats	Stabilizing soils with erosion matting of natural and synthetic materials.
ESC 21: Dust Controls	Controlling fugitive dust through, primarily, watering and street sweeping.
ESC 22: Temporary Stream Crossing	Providing for construction access over streams with culverts, fords, or bridges.
ESC 23: Construction Road Stabilization	Stabilizing vehicle routes through watering, berms, or paving.
ESC 24: Stabilizing Construction Entrance	Stabilizing points of ingress and egress and points where paved and unpaved roads meet.
ESC 30: Earth Dike	Managing runoff, desilting, or channeling water with earthen berms.
ESC 31: Temporary Drains and Swales	Managing off-site run-on and on-site runoff through stabilized channels.
ESC 32: Slope Drain	Draining slopes and channeling water with pipe drops, downdrains, or V-ditches.
ESC 40: Outlet Protection	Stabilizing drain outlets with rock and other velocity and erosion reducing devices.
ESC 41: Check Dams	Reducing the velocity of water with berms and sandbag dikes.
ESC 42: Slope Roughening/Terracing	Reducing runoff velocity and trapping sediment by creating microclimates and increasing infiltration and sedimentation.
ESC 50: Silt Fence	Detaining sediment-laden water with, primarily, fabric fencing or fencing combined with sandbags.

Sediment and Erosion Control BMP	General Description
ESC 51: Straw Bale Barriers	Detaining sediment-laden water with straw bales.
ESC 52: Sand Bag Barrier	Detaining sediment-laden water and preventing hazardous material runoff with sandbag barriers.
ESC 53: Brush or Rock Filter	Reducing velocity of storm water and increasing sedimentation with vegetative or rock filters.
ESC 54: Storm Drain Inlet Protection	Detaining sediment-laden water with straw and/or sandbag barriers.
ESC 55: Sediment Trap	Providing sedimentation with excavated bermed areas.
ESC 56: Sediment Basin	Retaining and detaining sediment laden water.

Table 4.6-4 discusses the titles and basic descriptions of the BMPs that might be used on the project site to control non-sediment pollution (typically BMPs that deal with contractor activities and practices.

Table 4.6-4 - Non-Sediment (Contractor Activity) BMPs

Non-Sediment BMP	General Description
CA 1: Dewatering Operations	Regulates disposal of non-stormwater.
CA 2: Paving Operations	Requiring runoff prevention, proper disposal of wastes, and employee training.
CA 3: Structure Construction and Painting	Requiring runoff prevention with enclosures or berms, using good housekeeping practices, using safer alternative products, and employee training.
CA 10: Material Delivery and Storage	Requiring minimization of materials stored on-site, storage of materials in stabilized or secured areas, storage of certain materials in secondary containment, and employee training.
CA 11: Material Use	Compelling use of alternative products, minimization of hazardous material use, and employee training.
CA 12: Spill Control	Reducing the chance for spills, containing and cleaning up spills, properly disposing of spilled materials, and training employees.
CA 20: Solid Waste Management	Requiring designated waste collection areas, and when possible, the regular and proper disposal of materials, and employee training.
CA 21: Hazardous Waste Management	Compelling the minimization of hazardous material use, proper disposal of hazardous materials, and employee training.
CA 22: Contaminated Soil Management	Requiring the detection, treatment, and/or disposal of contaminated soils.
CA 23: Concrete Waste Management	Requiring off-site washout areas, when possible, designated and secured on-site washout areas, and employee training.
CA 24: Sanitary/Septic Waste Management	Requiring the provision of convenient and well-maintained facilities, placement of those facilities either away from paved areas or in secured areas, and provision of regular service and disposal.

Non-Sediment BMP	General Description
CA 30: Vehicle and Equipment Cleaning	Requiring off-site cleaning.
CA 31: Vehicle and Equipment Fueling	Requiring off-site fueling, when possible. Requiring on-site fueling in designated or secured areas, discouraging on-site fuel storage, implementing spill controls, and requiring employee training.
CA 32: Vehicle and Equipment Maintenance	Compelling off-site maintenance, if possible, on-site maintenance in designated or secured areas, cover for materials stored outside, inspection for leaks and spills, immediate containment of leaks and spills, and employee training.
CA 40: Employee/Subcontractor Training	Stressing the importance of employee training and requiring bilingual training when appropriate.
TABLE 4.2: Quick Reference Disposal Alternatives	Used in conjunction with other fact sheets to dispose of hazardous materials and other pollutants.

The General Permit requires that the owner develop and implement a SWPPP based on applicable BMPs. The General Permit specifies that BMPs must satisfy the best available technology ("BAT") and best conventional technology ("BCT") standards. With the implementation of the SWPPP to the Tonner Hills Planned Community development, potential project related water quality impacts would be reduced to less than significant levels.

e. Post-Construction (Long-Term Impacts)

The proposed development will significantly change land use from the existing oil producing usage. In the developed condition, only 3% of the site will be retained for exclusive oil producing operations. In the developed condition, 68% of the site is slated for open space areas. This decrease in land used for oil production reduces the chances of stormwater contamination due to oil producing options. With the change in land use, and with other new development stormwater controls, the potential for hydrocarbon release on-site is predicted to be reduced from existing levels.

As proposed, 26% of the project site will be Development Planning Areas (residential, commercial, and park areas). Collector streets will comprise 3% of the project site. The proposed development will include roads, parking lots, buildings, and landscaped areas. These items will increase the imperviousness of the project area and, combined with the storm drain system, will alter the hydrologic response to storm events. Generally, runoff volumes and rates are increased for the developed areas. Urbanization and the increase in population density from the proposed development will increase the potential for storm water runoff to be contaminated by human activities associated with the change in land use. Potential water contaminants include motor vehicle operations, oil and grease residue, fertilizers, chemicals associated with gardening, landscaping, household cleansers, solvents, and increased coliform levels associated with household pets. These pollutants are more efficiently mobilized and transported by impervious surfaces on the site and the storm drain system. Pollutants such as pesticides may also be mobilized into the storm drain system during dry weather (excess irrigation and fertilizer/pesticides). However, impervious

surfaces may also reduce pollutant runoff by controlling areas which might have previously contributed sediment, metals, hydrocarbons, toxics or other pollutants adhering to sediment.

Surface runoff velocities, volumes, and peak flow rates will increase due to the increase of impervious surfaces associated with the development. Storm drains and water quality controls are proposed to accommodate and mitigate potential long-term water quality impacts to below levels of significance.

Storm water quality is generally affected by the length of time since last rainfall, rainfall intensity, urban uses of the area, and the quantity of pollutants available for transportation. The majority of pollutant loads are primarily washed away during the "first flush" of the storm occurring after the annual dry-season period. Because Orange County does not currently have a first flush criteria, post-development first flush devices in this area are typically sized using Los Angeles County standards. The Standard Urban Stormwater Mitigation Plan (SUSMP) methodology as developed by LACDWP determines first flush flow rates and volumes based on 0.75 inches of rainfall or the 85th percentile 24-hour runoff event determined as the maximized capture stormwater volume for the area. Post-construction BMPs are sized by either the SUSMP flow rate calculations (e.g., CDS Units, Catchbasin Drain Inserts) or by the SUSMP volume calculations (e.g., Debris Basins).

Some "post-construction" BMPs may be designed and implemented prior to ultimate site construction. These BMPs may be designed to treat existing conditions, construction and post-construction conditions simultaneously depending on phasing of the construction sequences, and interconnectivity of the tributary areas. These "new-development" BMPs are really only regulated once development is finished, but may be installed for water quality improvement prior to that date. This is an act of "good will" by the developer testifying to their good stewardship of the environment. An example is interceptor ditches downslope of oil seeps that direct flow to a structural BMP (oil-water separator or similar item).

Water Quality Management Plans (WQMPs) will be prepared to comply with the County Municipal Separate Storm Sewer System (MS4) permit; and the County of Orange Drainage Area Management Plan (DAMP). The DAMP requires preparation of a project-specific WQMP in connection with new development projects and addresses post-construction, long-term water quality issues. The DAMP contains New Development BMPs as well as other applicable programs, such as fertilizer management and efficient irrigation programs.

This section provides a Master WQMP outline and discusses the Best Management Practices (BMPs) that may be identified in the subsequent site specific WQMPs for this project to reduce predictable pollutants in runoff entering storm drain systems that drain to the ocean. The BMPs listed herein are taken from Tables 1 and 2 provided in Appendix G of the Countywide NPDES Stormwater Program Drainage Area Management Plan (DAMP), April 1993. These tables list Non-structural and Structural BMP that are deemed "routine" and "standard practice" to be required on new developments based on the type usage (residential, industrial, retail, etc.). Additionally, BMPs beyond those listed in Appendix G of the DAMP have been included to provide further stormwater quality protection. The BMPs presented are categorized as follows:

1. Structural BMPs - engineered facilities (as identified in Table 2 of the DAMP) designed to function with and compliment the project drainage system and address treatment of urban pollutant problems.

2. Non-structural BMPs - consist of educational programs, management practices, and regulatory approaches (as identified in Table 1 of the DAMP) aimed at reducing pollutants in runoff entering storm drain systems that drain to the ocean.

3. Special BMPs - structural BMPs (over and above the "routine" BMPs listed in the DAMP) designated to address specific stormwater quality problems identified in the water quality planning process, runoff management plan, CEQA process, or similar watershed planning process.

Table 4.6-5 - Structural BMPs

Structural BMP	General Description
S1 Filtration	Surface runoff shall be directed to landscaped areas wherever practicable and as recommended by the engineer of record.
S2 Common Area Efficient Irrigation	Physical implementation of landscape plan consistent with County Water Conservation Resolution or city equivalent, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.
S3 Common Area Runoff – Minimizing Landscape	Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration.
S4 Community Car Wash Racks	In complexes larger than 100 units where car washing is allowed, a designated car wash area which does not drain to a storm drain system shall be provided for common usage. Wash waters from this area may be directed to the sanitary sewer (in accordance with Attachment A and with the prior approval of the sewering agency); to an engineered infiltration system; or to an equally effective alternative.
S5 Wash Water Controls for Food Preparation Areas	Food establishments (per State Health and Safety Code §27520) shall have either contained areas or sinks, each with sanitary sewer connections for disposal of wash waters containing kitchen and food wastes. If located outside, the contained areas or sinks shall also be structurally covered to prevent entry of stormwater.
S6 Trash Container (Dumpster) Areas	Trash container (Dumpster) areas to have drainage from adjoining roofs and pavements diverted around the area(s), and: 1. For trash container areas associated with fuel dispensing, vehicle repair/maintenance, and industry, such areas are to be roofed over or drained to a water quality inlet (see S16), engineered infiltration/filtration system, or equally effective alternative. 2. For trash container areas associated with restaurants and warehouse/grocery operations such areas are to be screened or walled to prevent off-site transport of trash.

Structural BMP	General Description
S7 Self-contained Areas for Washing/Steam Cleaning/Repair/ Material Processing	Self-contained areas are required for washing/steam cleaning, wet material processing, and maintenance activities, specifically: 1. For businesses where washing of vehicles without steam cleaning occurs, provide wash racks constructed in accordance with the guidelines in Attachment A (of Appendix G of the DAMP) and with the prior approval of the sewering agency (Note: Discharge monitoring may be required by the sewering agency). Alternatively, refer to N16. 2. Where steam cleaning occurs, provide wash racks as in S7A or structurally contain (with a cover for rain events) runoff from such areas on site for commercial waste removal. 3. Where wet material processing occurs (e.g. Electroplating), secondary containment structures (not double wall containers) shall be provided to hold spills resulting from accidents, leaking tanks or equipment, or any other unplanned releases (Note: If these are plumbed to the sanitary sewer, the structures and plumbing shall be in accordance with Attachment B (of Appendix G of the DAMP) and with the prior approval of the sewering agency). Also see N10. 4. Where vehicle repair/maintenance occurs, impermeable berms, drop inlets, trench catch basins, or overflow containment structures shall be provided around repair bays to prevent spilled materials and wash down waters from entering the storm drain system.
S8 Outdoor Storage	Where a plan of development contemplates or building plans incorporate outdoor containers for oils, fuels, solvents, coolants, wastes, and other chemicals, these shall be protected by secondary containment structures (not double wall containers). Also see N10. For outdoor vehicle and equipment salvage yards, and outdoor recycling the entire storage area shall drain through water quality inlets (see S16).
S9 Motor Fuel Concrete Dispensing Areas	Areas used for fuel dispensing shall be paved with concrete (no use of asphalt). Concrete surfacing to extend 6½' from the corner of each fuel dispenser in any direction. This distance may be reduced to OR the maximum length that the fuel dispensing hose and nozzle assembly may be operated in any direction plus one (1) foot. In addition, the fuel dispensing area shall be graded and constructed so as to prevent drainage flow either through or from the fuel dispensing area (also see S11).
S10 Motor Fuel Dispensing Area Canopy	All motor fuel concrete dispensing areas are to have a canopy structure for weather protection, extending over the motor fuel concrete fuel dispensing area as defined in S9.
S11 Motor Fuel Concrete Dispensing Area Interruptible Drainage	The concrete motor fuel dispensing area will be graded and constructed so as to drain to an underground clarifier/sump/tank equipped with a shut-off valve that can stop the further draining of stormwater or spilled material therefrom into the street or storm drain system. Spills will be immediately cleaned up according to Spill Contingency Plan.
S12 Energy Dissipaters	Energy dissipaters are to be installed at the outlets of new storm drains which enter unlined channels, in accordance with applicable agency specifications.

Structural BMP	General Description
S13 Catch Basin Stenciling	The phrase "No Dumping – Drains to Ocean" or equally effective phrases shall be stenciled on catch basins to alert the public to the destination of pollutants discharged into storm water.
S14 Diversion of Loading Dock Drainage	Below grade loading docks for grocery stores and warehouse/distribution centers of fresh food items will drain through water quality inlets (see S16), or to an engineered infiltration system, or an equally effective alternative.
S15 Inlet Trash Racks	Where appropriate to reduce intake and transport through the storm drain system of large floatable debris, trash racks shall be provided where drainage from open areas enters storm drains (County EMA Standard Plan 1305 & 1327, Caltrans Standard Plan D96 & D98-C, or City equivalent).
S16 Water Quality Inlets	Water Quality Inlets designed to remove free phase liquid petroleum compounds, grease, floatable debris, and settleable solids can be used in the following applications: S6, S8, S14.

Table 4.6-6 - Non-Structural BMPs

Non-Structural BMP	General Description
N1 Education for Property Owners, Tenants, and Occupants	For developments with no Property Owners Association (POA)* or with POAs of less than fifty (50) dwelling units, practical information materials will be provided to the first residents/occupants/tenants on general good housekeeping practices that contribute to protection of storm water quality. Initially these materials will be provided by the developer. Thereafter such materials will be available through the co-permittees* education program. Different materials for residential, office commercial, retail commercial, vehicle-related commercial, and industrial uses will be involved. For developments with a POA and residential projects of more than fifty (50) dwelling units, project conditions of approval will require that the POA provide environmental awareness education materials, made available by the municipalities, to all members periodically. Among other things, these materials will describe the use of chemicals (including household type) that should be limited to the property, with no discharge of specified wastes via hosing or other direct discharge to gutters, catch basins and storm drains. *The term "Property Owners' Association" or POA as used herein means a nonprofit corporation or unincorporated association created for the purpose of managing a common interest development [from California Civil Code Sec. 1351(a)].
N2 Activity Restrictions	If a POA is formed, conditions, covenants, and restrictions shall be prepared by the developer for the purpose of surface water quality protection. Alternatively, use restrictions may be developed by a building operator through lease terms, etc.

Non-Structural BMP	General Description
N3 Common Area Landscape Management	Ongoing maintenance consistent with County Water Conservation Resolution or city equivalent, plus fertilizer and pesticide usage consistent with County Management Guidelines for Use of Fertilizers and Pesticides, or city equivalent.
N4 BMP Maintenance	Identification of responsibility for implementation of each non-structural BMP and scheduled cleaning of all BMP structural facilities.
N5 Title 22 CCR Compliance	Compliance with Title 22 of the California Code of Regulations and relevant sections of the California Health & Safety Code regarding hazardous waste management, to be enforced by County /Environmental Health on behalf of State.
N6 Local Industrial Permit Compliance	Provides for clean storm water discharges from fuel dispensing areas and requires permission to discharge industrial wastes to public properties.
N7 Spill Contingency Plan	Prepared by building operator for use by specified types of building or suite occupancies (County Environmental Health has provided list to County Building Plan Check, as an example), and which mandates stockpiling of cleanup materials, notification of responsible agencies, disposal of cleanup materials, documentation, etc.
N8 Underground Storage Tank Compliance	Compliance with State regulations dealing with underground storage tanks, enforced by County Environmental Health on behalf of State.
N9 Haz-Mat Disclosure Compliance	Compliance with County and comparable City ordinances typically enforced by Orange County Fire Authority.
N10 Uniform Fire Code Implementation	Compliance with Article 80 of the Uniform Fire Code enforced by fire protection agency.
N11 Common Area Litter Control	For development with POAs, the POA will be required to implement trash management and litter control procedures in the common areas aimed at reducing pollution of drainage water. The Associations may contract with their landscape maintenance firms to provide this service during regularly scheduled maintenance, which should consist of litter patrol, emptying of trash receptacles in common areas, and noting trash disposal violations by homeowners or businesses and reporting the violations to the Association for investigation.
N12 Employee Training	Education program (see N1) as it would apply to future employees of individual businesses. Developer either prepares manual(s) for initial purchasers of business site or for development that is constructed for an unspecified use makes commitment on behalf of POA to prepare.
N13 Housekeeping of Loading Docks	Loading docks for grocery, drug and discount stores and warehouse type commercial and industrial loading docks must be kept in a clean and orderly condition through a regular program of sweeping and litter control and immediate cleanup of spills and broken containers.

Non-Structural BMP	General Description
N14 Common Area Catch Basin Inspection	For developments with POAs and privately maintained drainage systems, require the Association to have privately owned catch basins inspected and, if necessary, cleaned prior to the storm season, no later than October 15th each year.
N15 Street Sweeping Private Streets and Parking Lots	For developments with POAs and privately owned streets and parking lots, require the streets and parking lots be swept prior to the storm season, no later than October 15th each year.
N16 Commercial Vehicle Washing	Vehicle exteriors may be washed with tap water or deionized water without the use of soaps or detergents and discharged to the storm drain system. Solvents/degreasers may be used on spot basis but must be wiped off before the vehicle is rinsed.

Table 4.6-7 - Special Structural BMPs

Special Structural BMPs	General Description
SS 1 CDS Unit	Catch Basin Insert that separates trash/debris and large particle sediment from stormwater effluent. May incorporate materials for petroleum capture. (Flow Based BMP)
SS 2 Debris Basin	Gravity Basin that promotes the separation of trash, and large particles from stormwater effluent. (Volume Based BMP)

Exhibit 4.6-1 identifies the locations of the BMPs for the Master WQMP.

The site-specific WQMP will be designed to standards current (at the time of development) and will determine which BMPs to be implemented. With the implementation of a WQMP to the Tonner Hills Planned Community development, potential new development post-construction project related water quality impacts would be reduced to less than significant levels.

4.6.4 Mitigation Measures

Development of the site is a mitigation measure unto itself due to previously outlined items including site remediation, site stabilization, BMPs that will treat existing conditions, reduction of ocean pollution due to wastewater discharge re-direction, etc.. With an increase in impervious surfaces and introduction of residential, commercial, and park uses, impacts to water quality are primarily due to construction activities, long-term runoff impacts of new impervious surfaces, pesticides and fertilizers applied to landscaping, potential future pesticide or fertilizer spills from accidents and/or improper resident storage, or the use and disposal of chemicals. Mitigation measures to reduce project water quality impacts include:

WQ-1 **Runoff Management and Water Quality Plan** - Prior to the recordation of the first final map (either for conveyance or development), or prior to the issuance of any rough or precise grading permit, whichever occurs first, the land owner/applicant shall prepare, and receive approval from the Manager, Subdivision and Grading, in consultation with the Environmental Resources and Flood Program Sections of the PFRD Program Development Division (PDD) of, a Runoff Management Plan (RMP), including Water Quality Management Plan (WQMP) covering the subject property. The RMP shall include the location of all permanent large-scale Best Management Practices (BMPs), including filtration devices, such as water quality basins, detention basins, debris basins, grass/bio-swales, energy dissipaters, and other BMPs.

WQ-2 **Master Infrastructure Improvements** - Prior to the recordation of the first final map (either for conveyance or development), or prior to the issuance of any rough or precise grading permit, whichever occurs first, the land owner shall design and construct all applicable master infrastructure improvements identified in the approved RMP, including debris basins, bio-swales, energy dissipaters, drainage pipes, and other improvements, and shall provide all necessary dedications, all in a manner meeting the approval of the Manager, Subdivision and Grading, and the Manager, PFRD/Program Development Division.

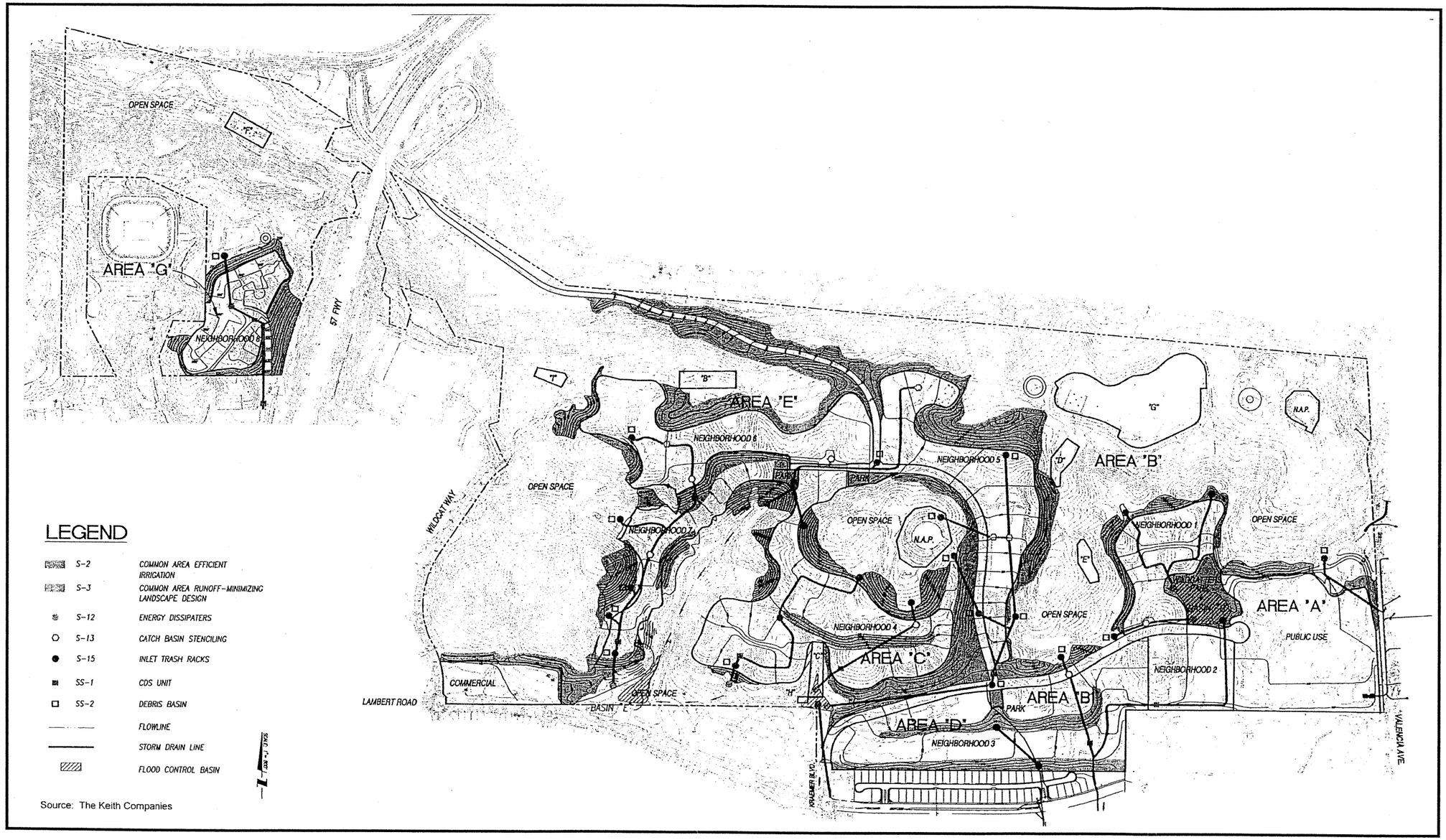
WQ-3 **NPDES** - Prior to issuance of any grading permits, the applicant shall submit evidence to the Manager, Subdivision and Grading, that the applicant has obtained coverage under the NPDES statewide General Construction Activity Stormwater Permit from the State Water Resources Control Board, which includes the preparation of a Storm Water Pollution Prevention Program and incorporates BMP to minimize stormwater runoff.

WQ-4 **Final Map Note for Retention Basins** - Prior to the recordation of each final map (either for conveyance or development), a note shall be placed on the applicable final map where appropriate, indicating that retention basins will be required on the property in accordance with the approved RMP, in a manner meeting the satisfaction of the Manager, Subdivision and Grading.

4.6.5 Cumulative Impacts

Cumulative development in the project area will result in alterations to the drainage pattern and flow rates in the project vicinity. The Runoff Management Plan (RMP) for the Tonner Hills Planned Community has assisted in the design and implementation of drainage facilities for the project. Storm drain improvements on-site will be designed to provide protection at the level required by the Orange County Local Drainage Manual. In fact, the RMP indicates that existing flooding conditions will be eliminated with the construction of the required storm drain systems.

The proposed development will not generate an increase in runoff from the site. Project downstream storm drain facilities will provide equal or greater water quality protection than that of the existing condition.



Source: The Keith Companies

Exhibit 4.6-1
Water Quality Management Plan

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4.6.6 Unavoidable Adverse Impacts

Implementation of the recommended mitigation measures specified above will reduce the potentially significant impacts to water quality to a less than significant level. There are three stages associated with water quality impacts and the development of Tonner Hills Planned Community project: existing conditions, construction, and post-construction. Each stage has specific characteristics of stormwater runoff in terms of quality and drainage patterns. Changes to stormwater characteristics due to development include: remediation of contaminated sites; increased runoff due to increased impervious area; change in disposal methods of wastewater; site stabilization due to development; reduced erosion potential; stormwater quality improvement over existing conditions due to structural and non-structural best management practices. No unavoidable adverse impacts to water quality are anticipated for any of the three stages.

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4.7 Transportation/Circulation

This section summarizes information contained in the project traffic study dated February 15, 2002, prepared by Urban Crossroads, Inc. The complete project traffic study is provided in the Technical Appendices to this EIR.

The project traffic analysis has been conducted to assess the effects of the proposed project on roadway conditions in the study area. Traffic issues related to land use and development have been analyzed in the context of the Orange County Congestion Management Program (CMP) and the County of Orange Growth Management Program (GMP). Although each of these programs involves different specific objectives and requirements, the underlying goal from a transportation perspective is to eliminate or minimize the impact of changes in land use on the transportation system.

4.7.1 Existing Conditions

The proposed project is located on property within unincorporated County of Orange north of Lambert Road, south of Tonner Canyon Road, and west of Valencia Avenue. Regional access to the project site is provided by the Orange (SR 57) Freeway. The Lambert Road exit from SR 57 is the most direct access. Brea Boulevard from either north or south and State College Boulevard, Kraemer and Valencia from the south are the most direct arterial streets. East/west access is provided by Lambert Road, Birch Street, and Imperial Highway. The main project access is the north leg of the intersection of Kraemer Boulevard and Lambert Road.

a. Traffic Analysis Approach

The study area for the traffic impact analysis has been determined based on CMP and GMP criteria along with discussions with interested parties, including staff from the County of Orange and the City of Brea. The CMP states that all locations where project traffic represents more than 3% of roadway capacity at that location should be analyzed. The definition of a measurable impact by the GMP is considerably more stringent. The GMP defines a measurable impact as any increase in the existing ICU of 1% or more caused by the addition of project traffic. As a result of the requirements of the CMP and GMP, the study area includes facilities of regional importance as shown on Exhibit 4.7-1.

This exhibit also depicts the locations chosen for analysis based on the GMP criteria. The existing plus project 1% Intersection Capacity Utilization (ICU) increase test required by the GMP was applied to 33 intersections. Four intersections not meeting the GMP analysis criteria at the southern and northern edges of the study area were eliminated from the future conditions analysis. Future conditions at a total of 29 intersections are therefore analyzed. The future conditions time frame of the traffic analysis is the General Plan build-out (2025).

The traffic analysis assesses the effects of the proposed project on traffic circulation in the study area and has assumed that the worst case conditions will occur in association with the build-out of the General Plan land uses (as reflected in the officially adopted countywide population and employment growth forecasts) in the vicinity of the project site. Therefore, a comprehensive travel demand forecasting

analysis has been undertaken for the express purpose of developing long-range traffic projections for a variety of conditions. Future conditions both with and without the proposed project are evaluated.

The Orange County Congestion Management Program (CMP) also requires that the basic inputs to any model being used for CMP analysis must be compared to the official regional projections of growth to verify model consistency with the official regional projections. The OCP-2000 growth forecasts are the currently adopted official projections for the County of Orange. This data has been incorporated into the OCTAM 3.1 tool used for this analysis. Because the regional model was used, no consistency review needs to be completed. The City of Brea traffic model was considered for this work effort; however, this tool has not received an official finding of consistency from the Orange County Transportation Authority and does not include the most current countywide socioeconomic data. The City of Brea traffic model could therefore not be used in this traffic study effort.

The OCTAM roadway network has been used, and therefore matches the Orange County MPAH. Two network alternatives have been evaluated for both with and without project land use. The only difference between the roadway networks is the inclusion (or lack thereof) of the Tonner Canyon Road connection to Valencia Avenue. The City of Brea has identified the extension of Tonner Canyon Road as an issue that is currently being studied. The "With Tonner Canyon Road Connection" scenarios are consistent with the MPAH; however, the "Without Tonner Canyon Road Connection" conditions have been analyzed also. These additional future scenarios have been included because of efforts currently underway to delete the planned Tonner Canyon Road connection from the MPAH.

Future traffic volume forecasts under both No Project and With Project conditions have been developed using the following three-step process:

- Trip Generation
- Trip Distribution
- Traffic Assignment

The traffic analysis uses a computerized forecasting tool or traffic model to represent the interaction of the proposed project with the surrounding study area. The computerized traffic modeling forecasts used to evaluate future build-out conditions for this traffic study were produced using a derivative of the Orange County Transportation Analysis Model (OCTAM). The OCTAM was developed by the Orange County Transportation Authority (OCTA). Inputs to OCTAM include the MPAH roadway structure and most current OCP-2000 socioeconomic data. The OCTAM structure was modified slightly, incorporating additional detail to better represent the project land uses and project access to the arterial roadway system. Three OCTAM traffic analysis zones (TAZs) were disaggregated to a total of 15 subarea TAZs. Additional project roadways were also incorporated into the modeling tool used in this analysis.

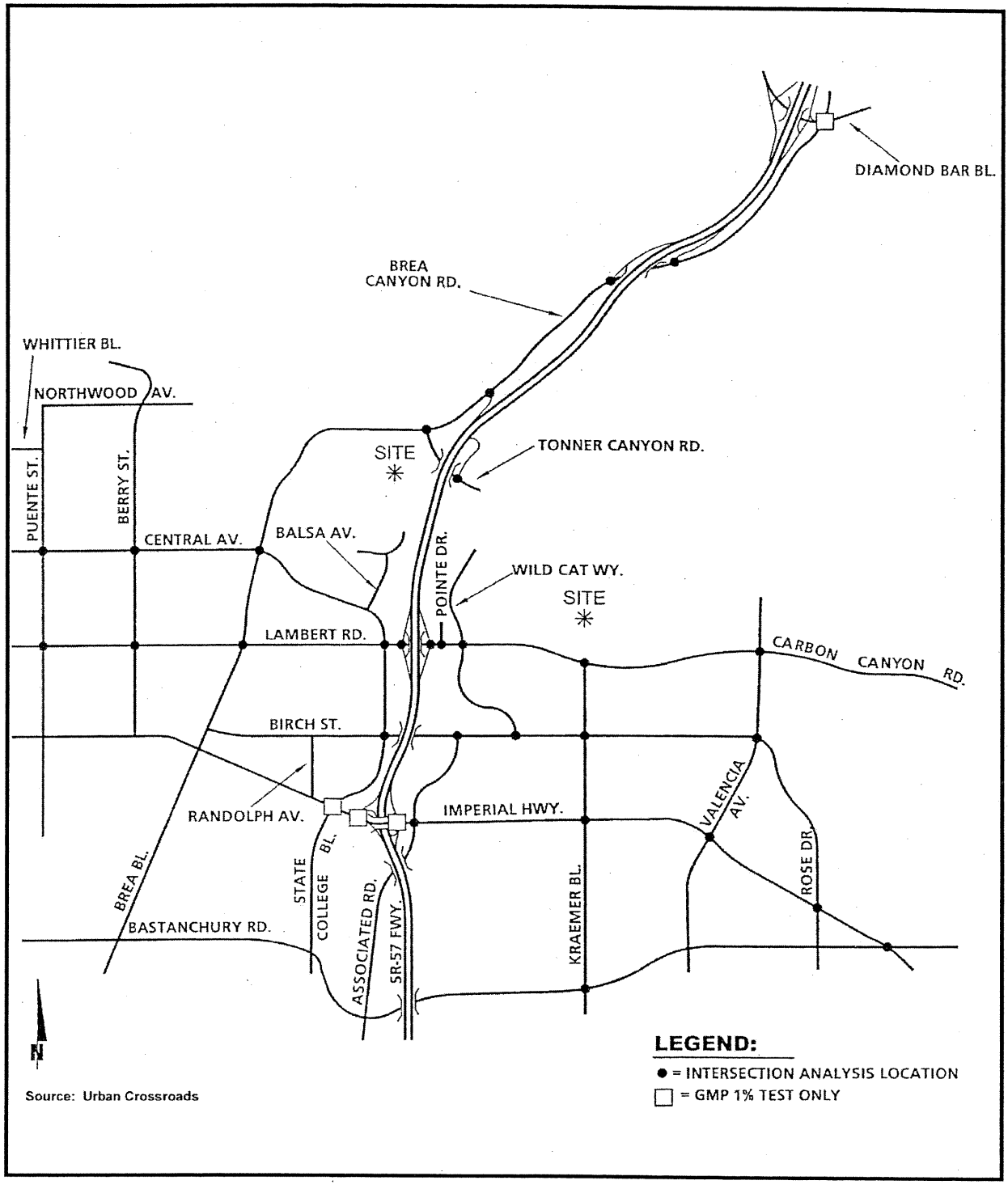

Exhibit 4.7-1

Study Area and Intersection Analysis Locations

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The area encompassed by the OCTAM contains the five Southern California Counties (Ventura, Los Angeles, Riverside, San Bernardino, and Orange), with most focus on Orange County. The Pacific Ocean provides a natural boundary along the southwestern edge of the model area.

The OCTAM has been further refined within the immediate project area. Several TAZs have been disaggregated to better reflect the project and adjacent land uses. The Orange (SR 57) Freeway interchange at Brea Canyon Road has been refined to better reflect actual travel patterns and allowed movements. On-site roads have been added (for with project alternatives). The remainders of the OCTAM zones occupied by the project have been modified to include existing data for built-out areas and Brea Area Traffic Model (BATM) data where future development is anticipated.

b. Definitions

Certain terms are used throughout this section and are defined below to clarify their intended meaning:

ADT Average Daily Traffic

VPD Vehicles Per Day. This has the same meaning as ADT, but is generally used in a trip generation context rather than in reference to a highway volume at a selected location.

VPH Vehicles Per Hour

ICU Intersection Capacity Utilization. This factor is used for measuring the volume-to-capacity ratio for an intersection.

LOS Level of Service. A scale used to evaluate circulation system performance based on volume/capacity ratios of arterial segments or intersection ICU values. The levels range from "A" to "F", with LOS "A" representing free flow traffic and LOS "F" representing severe traffic congestion.

V/C Volume-to-Capacity Ratio. This is typically described as a percentage of capacity utilized by existing or projected traffic on a segment of arterial or an intersection turn movement.

Exhibit 4.7-2 depicts peak hour level of service descriptions and delay relationships.

c. Existing Roadway Network and Traffic Conditions

Exhibit 4.7-3 identifies the existing roadway characteristics for the study area roadways, including the number of through traffic lanes for existing roadways and the existing intersection controls. Roadway cross-sections vary from two-lane undivided roadways up to six-lane divided roadways in the study area. Intersection lane configurations are provided in the Technical Appendices.

Regional access to the site is provided by the Orange (SR 57) Freeway. Local access and connections to the regional system are provided by the Orange County arterial street system, including Lambert Road, Tonner Canyon Road, Brea Boulevard, and the various other arterials within the study area. Balsa Avenue is a local street that will provide access (via Carmichael Drive) to Neighborhood 8 (40 homes) of the proposed project.

Existing daily traffic volumes on the roadway system in the study area surrounding the proposed project are shown on Exhibit 4.7-4. The Technical Appendices include 24-hour traffic count data worksheets. Sources include city and county data, and new counts collected by Urban Crossroads, Inc. specifically for this analysis. Lambert Road will be the primary access for most of the project site. Existing traffic on Lambert Road in the vicinity of the project ranges from approximately 14,400 vehicles per day near Valencia Avenue to 64,700 vehicles per day just west of SR 57.

Imperial Highway within the study area carries even higher traffic volumes than Lambert Road. The highest existing daily traffic volume on Imperial Highway occurs west of the Orange (SR 57) Freeway and is 72,500 vehicles per day (VPD). The lowest daily traffic volume on Imperial Highway within the study area is 32,800 VPD east of Valencia Avenue.

The north-south arterial roadways in the study area generally carry lower daily traffic volumes than the east-west roadways, presumably due to the presence of the Orange Freeway. The highest daily traffic volume on a north-south arterial within the study area is 28,900 VPD on Brea Boulevard south of Imperial Highway.

In addition to the arterial roadway system, various components of the local roadway system are also of concern/interest. Balsa Avenue and Carmichael Drive are local collector roadways that will serve Neighborhood 8 of the proposed project. The daily traffic volume on Balsa Avenue ranges from 2,400 VPD north of North State College Boulevard to 1,700 VPD south of Carmichael Drive. The traffic volume on Carmichael Drive east of Balsa Avenue is 600 VPD.

Although the raw (engineering) capacity of a two-lane roadway is more than 10,000 VPD, the County of Orange utilizes a design value of 6,000 VPD as an upper limit for collector roadways (without direct residential frontage/driveway access). On local streets, traffic volumes greater than 1,200 VPD exceed the "nuisance volume" criteria for streets with direct residential frontage.

Existing AM and PM peak hour traffic volumes in the focused study area are detailed in the Technical Appendices. The AM peak hour traffic volumes were generally derived from the two-hour period between 7:00 and 9:00 a.m. The PM peak hour traffic volumes were generally derived from the two hour period from 4:00 p.m. to 6:00 p.m. Average daily traffic volumes (ADT) were obtained from existing County and City sources, along with some new counts. The City of Brea specifically provided recent (September 2001) traffic count data to replace traffic count data collected during the summer. This data was incorporated into the traffic study to ensure that the analysis reflects traffic conditions including school related traffic.

PEAK HOUR LEVEL OF SERVICE DESCRIPTIONS

LEVEL OF SERVICE	TRAFFIC FLOW QUALITY	V/C VALUE
I. VOLUME/CAPACITY RELATIONSHIPS[1]		
A	Low volumes; high speeds; speed not restricted by other vehicles; all signal cycles clear with no vehicles waiting through more than one signal cycle.	0 - .60
B	Operating speeds beginning to be affected by other traffic; between one and 10 percent of the signal cycles have one or more vehicles which wait through more than one signal cycle during peak traffic periods.	.61 - .70
C	Operating speeds and maneuverability closely controlled by other traffic; between 11 and 30 percent of the signal cycles have one or more vehicles which wait through more than one signal cycle during peak traffic periods; recommended ideal design standards.	.71 - .80
D	Tolerable operating speeds; 31 to 70 percent of the signal cycle have one or more vehicles which wait through more than one signal cycle during peak traffic periods; often used as design standard in urban areas.	.81 - .90
E	Capacity; the maximum traffic volume an intersection can accommodate; restricted speeds; 71 to 100 percent of the signal cycles have one or more vehicles which wait through more than one signal cycle during peak traffic periods.	.91 - 1.00
F	Long queues of traffic; unstable flow; stoppages of long duration; traffic volume and traffic speed can drop to zero; traffic volume will be less than the volume which occurs at Level of Service "E."	Above 1.00
II. INTERSECTION DELAY RELATIONSHIPS[2]		
A	Low delay (less than 5.0 seconds per vehicle). Occurs when progression is extremely favorable, and most vehicles arrive during the green phase and do not stop at all.	
B	Delay in the range of 5 to 15 seconds per vehicle. Generally occurs with good progression and/or short cycle lengths.	
C	Delay in the range of 15 to 25 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.	
D	Delay in the range of 25 to 40 seconds per vehicle, and the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	
E	Delay in the range of 40 to 60 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	
F	Delay in excess of 60 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.	

Sources: [1]Highway Capacity Manual, Highway Research Board Special Report 87, National Academy of Sciences, 1965.
[2]Highway Capacity Manual, Transportation Research Board Special Report 209, National Research Council, 1985.

Exhibit 4.7-2
Peak Hour Level of Service Descriptions

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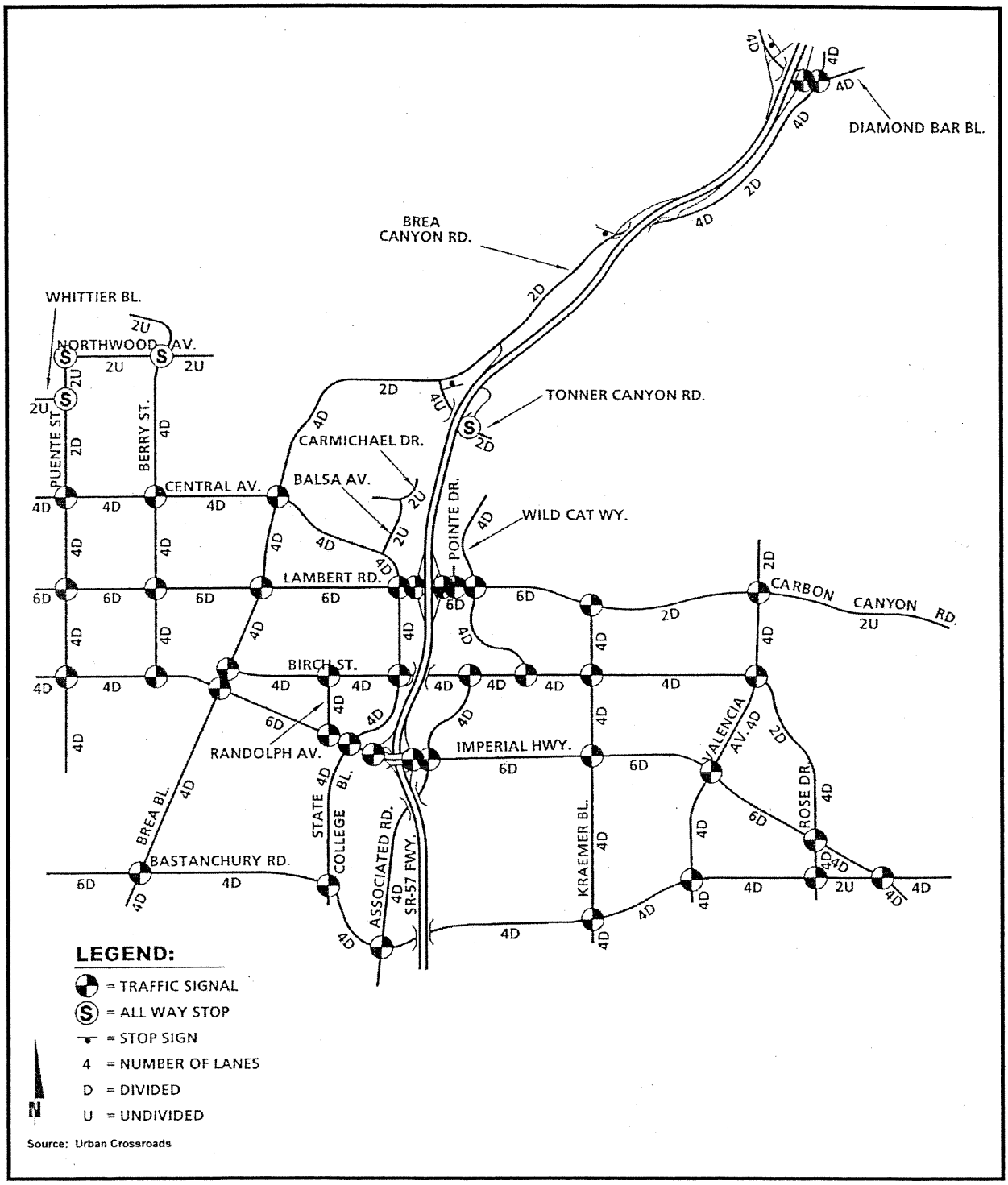

Exhibit 4.7-3

Existing Number of Through Lanes and Intersection Conditions

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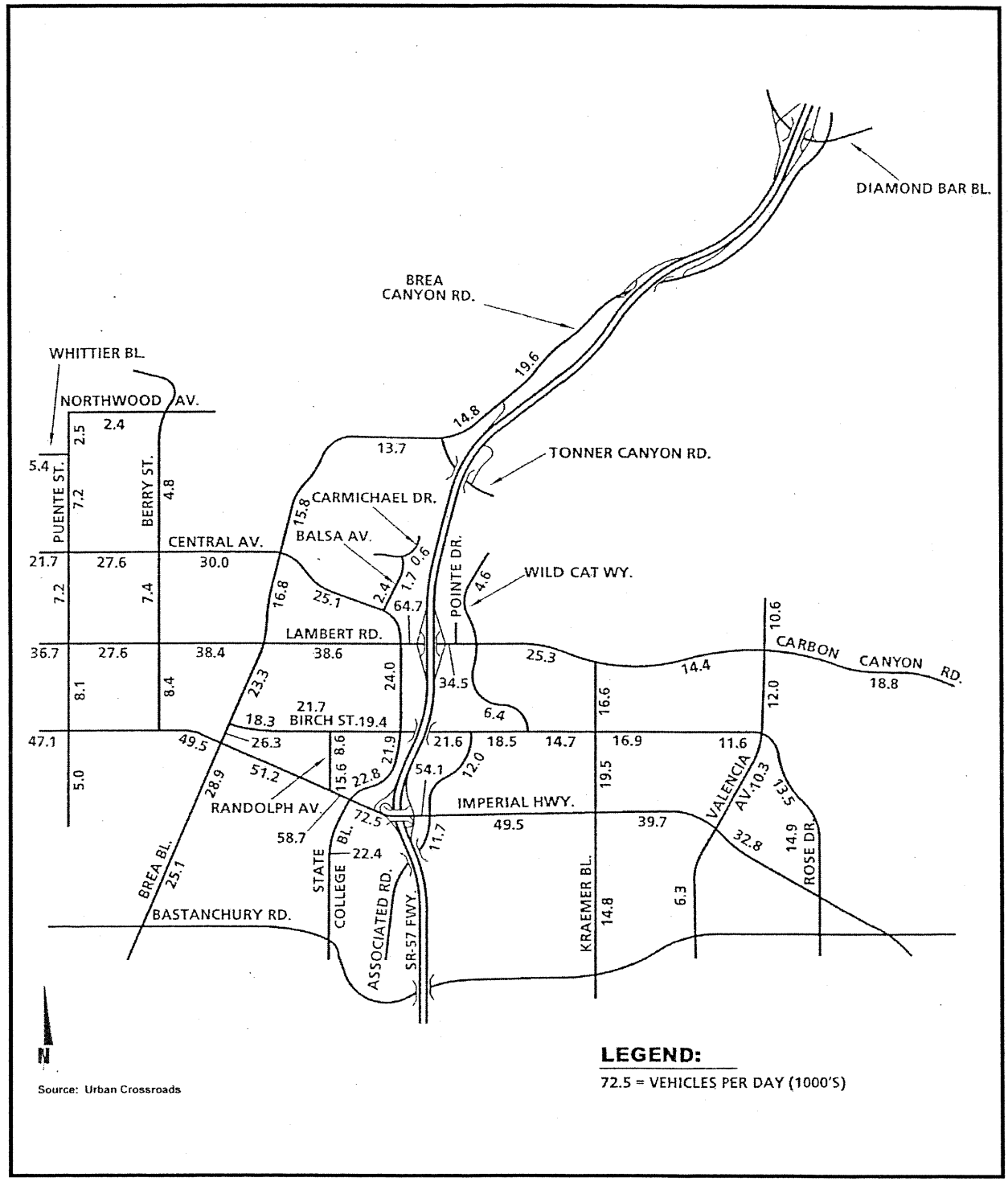

Source: Urban Crossroads

Exhibit 4.7-4

Existing Average Daily Traffic (ADT) Volumes

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The levels of service for intersections have been analyzed in terms of intersection capacity, using the Intersection Capacity Utilization (ICU) methodology. The results of the intersection analysis are shown in Table 4.7-1, while the detailed ICU calculation worksheets are included the Technical Appendices. The analysis indicates that 6 of the intersections studied currently operate at Level of Service "E" or "F", with an ICU of 0.91 or worse. The 6 intersections currently experiencing deficient operations are:

Brea Boulevard (NS) at:
- SR 57 Southbound On-Ramp (EW)
- Tonner Canyon Road (EW)
- Central Avenue (EW)

SR 57 Southbound Ramps (NS) at:
- Lambert Road (EW)
- Imperial Highway (EW)

SR 57 Northbound Ramps (NS) at:
- Imperial Highway (EW)

Table 4.7-1 - Existing Conditions Intersections Levels of Service

#	Intersection	Peak Hour ICU*		Level of Service	
		AM	PM	AM	PM
	Puente St. (NS) at:				
21	- Central Ave. (EW)	0.48	0.59	A	A
17	- Lambert Rd. (EW	0.48	0.61	A	B
	Berry St. (NS) at:				
20	- Central Ave. (EW)	0.54	0.52	A	A
16	- Lambert Rd. (EW)	0.52	0.60	A	A
	Brea Canyon Rd. (NS) at:				
27	- Diamond Bar Blvd. (EW)	0.62	0.80	B	D
	Brea Blvd. (NS) at:				
24	- SR 57 SB On-Ramp (EW)	1.10	1.32	F	F
23	- Tonner Canyon Rd. (EW)	1.08	1.23	F	F
18	- Central Ave. (EW)	1.00	1.03	E	F
15	- Lambert Rd. (EW)	0.59	0.65	A	B
	State College Blvd. (NS) at:				
14	- Lambert Rd. (EW	0.79	0.85	D	D
7	- Birch St. (EW)	0.53	0.67	A	B
4	- Imperial Hwy. (EW)	0.67	0.83	B	D
	SR 57 SB Off-Ramp (NS) at:				
26	- Brea Canyon Rd. (EW)	0.80	0.75	D	C
	SR 57 NB On-Ramp (NS) at:				
25	- Brea Canyon Rd. (EW)	0.52	0.57	A	A
	SR 57 NB Off-Ramp (NS) at:				
22	- Tonner Canyon Rd. (EW)	0.06	0.19	A	A
	SR 57 SB Ramps (NS) at:				
13	- Lambert Rd. (EW	0.76	1.13	D	F

#	Intersection	Peak Hour ICU*		Level of Service	
		AM	PM	AM	PM
	SR 57 SB Ramps (NS) at:				
3	- Imperial Hwy. (EW)	1.23	1.12	F	F
	SR 57 NB Ramps (NS) at:				
2	- Imperial Hwy. (EW)	0.94	1.07	E	F
	SR 57 NB Ramps (NS) at:				
12	- Lambert Rd. (EW)	0.75	0.69	C	B
	Pointe Dr. (NS) at:				
11	- Lambert Rd. (EW)	0.44	0.70	A	B
	N. Associated Rd./Wild Cat Way (NS) at:				
9	- Lambert Rd. (EW)	0.64	0.50	B	A
5	- Birch St. (EW)	0.62	0.62	B	B
	S. Associated Rd. (NS) at:				
6	- Birch St. (EW)	0.62	0.71	B	C
1	- Imperial Hwy. (EW)	0.61	0.82	B	D
	Kraemer Blvd. (NS) at:				
8	- Lambert Rd. (EW)	0.79	0.63	D	B
30	- Birch St. (EW)	0.55	0.69	A	B
31	- Imperial Hwy. (EW)	0.59	0.72	A	C
34	- Bastanchury Rd. (EW)	0.53	0.66	A	B
	Valencia Ave. (NS) at:				
28	- Carbon Canyon Rd./Lambert Rd. (EW)	0.68	0.72	B	C
29	- Birch St. (EW)	0.54	0.52	A	A
32	- Imperial Hwy. (EW)	0.67	0.64	B	B
	Rose Dr. (NS) at:				
33	- Imperial Hwy. (EW)	0.55	0.76	A	C
	Imperial Hwy. (NS) at:				
10	- Bastanchury Rd. (EW)	0.69	0.74	B	B

*ICU = Intersection Capacity Utilization

All of these locations qualify as deficient intersections in accordance with GMP guidelines. They should, therefore, be added to the list of deficient intersections as prescribed by the GMP, and feasible mitigation measures should be explored. Furthermore, all such improvements should be constructed within the time frames set forth in the GMP.

d. Planned Transportation Improvements

The planned roadway system in the study area is represented by the Orange County Master Plan of Arterial Highways (MPAH). The Orange County Master Plan of Arterial Highways is shown on Exhibit 4.7-5. The existing transportation system within the study area will be improved substantially over time. The Orange County Transportation Authority (OCTA) has been pursuing improvements to the Orange Freeway corridor, including a cooperative effort with the California Department of Transportation (Caltrans) and the Los Angeles County Transportation Planning Authority (Metropolitan Transportation Authority or MTA). OCTA has also been studying potential improvements to the Lambert Road/SR 57 Freeway interchange

(in cooperation with Caltrans and the City of Brea). No definitive information regarding a preferred alternative is available at this time, per discussions with City of Brea staff.

The City of Brea is actively pursuing needed transportation system improvements to the arterial roadway system. The City of Brea has an adopted roadway improvement fee program (Nexus Program) in place. The Technical Appendices details the anticipated future roadway geometrics with the currently adopted fee program. Approximately 75% of the funding for these improvements will come from development in the City of Brea. The City is pursuing a variety of funding sources for the remaining 25% of the funds needed.

The City of Brea is also in the process of updating their fee program. Their most recent study (April 2001) identifies a number of additional improvements that are part of the proposed fee program. The anticipated roadway system with the proposed fee program (other) improvements is provided within the Technical Appendices. Pursuant to City of Brea direction, these improvements are deemed to be complete and in-place for the long range buildout condition.

The other key future roadway system issue in the study area is the completion of the proposed connection of Tonner Canyon Road to Valencia Avenue. The City of Brea has initiated an effort to delete this connection from the MPAH. The future conditions analysis therefore evaluates the impacts of the project both with and without the Tonner Canyon Road connection to Valencia Avenue.

e. Congestion Management Plan (CMP)/Growth Management Program (GMP)

The Orange County GMP Transportation Implementation Manual provides specific guidance regarding the sphere of impact and methodology for assessing project traffic impacts. The sphere of impact of a project is where a project contributes "measurable traffic within three years of the issuance of the first use and occupancy permit for a development project, or within five years of issuance of a finished grading permit or building permit for said project, whichever occurs first." Measurable traffic is defined as traffic volumes resulting in a one percent increase in V/C (volume/capacity) ratio of the sum of all critical movements at any intersection.

The Orange County CMP requires that basic inputs to any model being used for CMP analysis purposes must be compared to the official regional projections of growth to verify model consistency with the official regional projections. The OCP-2000 growth forecasts are the currently adopted official projections for the County of Orange.

The CMP and GMP require analysis of the effects of land use decisions on roadway facilities in the vicinity of any project involving such land use decisions. The requirements of the CMP and the GMP are considered in this analysis. Both the CMP and GMP require specific reference time frames. The CMP examines a seven year time horizon, while the GMP is concerned with a three to five year time frame from the issuance of building permits or finished grading permits, respectively.

Either of these relatively short time frame analyses require greater certainty regarding the project description itself and the scheduling of project phasing and construction than is currently available. It is entirely possible that the phasing of the project alone will extend over a time period greater than that required for analysis under CMP/GMP requirements.

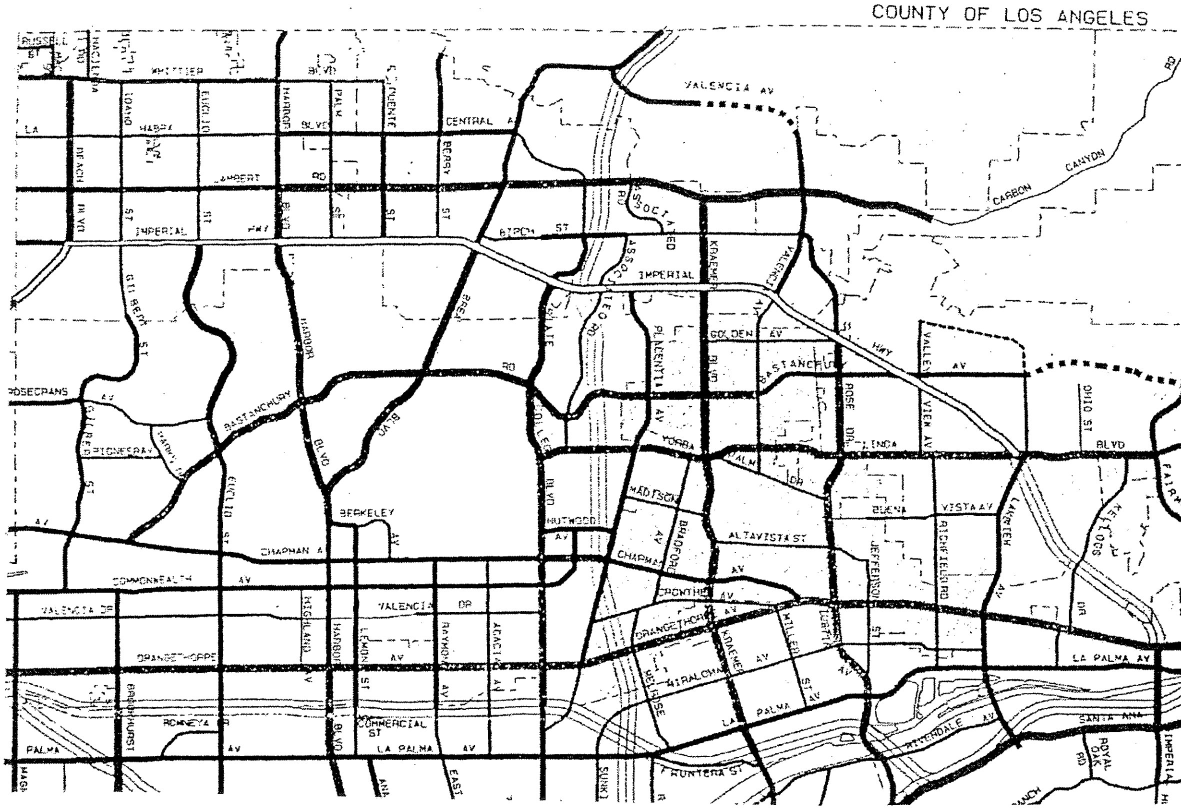
The project traffic analysis is, therefore, primarily oriented towards the evaluation of future worst case conditions. The ICU analysis methodology is generally consistent with GMP and definitions of significant project impacts are consistent with requirements set forth in the CMP. The long term or worst case characteristics of 2025 projections ensure that the impacts identified in the traffic study are certain to comply with these programs.

Both the CMP and GMP are based on the evaluation of peak hour intersection operations using the ICU methodology. LOS "D" is the limit of acceptable peak hour intersection operations, with LOS "E" being defined as the beginning of deficient operations. Any peak hour intersection operations of LOS "E" or worse are, therefore, considered deficient.

A traffic impact is considered significant if the project both: i) contributes measurable traffic to and ii) substantially and adversely changes the level of service to any intersection projected to experience deficient operations under foreseeable worst case conditions.

The CMP requires analysis on those facilities which have been designated as part of the CMP network, and to which the project contributes traffic greater than 3% of the roadway link capacity. The definition of a measurable impact by the GMP is considerably more stringent. The GMP defines a measurable impact as any increase in the existing ICU of 1% or more caused by the addition of project traffic. The study area chosen for this analysis has been defined on the basis of the more stringent GMP criteria.

Any intersection experiencing deficient operations where the project causes a .01 or greater increase compared to no project conditions is considered significantly impacted in this study. Mitigation measures have then been identified to reduce the project impact to a level of insignificance. The feasibility of proposed mitigation measures has been evaluated on the basis of field reconnaissance and/or review of aerial photographs of the study area. The CMP and GMP then require that a project contribute a pro-rata contribution for improvements at any location requiring improvements, based on the ratio of project traffic volume to the capacity of improvement provided.



LEGEND

ARTERIAL HIGHWAYS

ESTABLISHED ALIGNMENT	PROPOSED ALIGNMENT	
━━━	▬ ▬ ▬ ▬	PRINCIPAL
━━━	,,,,,,,,,,,,,,	MAJOR
───	....	PRIMARY
───	───	SECONDARY
───	───	COLLECTOR
━━━	ROADS OUTSIDE OF OC SHOWN FOR CONTINUITY	

N

Source: Urban Crossroads

Exhibit 4.7-5

Orange County Master Plan of Arterial Highways

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4.7.2 Thresholds of Significance

For purposes of this EIR, the thresholds of significance for evaluating project impacts are based on suggested criteria from the County of Orange Environmental Checklist and the CEQA Environmental Checklist found within Appendix G of the CEQA Guidelines. The project would result in a significant impact if it would:

- Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system;
- Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways;
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;
- Substantially increase hazards due to a design feature or incompatible uses
- Result in inadequate emergency access;
- Result in inadequate parking capacity;
- Conflict with adopted policies, plans or programs supporting alternative transportation;
- Create rail, waterborne or air traffic impacts; or
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

The GMP defines the limit of acceptable peak hour intersection operations as Level of Service "D" (LOS "D"), with LOS "E" generally considered deficient for peak hour intersection operations. The CMP defines the limit of acceptable peak hour intersection operations as LOS "E" and also allows for locations where an existing deficiency (e.g., existing LOS "F") is identified to remain at this level, so long as conditions do not worsen. The definition of deficient intersection operations used for the project traffic analysis is therefore, LOS "E", which is consistent with the GMP and more stringent than the CMP. A traffic impact is considered significant if the project both: i) contributes measurable traffic to and ii) substantially and adversely changes the level of service of any intersection projected to experience deficient operations under foreseeable worst case conditions.

4.7.3 Project Impacts

This section provides a summary of the traffic analysis of the proposed project and related traffic issues including discussions of the project, near term conditions, and future conditions with and without the project. Table 4.7-2 shows the future alternatives considered in this study. Year 2025 conditions with and without the project have been evaluated based upon scenarios which assume that the Tonner Canyon Road connection between Valencia Avenue and Brea Canyon Road may or may not be connected.

Table 4.7-2 - Future Scenario Definitions

	With Tonner Canyon Road Connection	Without Tonner Canyon Road Connection
Without Project	X	X
With Project	X	X

Tonner Canyon Road is an off-site circulation feature that is currently included on the Orange County Master Plan of Arterial Highways (MPAH). The traffic study evaluates potential project impacts both with and without this proposed MPAH roadway extension. This was done to ensure that project traffic impacts can be mitigated to a level of insignificance regardless of whether the proposed extension of Tonner Canyon Road occurs. Tonner Hills Drive is the name of the currently planned project access (collector) road that will provide access to the project via Tonner Canyon Road to the north of the project.

Conditions under each of the existing and future traffic scenarios are summarized, with particular attention focused on current and anticipated deficiencies and the measures required to mitigate the deficiencies at locations which are significantly impacted by the proposed project. Deficiencies have been defined as Level of Service "E" (LOS "E") or worse peak hour intersection operations, which is generally consistent with County of Orange standards, City of Brea standards and the CMP/GMP requirements.

a. Project Traffic

(1) Project Land Use

The project land use consists of a 914 single family dwelling units, 77 thousand square foot (tsf) mixed use, a 32.7 public use site (which is assumed to be a sports park for analysis purposes), passive parks, and various other (nominal trip generation) uses with over half the project site dedicated to open space. The project is located north of Lambert Road, South of Tonner Canyon Road and west of Valencia Avenue. Forty of the homes are located just west of SR 57 (with access from Balsa Avenue to State College Boulevard). All other project uses are located east of SR 57. The main project access is the north leg of the intersection Kraemer Boulevard and Lambert Road, but certain parts of the project have access to Valencia Avenue, Tonner Canyon Road, and Lambert Road.

(2) Project Roadway System

Forty of the proposed residences are located just west of SR 57 (with access from Balsa Avenue to State College Boulevard). All other project uses are located east of SR 57. The main project access is the north leg of the intersection Kraemer Boulevard and Lambert Road, but certain parts of the project have access to Valencia Avenue, Tonner Canyon Road, and Lambert Road. Pass-through traffic through the project site is not allowed by the configuration of internal project streets. The preliminary concepts for the park located adjacent to Valencia Avenue suggest that the roadway design is intended to serve park traffic only. No other

internal development traffic (other than the park and adjacent neighborhood) has been assumed to use the Valencia Avenue site access point.

(3) Project Trip Generation

The traffic generated by the proposed project is determined by multiplying an appropriate trip generation rate by the quantity of land use. Trip generation rates have been determined for daily, morning and evening peak hour traffic for the proposed land uses. By multiplying the traffic generation rates by the land use quantities, the traffic volumes are determined. Trip generation rates for this project are based upon data accumulated from various sources and are shown on Table 4.7-3.

Table 4.7-3 - Project Trip Generation Rates

Land Use	Units	Peak Hour				Daily
		AM		PM		
		In	Out	In	Out	
Commercial	TSF	1.080	0.690	3.290	3.570	74.830
Park	AC	0.100	0.100	0.200	0.200	5.000
Single Family Residential	DU	0.240	0.650	0.760	0.440	12.000
Sports Park	AC	0.880	0.740	2.350	2.350	41.760

TSF = thousand square feet, AC = acres, DU = dwelling units

The County of Orange adopted daily trip rate for single family dwelling units is 12.0 trips per day. This is higher than the standard trip rate of 9.55 trips per day typically used by the City of Brea for traffic impact analysis. The higher value of 12.0 trips per day represents a conservative worst case value for environmental impact analysis purposes. The trip rate of 12.0 trips per day has only been applied to the project itself. Daily trip generation for the remainder of the study area (and region) is obtained directly from the regional travel demand model and is generally consistent with the daily trip generation rate used by the City of Brea.

The commercial retail and passive park trip generation rates were obtained from the Institute of Transportation Engineers (ITE) Trip Generation Manual (Sixth Edition). The trip rates for single-family dwelling units are rates specifically approved by the County of Orange, and the trip rates for the active park were derived from previous studies completed by Urban Crossroads, Inc.

Daily and peak-hour trip-ends for the proposed project are shown in Table 4.7-4. The project will generate 18,132 daily trips, with 1,004 trips generated during the AM peak hour and 1,780 trips generated during the PM peak hour. The Technical Appendices provides a more detailed breakdown of the project land use and trip generation by Transportation Analysis Zones (TAZs).

Table 4.7-4 - Project Trip Generation

Land Use	Quantity	Units	Peak Hour				Daily
			AM		PM		
			In	Out	In	Out	
Commercial	77	TSF	83	53	253	275	5,762
Park	7.1	AC	1	1	1	1	36
Single Family Residential	914	DU	21	594	695	402	10,968
Sports Park	32.7	AC	29	24	77	77	1,366
Total			332	672	1,025	755	18,132

TSF = thousand square feet, AC = acres, DU = dwelling units

(4) Project Traffic Distribution

The percentages of project generated trips allocated to various roadway segments are based upon the OCTAM travel demand trip tables. The general pattern of trip distribution for the proposed project obtained from the OCTAM has been reviewed by Urban Crossroads, Inc. staff and appears reasonable. Pass-through traffic through the project site is not allowed by the internal street configuration, since the project is a gated community.

Exhibits contained within the Technical Appendices show the trip distribution patterns for the various project zones (TAZs). Project traffic interacts with surrounding land uses and disperses on surrounding north-south and east-west roadways. Between twenty and thirty percent of the project traffic uses SR 57 for long distance trips to the north and south.

Neighborhood 8 single family dwelling units (40 units) is located in the project area west of the SR 57 Freeway and north of State College Boulevard. Access for this component of the proposed project will be provided exclusively via Balsa Avenue. The majority of the traffic from this area will then access the remainder of the regional transportation system via State College Boulevard and Central Avenue.

A mixed use center is proposed at the corner of Wild Cat Way and Lambert Road. Most (93%) traffic from this mixed use site will utilize Lambert Road to reach the proposed shopping center. Six percent (6%) will utilize North Associated Road, reflecting local (City of Brea) traffic that will visit the center from areas along Associated Road (much of the other traffic visiting the commercial center will also originate within the City of Brea).

For residential Neighborhoods 4, 6 and 7 (343 units) located east of the SR 57 Freeway and west of the project north-south spine collector road, traffic from this area will be distributed fairly evenly to the north and south of the project boundaries. Much of the traffic oriented towards the north will actually use the SR 57 Freeway/Tonner Canyon Road (Brea Canyon Road) interchange to travel south on the SR 57 Freeway.

For Neighborhood 5, traffic is also fairly evenly split between the northerly and southerly project access points, favoring the southerly access slightly more than for Neighborhoods 4, 6 and 7 (57% compared to 52% southerly orientation). As with Neighborhoods 4, 6 and 7, much of the traffic using the northerly project access will quickly transfer to the SR 57 Freeway bound for destinations to the south (and north).

For Neighborhood 1 and Wildcatters Park, most (96%) of the traffic will utilize the Kraemer Boulevard project access point. Fifty-two percent (52%) of this traffic will proceed west on Lambert Road, while 5% will travel east on Lambert Road and the remaining 39% will use Kraemer Boulevard to travel to destinations south of the proposed project. Although Neighborhood 1 is located between Kraemer Boulevard and Valencia Avenue, the internal roadway layout of the park's roadway system is expected to discourage traffic from using Valencia Avenue.

The trip distribution for Neighborhood 3 is very similar to the trip distribution for Neighborhood 1, with 98% of the Neighborhood 1 traffic using the Kraemer Boulevard project access point to reach the adjacent roadway system.

For Neighborhood 2 and the proposed sports park/public use components of the Tonner Hills project. Two percent (2%) of the traffic will be captured internally by the project. Three quarters of the remaining project traffic (74%) will use the Kraemer Boulevard project access point to travel on to destinations north, south, and west of the project site, while the remaining 24% will use Valencia Avenue to travel towards destinations to the south and east.

b. Growth Management Program (GMP) Near Term Analysis

The GMP Near Term analysis consists of existing conditions plus project traffic and has been conducted primarily to identify locations where the project has a measurable impact. This analysis has been conducted by overlaying the peak hour project traffic on the existing counted traffic volumes. The existing plus project analysis has also been used to identify short term improvement needs in the study area. Additional GMP near term analysis will be performed when more is known about project phasing. It is anticipated that the additional GMP analysis will be completed in conjunction with submittal of the Tentative Tract Map Level "B".

(1) Near Term Traffic Conditions

The sphere of impact for the study area has been analyzed based upon County of Orange Growth Management Program (GMP) guidelines for the area to which the project contributes measurable traffic. This is defined as a traffic volume resulting in a 1% increase in the volume/capacity ratio of the sum of all critical movements at any given intersection. The area evaluated has been determined based upon discussions with interested agencies, including staff from the County of Orange and the City of Brea. The Technical Appendices illustrates for each study intersection the Near Term conditions AM and PM peak hour intersection volumes.

(2) Near Term Measurable Project Impact

The 33 intersections tested to determine if detailed analysis is required for the Tonner Hills project AM and PM intersection analysis were previously presented on Exhibit 4.7-1 on page 4.7-3. The Technical Appendices provides the results of the GMP 1% test as well as the Near Term ICU worksheets.

Of the intersections tested for a 1% increase, 28 intersections trip the GMP required analysis threshold. Four of the five intersections that did not meet the GMP measurable traffic criteria are at the extreme edges of the study area and have been dropped from the future conditions analysis. The remaining 29 intersections are analyzed in all of the future scenarios. The Near Term ICU analysis summarized on Table 4.7-5 indicates that the following 6 intersections within the required GMP study area are projected to experience deficient intersection operations under these conditions:

Brea Boulevard (NS) at:
- SR 57 Southbound On-Ramp (EW)
- Tonner Canyon Road (EW)
- Central Avenue (EW)

State College Boulevard (NS) at:
- Lambert Road (EW)

SR 57 Southbound Ramps (NS) at:
- Lambert Road (EW)

Kraemer Boulevard (NS) at:
- Lambert Road (EW)

The intersections of State College Boulevard (NS) at Lambert Road (EW) and Kraemer Boulevard (NS) at Lambert Road (EW) were not previously identified as experiencing deficient operations for existing conditions. These locations are therefore significantly impacted under Near Term conditions.

The project also causes the deficient intersection operations (ICU values) to worsen by .01 or more at the following 4 intersections:

Brea Boulevard (NS) at:
- SR 57 Southbound On-Ramp (EW)
- Tonner Canyon Road (EW)
- Central Avenue (EW)

SR 57 Southbound Ramps (NS) at:
- Lambert Road (EW)

Based upon these analysis results, the project has a significant impact under Near Term (existing plus project) Conditions at all 6 locations that are deficient for Near Term Conditions.

In addition to these impacts to the arterial roadway system, the project is expected to contribute additional traffic to the existing local residential street deficiency previously identified on Balsa Avenue.

The Near Term (existing plus project) scenario was also evaluated with the City of Brea currently adopted and proposed fee program improvements. Table 4.7-5 summarizes the ICU calculations for Near Term (existing plus project) Conditions with currently adopted free program improvements.

The City of Brea currently adopted fee program includes improvements at three of the six intersections where Near Term conditions deficiencies have been identified. Near Term traffic operations are projected to improve to acceptable conditions at the intersections of Kraemer Boulevard (NS) at Lambert Road (EW) and State College Boulevard (NS) at Lambert Road (EW), as a result of the currently adopted fee program improvements. This will leave the following four deficient intersections:

Brea Boulevard (NS) at:
- SR 57 Southbound On-Ramp (EW).
- Tonner Canyon Road (EW).
- Central Avenue (EW)

SR 57 Southbound Ramps (NS) at:
- Lambert Road (EW)

The effect of the currently adopted fee program improvements included in the currently adopted fee program at the other two deficient locations have also been reviewed with respect to their ability to reduce the project impact to a level of insignificance. Based upon this review, the improvements at these other two locations do not reduce the ICU value to a level of insignificant project impact. The Near Term conditions project impact at the four intersections listed above therefore remains significant, even with implementation of the City of Brea currently adopted fee program.

The Near Term traffic volumes have also been evaluated assuming implementation of both the currently adopted and the proposed City of Brea traffic fee program improvements. Table 4.7-5 summarizes the results of this additional analysis. Intersections that will be improved in conjunction with the proposed City of Brea fee program are identified with a code of "P" for proposed or "B" for both on Table 4.7-5.

The City of Brea proposed fee program includes improvements at three of the four intersections where Near Term conditions deficiencies have been identified, even after implementation of the currently adopted fee program improvements. Near Term traffic operations with the proposed fee program are projected to improve to acceptable conditions at the intersections of Brea Boulevard (NS) at the SR 57 Southbound On-Ramp (EW) and Brea Boulevard (NS) at Tonner Canyon Road (EW). This will leave the following two deficient intersections:

Table 4.7-5 - Near Term (Existing Count Plus Project) Intersection Levels of Service

#	Intersection	Existing Lane Geometrics				With City of Brea Currently Adopted Fee Program				With City of Brea Proposed Fee Program			
		Peak Hour ICU*		Level of Service		Peak Hour ICU*		Level of Service		Peak Hour ICU*		Level of Service	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
	Puente St. (NS) at:												
21	- Central Ave. (EW)	0.48	0.60	A	A	0.48	0.60	A	A	0.44	0.52	A	A
17	- Lambert Rd. (EW	0.49	0.62	A	B	0.49	0.62	A	B	0.49	0.59	A	A
	Berry St. (NS) at:												
20	- Central Ave. (EW)	0.55	0.54	A	A	0.55	0.54	A	A	0.55	0.54	A	A
16	- Lambert Rd. (EW)	0.53	0.61	A	B	0.53	0.61	A	B	0.53	0.61	A	B
	Brea Blvd. (NS) at:												
24	- SR 57 SB On-Ramp (EW)	1.11	1.33	F	F	1.11	1.33	F	F	0.58	0.70	A	B
23	- Tonner Canyon Rd. (EW)	1.13	1.28	F	F	1.13	1.28	F	F	0.62	0.87	B	D
18	- Central Ave. (EW)	1.01	1.05	F	F	0.81	1.05	D	F	0.81	1.05	D	F
15	- Lambert Rd. (EW)	0.61	0.67	B	B	0.61	0.67	B	B	0.61	0.67	B	B
	State College Blvd. (NS) at:												
14	- Lambert Rd. (EW	0.82	0.92	D	E	0.82	0.89	D	D	0.82	0.89	D	D
7	- Birch St. (EW)	0.53	0.69	A	B	0.53	0.69	A	B	0.53	0.69	A	B
	SR 57 SB Off-Ramp (NS) at:												
26	- Brea Canyon Rd. (EW)	0.81	0.77	D	C	0.81	0.77	D	C	0.61	0.70	B	C
	SR 57 NB On-Ramp (NS) at:												
25	- Brea Canyon Rd. (EW)	0.53	0.57	A	A	0.53	0.57	A	A	0.53	0.57	A	A
	SR 57 NB Off-Ramp (NS) at:												
22	- Tonner Canyon Rd. (EW)	0.15	0.27	A	A	0.15	0.27	A	A	0.15	0.27	A	A
	SR 57 SB Ramps (NS) at:												
13	- Lambert Rd. (EW	0.78	1.18	D	F	0.78	1.18	C	F	0.78	1.18	D	F
	SR 57 NB Ramps (NS) at:												
12	- Lambert Rd. (EW)	–	–	–	--	0.77	0.75	C	C	0.77	0.71	C	C
	Pointe Dr. (NS) at:												
11	- Lambert Rd. (EW)	0.49	0.73	A	C	0.49	0.70	A	B	0.49	0.70	A	B
	N. Associated Rd./Wild Cat Way (NS) at:												
9	- Lambert Rd. (EW)	0.69	0.57	B	A	0.69	0.57	B	A	0.69	0.57	B	A
5	- Birch St. (EW)	0.65	0.65	B	B	0.65	0.65	B	B	0.65	0.65	B	B
	S. Associated Rd. (NS) at:												
6	- Birch St. (EW)	0.64	0.74	B	C	0.64	0.74	B	C	0.56	0.58	A	A
1	- Imperial Hwy. (EW)	0.61	0.83	B	D	0.54	0.69	A	B	0.54	0.69	A	B

#	Intersection	Existing Lane Geometrics				With City of Brea Currently Adopted Fee Program				With City of Brea Proposed Fee Program			
		Peak Hour ICU*		Level of Service		Peak Hour ICU*		Level of Service		Peak Hour ICU*		Level of Service	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
	Kraemer Blvd. (NS) at:												
8	- Lambert Rd. (EW)	0.91	0.74	E	C	0.79	0.72	C	C	0.79	0.69	C	B
30	- Birch St. (EW)	0.57	0.77	A	C	0.57	0.77	A	C	0.48	0.56	A	A
31	- Imperial Hwy. (EW)	0.60	0.74	A	C	0.56	0.71	A	C	0.56	0.71	A	C
34	- Bastanchury Rd. (EW)	0.54	0.67	A	B	0.54	0.67	A	B	0.54	0.67	A	B
	Valencia Ave. (NS) at:												
28	- Carbon Canyon Rd./Lambert Rd. (EW)	0.70	0.73	B	C	0.38	0.32	A	A	0.38	0.32	A	A
29	- Birch St. (EW)	0.54	0.54	A	A	0.42	0.46	A	A	0.42	0.46	A	A
32	- Imperial Hwy. (EW)	0.68	0.65	B	B	0.68	0.65	B	B	0.60	0.56	A	A
	Rose Dr. (NS) at:												
33	- Imperial Hwy. (EW)	0.56	0.78	A	C	0.56	0.78	A	C	0.56	0.78	A	C
	Imperial Hwy. (NS) at:												
10	- Bastanchury Rd. (EW)	0.70	0.75	B	C	0.65	0.70	B	B	–	–	–	–

*ICU = Intersection Capacity Utilization

Brea Boulevard (NS) at:
- Central Avenue (EW)

SR 57 Southbound Ramps (NS) at:
- Lambert Road (EW)

The effect of the proposed fee program improvements has also been reviewed with respect to their ability to reduce the project impact to a level of insignificance. The project impact at the locations are not reduced to a level of insignificance by the proposed fee program improvements. The Near Term conditions project impact at the two intersections listed above therefore remains significant, even with implementation of the City of Brea proposed fee program improvements. Discussion of proposed mitigation measures for these impacts is provided later in this section.

c. Future Conditions (Year 2025)

Forecasts of reasonably foreseeable conditions in the study area have been developed assuming build-out of the General Plan land uses in the vicinity of the project. The OCTAM 3.1 forecasts have been developed using OCP-2000 socioeconomic data throughout the Orange County area and the MPAH/circulation element roadway system.

This section of the analysis describes future study area circulation plans, anticipated land use changes, and the resulting traffic forecasts and roadway operations under future conditions without the project.

(1) Area Circulation Plans

The future transportation infrastructure (roadway system) within the study area is consistent with the Orange County Master Plan of Arterial Highways (MPAH) and was described previously. Only committed transportation infrastructure improvements have been assumed in the future conditions analysis contained in this report. The only exception is the connection of Tonner Canyon Road to Valencia Avenue. Future conditions with and without this connection have been analyzed.

The intersection geometries used in this analysis do not include unfunded roadway improvements. Future conditions have been analyzed using existing intersection lane geometries in conjunction with the City of Brea currently adopted fee program improvements. A separate analysis assuming the additional improvements in the City of Brea proposed fee program has also been completed and is summarized as well.

(2) Future Land Use

The planned transportation systems have been developed in conjunction with long range planning of future land uses within the study area. The transportation systems have been designed to accommodate future travel demand to the maximum extent possible. Future without project conditions for this traffic impact analysis study have assumed the adopted 2025 (OCP-2000) socioeconomic data (SED) throughout Orange County.

The only area where the adopted OCP-2000 2025 SED was not used was in the immediate vicinity of the project site. Data for the remaining portions of the OCTAM 3.1 traffic analysis zones (TAZs) that include the project site was generally obtained directly from the Brea Traffic Model Technical Notebook. The mitigated negative declaration (MND) for Tentative Tract 16047 (TT 16047) was provided to Urban Crossroads, Inc., and it was requested that the data included in the Tonner Hills analysis be reviewed to ensure that this project was accounted for in the traffic forecasts.

TT 16047 includes 56 single family dwelling units. The land area represented by TT 16047 was combined with the additional outparcel located to the south of the Tonner Hills project between TT 16047 and Valencia Avenue. The traffic model included a total of 356 single family dwelling units for the overall area south of the project between Kraemer Boulevard and Valencia Avenue. The land uses for TT 16047 were adequately represented in the traffic analysis.

(3) 2025 Without Project Traffic Conditions

Average daily traffic volumes forecast by the OCTAM for 2025 conditions without the project and with the Tonner Canyon Road Connection are shown on Exhibit 4.7-6. Average daily traffic volumes without the project and without the Tonner Canyon Road Connection are presented on Exhibit 4.7-7. The Tonner Canyon Road Connection is projected to carry 8,500 vehicles per day if constructed. This traffic is diverted from several parallel facilities, including Brea Boulevard, Lambert Road, Birch Street and Imperial Highway.

Daily traffic volumes in excess of 70,000 vehicles per day (VPD) are forecast on Lambert Road west of the Orange (SR 57) Freeway and in excess of 80,000 VPD on Imperial Highway west of the SR 57 Freeway. Traffic volumes on these roadways east of the SR 57 Freeway are generally lower, ranging from 23,800 VPD to a maximum of 61,100 VPD (Imperial Highway between Associated Road and the SR 57 Freeway). Brea Boulevard / Brea Canyon Road is projected to carry the highest 2025 daily traffic volumes of any north-south roadway in the study area, with volumes generally ranging between 16,000 VPD and 29,000 VPD.

The effect of the proposed Tonner Canyon Road Connection is most evident on Brea Boulevard between Central Avenue and Tonner Canyon Road. The daily traffic volume without the Tonner Canyon Road Connection is 26,600 VPD, compared to 23,600 VPD if the Tonner Canyon Road Connection is constructed. Daily traffic volumes differ by less than 500 VPD north of Tonner Canyon Road for with versus without the proposed Tonner Canyon Road connection.

Peak hour traffic volumes have also been developed using the OCTAM. A summary of projected intersection operations under 2025 conditions without the project and with the Tonner Canyon Road Connection are provided in Tables 4.7-6 with the currently adopted City of Brea fee program lanes and with proposed fee program lanes, respectively. Review of Table 4.7-6 indicates that the following 10 intersections will experience deficient peak hour traffic operations, if only the City of Brea currently adopted fee program improvements are implemented:

Brea Boulevard (NS) at:
- SR 57 Southbound On-Ramp (EW)
- Tonner Canyon Road (EW)
- Central Avenue (EW)

State College Boulevard (NS) at:
- Lambert Road (EW)

SR 57 Southbound Ramps (NS) at:
- Brea Canyon Road (NS)
- Lambert Road (EW)

Valencia Avenue (NS) at:
- Birch Street (EW)
- Imperial Highway (EW)

Rose Drive (NS) at:
- Imperial Highway (EW)

Imperial Highway (NS) at:
- Bastanchury Road (EW)

ICU calculations have also been performed assuming implementation of the City of Brea proposed traffic improvement fee program. The results of this analysis are summarized on Table 4.7-6. A total of 7 intersections will experience deficient peak hour traffic operations for 2025 No Project With Tonner Canyon Road Connection conditions with the proposed fee program improvements. The intersections where deficiencies are projected are:

Brea Boulevard (NS) at:
- Tonner Canyon Road (EW)
- Central Avenue (EW)

State College Boulevard (NS) at:
- Lambert Road (EW)

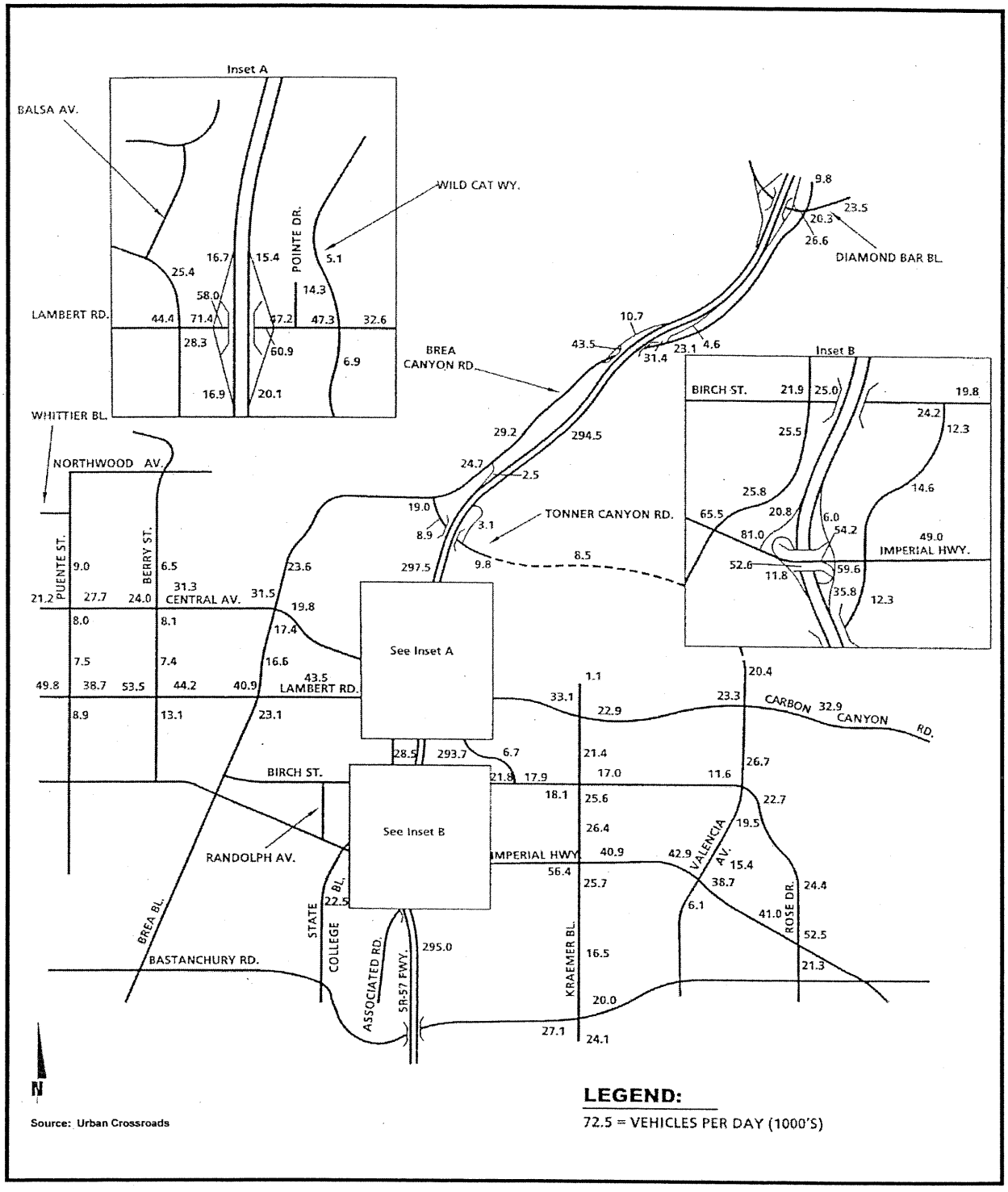

Exhibit 4.7-6

2025 No Project With Tonner Canyon Road Connection ADT Volumes

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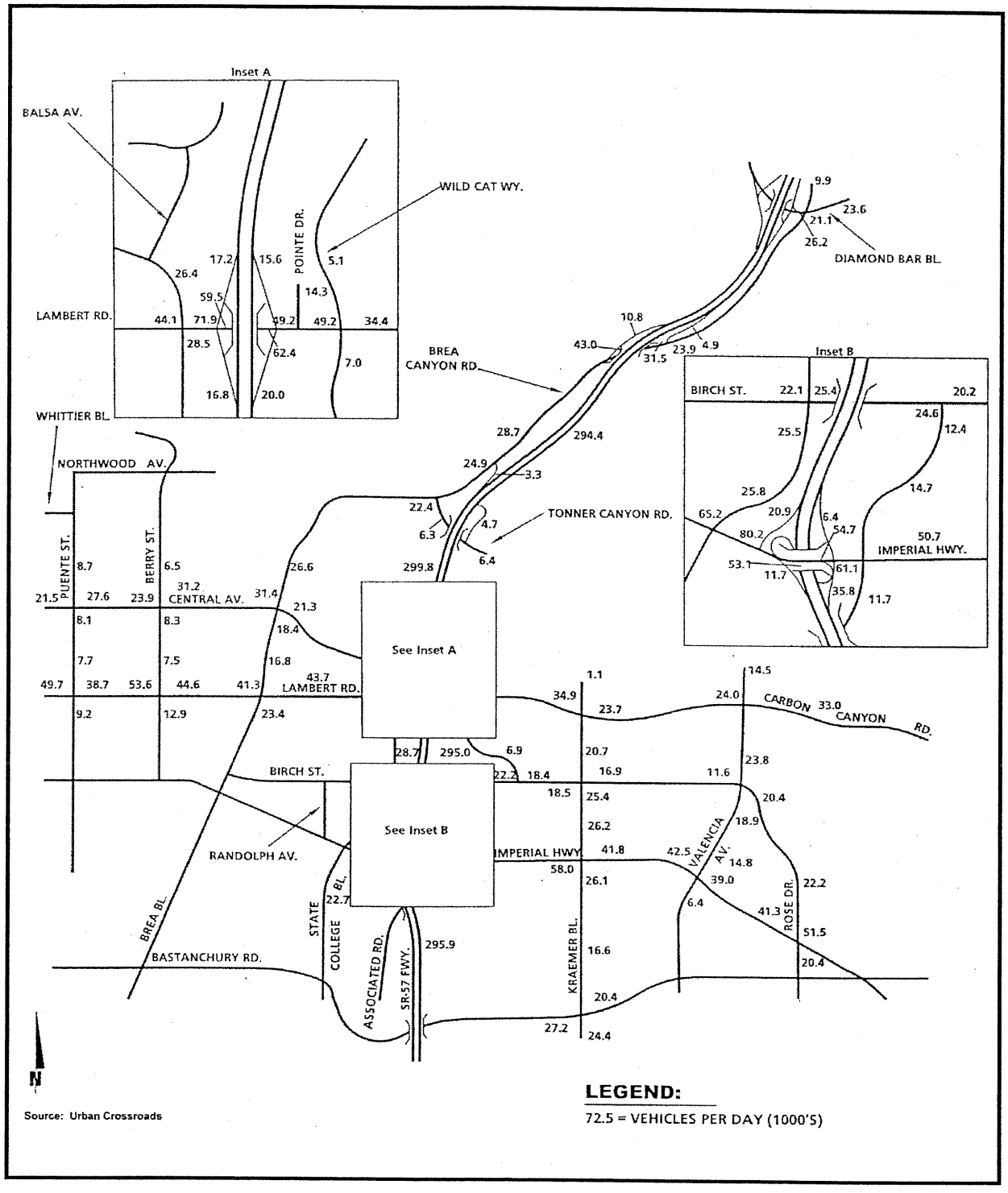

Exhibit 4.7-7

2025 No Project Without Tonner Canyon Road Connection ADT Volumes

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SR 57 Southbound Ramps (NS) at:
- Lambert Road (EW)

Valencia Avenue (NS) at:
- Birch Street (EW)

Rose Drive (NS) at:
- Imperial Highway (EW)

Imperial Highway (NS) at:
- Bastanchury Road (EW)

2025 traffic conditions without the Tonner Canyon Road Connection (i.e., deleting this facility from the adopted Master Plan of Arterial Highways) have also been evaluated. 2025 No Project Without the Tonner Canyon Road Connection conditions are summarized on Table 4.7-6, assuming that only the City of Brea currently adopted fee program roadway improvements are in place.

The results summarized on Table 4.7-6 indicate that the following 10 intersections are projected to experience deficient AM and/or PM peak hour traffic operations within the study area for 2025 Without Project Without the Tonner Canyon Road Connection conditions and assuming that only the currently adopted fee program improvements are constructed:

Brea Boulevard (NS) at:
- SR 57 Southbound On-Ramp (EW)
- Tonner Canyon Road (EW)
- Central Avenue (EW)

State College Boulevard (NS) at:
- Lambert Road (EW)

SR 57 Southbound Ramps (NS) at:
- Brea Canyon Road (NS)
- Lambert Road (EW)

Kraemer Boulevard (NS) at:
- Lambert Road (EW)

Valencia Avenue (NS) at:
- Imperial Highway (EW)

Rose Drive (NS) at:
- Imperial Highway (EW)

Imperial Highway (NS) at:
- Bastanchury Road (EW)

Table 4.7-6 - 2025 Without Project Intersection Levels of Service

#	Intersection	With Tonner Connection								Without Tonner Connection							
		City of Brea Currently Adopted Fee Program				With City of Brea Proposed Fee Program				with City of Brea Currently Adopted Fee Program				With City of Brea Proposed Fee Program			
		Peak Hour ICU*		Level of Service		Peak Hour ICU*		Level of Service		Peak Hour ICU*		Level of Service		Peak Hour ICU*		Level of Service	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
	Puente St. (NS) at:																
21	- Central Ave. (EW)	0.52	0.70	A	B	0.50	0.60	A	A	0.52	0.70	A	B	0.49	0.60	A	A
17	- Lambert Rd. (EW	0.61	0.67	B	B	0.61	0.64	B	B0	0.61	0.69	B	B	0.61	0.66	B	B
	Berry St. (NS) at:																
20	- Central Ave. (EW)	0.63	0.60	B	A	0.63	0.60	B	A	0.63	0.61	B	B	0.63	0.61	B	B
16	- Lambert Rd. (EW)	0.63	0.68	B	B	0.63	0.68	B	B0	0.60	0.71	A	C	0.60	0.71	A	C
	Brea Blvd. (NS) at:																
24	- SR 57 SB On-Ramp (EW)	1.46	1.69	F	F	0.74	0.87	C	D	1.36	1.71	F	F	0.70	0.89	B	D
23	- Tonner Canyon Rd. (EW)	0.96	1.48	E	F	0.61	1.06	B	F	1.09	1.26	F	F	0.59	0.85	A	D
18	- Central Ave. (EW)	0.84	1.23	D	F	0.84	1.08	D	F	0.90	1.22	D	F	0.90	1.10	D	F
15	- Lambert Rd. (EW)	0.69	0.72	B	C	0.69	0.71	B	C	0.70	0.74	B	C	0.70	0.73	B	C
	State College Blvd. (NS) at:																
14	- Lambert Rd. (EW	0.96	0.92	E	E	0.91	0.92	E	E	0.94	0.94	E	E	0.94	0.94	E	E
7	- Birch St. (EW)	0.64	0.83	B	D	0.60	0.79	A	C	0.61	0.80	B	C	0.61	0.80	B	C
	SR 57 SB Off-Ramp (NS) at:																
26	- Brea Canyon Rd. (EW)	0.94	0.98	E	E	0.65	0.90	B	D	0.92	0.90	E	D	0.67	0.90	C	D
	SR 57 NB On-Ramp (NS) at:																
25	- Brea Canyon Rd. (EW)	0.72	0.68	C	B	0.72	0.68	C	B	0.84	0.71	D	C	0.84	0.71	D	C
	SR 57 NB Off-Ramp (NS) at:																
22	- Tonner Canyon Rd. (EW)	0.25	0.45	A	A	0.25	0.45	A	A	0.16	0.31	A	A	0.16	0.31	A	A
	SR 57 SB Ramps (NS) at:																
13	- Lambert Rd. (EW	0.95	1.33	E	F	0.89	1.19	D	F	0.93	1.18	E	F	0.93	1.18	E	F
	SR 57 NB Ramps (NS) at:																
12	- Lambert Rd. (EW)	0.83	0.77	D	C	0.83	0.73	D	C	0.87	0.77	D	C	0.87	0.73	D	C
	Pointe Dr. (NS) at:																
11	- Lambert Rd. (EW)	0.55	0.82	A	D	0.54	0.78	A	D	0.56	0.79	A	C	0.56	0.79	A	C
	N. Associated Rd./Wild Cat Way (NS) at:																
9	- Lambert Rd. (EW)	0.75	0.57	C	A	0.73	0.56	C	A	0.75	0.57	C	A	0.75	0.57	C	A
5	- Birch St. (EW)	0.75	0.71	C	C	0.72	0.69	C	B	0.71	0.71	C	C	0.71	0.71	C	C

#	Intersection	With Tonner Connection								Without Tonner Connection							
		City of Brea Currently Adopted Fee Program				With City of Brea Proposed Fee Program				with City of Brea Currently Adopted Fee Program				With City of Brea Proposed Fee Program			
		Peak Hour ICU*		Level of Service		Peak Hour ICU*		Level of Service		Peak Hour ICU*		Level of Service		Peak Hour ICU*		Level of Service	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
	S. Associated Rd. (NS) at:																
6	- Birch St. (EW)	0.74	0.78	C	C	0.63	0.58	B	A	0.72	0.79	C	C	0.64	0.59	B	A
1	- Imperial Hwy. (EW)	0.60	0.80	A	C	0.60	0.78	A	C	0.61	0.80	B	C	0.61	0.94	B	E
	Kraemer Blvd. (NS) at:																
8	- Lambert Rd. (EW)	0.94	0.75	E	C	0.87	0.63	D	B	0.95	0.77	E	C	0.95	0.65	E	B
30	- Birch St. (EW)	0.78	0.91	C	E	0.60	0.62	A	B	0.81	0.82	D	D	0.65	0.59	B	A
31	- Imperial Hwy. (EW)	0.70	0.90	B	D	0.70	0.85	B	D	0.72	0.84	C	D	0.72	0.84	C	D
34	- Bastanchury Rd. (EW)	0.66	0.77	B	C	0.66	0.77	B	C	0.67	0.76	B	C	0.67	0.76	B	C
	Valencia Ave. (NS) at:																
28	- Carbon Canyon Rd./Lambert Rd. (EW)	0.87	0.59	D	A	0.85	0.59	D	A	0.82	0.49	D	A	0.82	0.49	D	A
29	- Birch St. (EW)	0.96	1.04	E	F	0.96	0.95	E	E	0.83	0.77	D	C	0.83	0.77	D	C
32	- Imperial Hwy. (EW)	0.99	0.93	E	E	0.77	0.71	C	C	0.96	0.90	E	D	0.77	0.72	C	C
	Rose Dr. (NS) at:																
33	- Imperial Hwy. (EW)	0.83	1.12	D	F	0.83	1.12	D	F	0.82	1.04	D	F	0.82	1.04	D	F
	Imperial Hwy. (NS) at:																
10	- Bastanchury Rd. (EW)	0.98	1.01	E	F	0.94	1.01	E	F	0.95	0.97	E	E	0.87	0.97	D	E

*ICU = Intersection Capacity Utilization

ICU calculations have also been performed assuming implementation of the City of Brea proposed traffic improvement fee program. The results of this analysis are summarized on Table 4.7-6. A total of 6 intersections will experience deficient peak hour traffic operations for 2025 No Project Without Tonner Canyon Road Connection conditions, with the City of Brea proposed fee program improvements. The intersections where deficiencies are projected are:

Brea Boulevard (NS) at:
- Central Avenue (EW).

State College Boulevard (NS) at:
- Lambert Road (EW)

SR 57 Southbound Ramps (NS) at:
- Lambert Road (EW)

Kraemer Boulevard (NS) at:
- Lambert Road (EW)

Rose Drive (NS) at:
- Imperial Highway (EW)

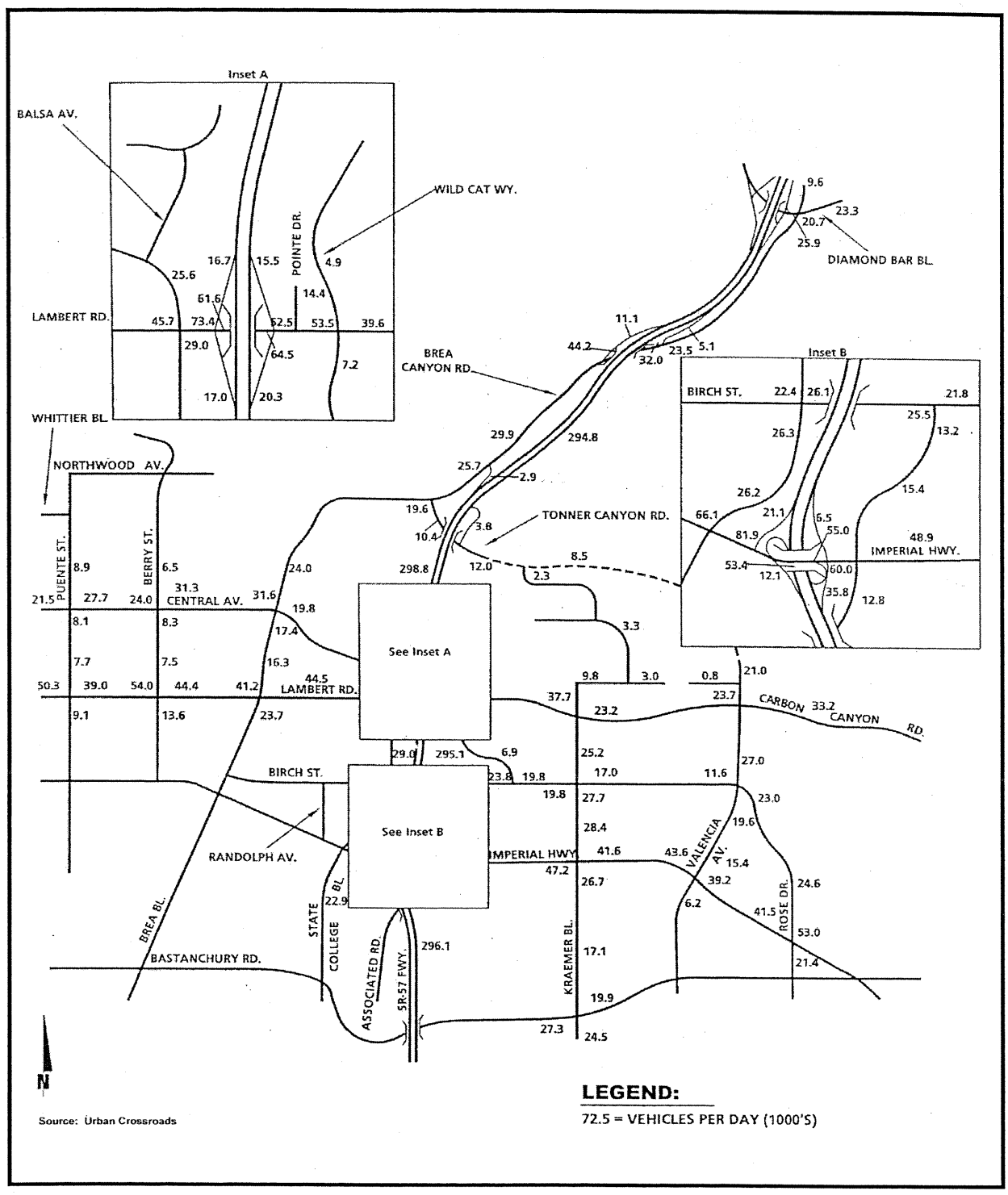
Imperial Highway (NS) at:
- Bastanchury Road (EW)

Discussion of proposed mitigation measures to address these impacts are provided later in this section.

(4) 2025 With Project Traffic Conditions

Future (2025) with project traffic volumes have been developed for two distinct scenarios. Future with project conditions have been forecast and analyzed both with and without the proposed Tonner Canyon Road Connection. The assignment of project traffic to the future network using computer modeling allows for the interaction of trips between existing and future land uses assumed under future without project conditions on the street system to react to the proposed land uses within the project. As portions of the street system become congested, travel patterns can change as drivers modify their travel route in order to avoid delays in the high volume areas. For this reason, future with project traffic volumes do not equal future without project traffic volumes with a direct addition of project only traffic volumes.

Average daily traffic (ADT) volumes forecast by the OCTAM for 2025 With Project With Tonner Canyon Road Connection conditions are shown on Exhibit 4.7-8. Average daily traffic (ADT) volumes forecast by the OCTAM for 2025 With Project Without Tonner Canyon Road Connection conditions are shown on Exhibit 4.7-9.



Source: Urban Crossroads

Exhibit 4.7-8

2025 With Project With Tonner Canyon Road Connection ADT Volumes

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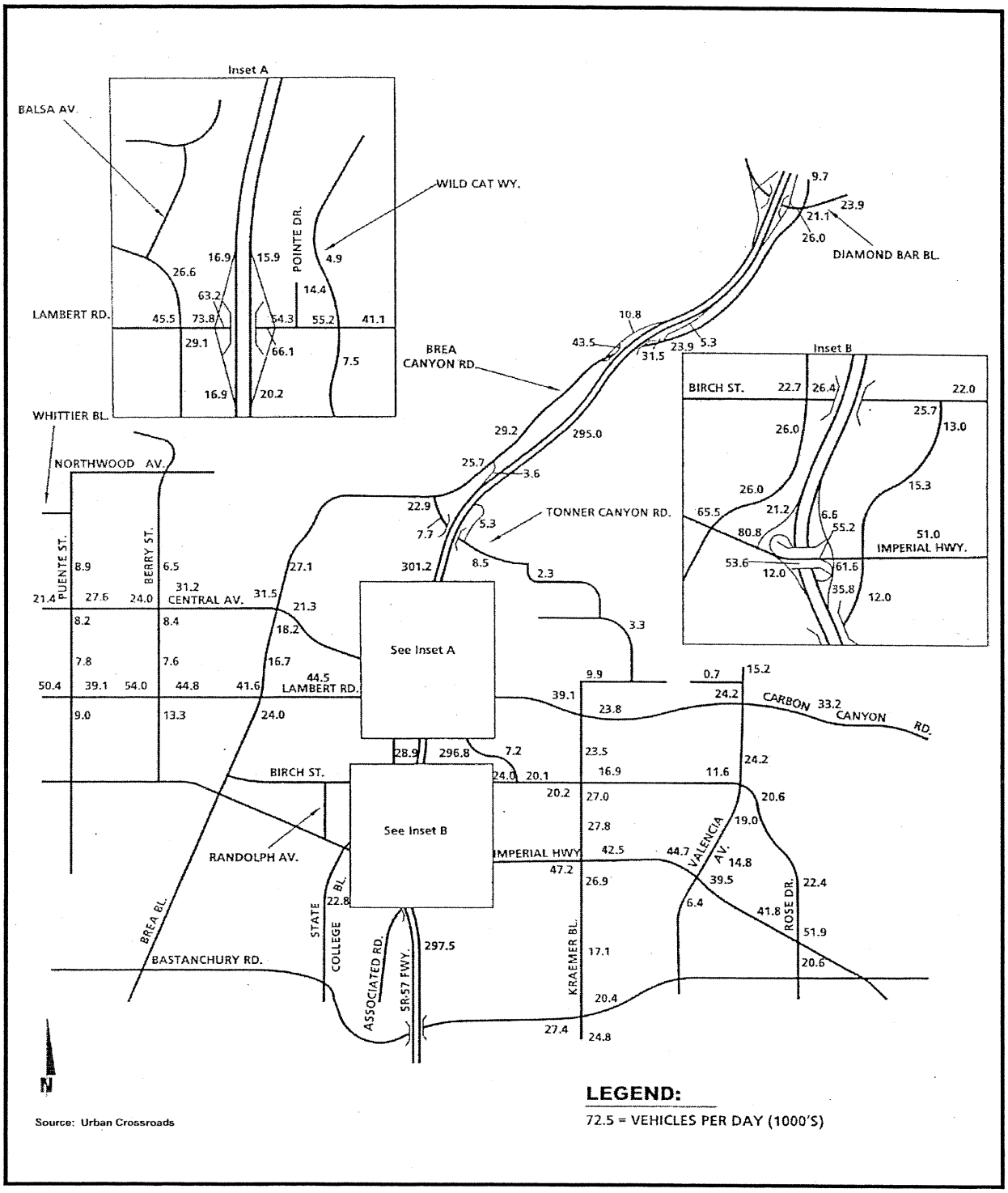

Exhibit 4.7-9

2025 With Project Without Tonner Canyon Road Connection ADT Volumes

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The daily traffic volume on the proposed Tonner Canyon Road Connection is unchanged from 2025 without project conditions (8,500 vehicles per day). One thousand (1,000) to 2,000 vehicles per day (VPD) use the internal project roadway system to access the regional highway system via Tonner Canyon Road or Valencia Avenue. Kraemer Boulevard north of Lambert Road and Lambert Road between Kraemer Boulevard and the SR 57 Freeway experience the greatest increase in daily traffic (7,000-8,000 VPD). No other roadway segment experiences an increase in traffic greater than 1,000 VPD.

2025 With Project With the Tonner Canyon Road Connection traffic conditions have been evaluated assuming two distinct sets of roadway improvements. First, 2025 conditions with only the City of Brea currently adopted fee program have been evaluated. A second set of calculations assuming both the currently adopted and the proposed fee program improvements are implemented has also been prepared. The 2025 With Project With the Tonner Canyon Road Connection conditions ICU analysis results are summarized on Table 4.7-7. This analysis indicates that the following 12 intersections will experience deficient peak hour traffic operations, if only the City of Brea currently adopted fee program improvements are implemented:

Brea Boulevard (NS) at:
- SR 57 Southbound On-Ramp (EW)
- Tonner Canyon Road (EW)
- Central Avenue (EW)

State College Boulevard (NS) at:
- Lambert Road (EW)

SR 57 Southbound Ramps (NS) at:
- Brea Canyon Road (NS)
- Lambert Road (EW)

Kraemer Boulevard (NS) at:
- Lambert Road (EW)
- Birch Street (EW)

Valencia Avenue (NS) at:
- Birch Street (EW)
- Imperial Highway (EW)

Rose Drive (NS) at:
- Imperial Highway (EW)

Imperial Highway (NS) at:
- Bastanchury Road (EW)

ICU calculations have also been performed assuming implementation of the City of Brea proposed traffic improvement fee program. The results of this analysis are summarized on Table 4.7-7. A total of 9 intersections will experience deficient peak hour traffic operations for 2025 With Project With Tonner Canyon Road Connection conditions with the proposed fee program. The 9 intersections where deficiencies are projected are:

Brea Boulevard (NS) at:
- Tonner Canyon Road (EW)
- Central Avenue (EW)

State College Boulevard (NS) at:
- Lambert Road (EW)

SR 57 Southbound Ramps (NS) at:
- Brea Canyon Road (NS)
- Lambert Road (EW)

Kraemer Boulevard (NS) at:
- Lambert Road (EW)

Valencia Avenue (NS) at:
- Birch Street (EW)

Rose Drive (NS) at:
- Imperial Highway (EW)

Imperial Highway (NS) at:
- Bastanchury Road (EW)

2025 With Project traffic conditions without the Tonner Canyon Road Connection (i.e., deleting this facility from the adopted Master Plan of Arterial Highways) have also been evaluated. 2025 With Project Without the Tonner Canyon Road Connection conditions are summarized on Table 4.7-7, assuming that only the City of Brea currently adopted fee program roadway improvements are in place.

The results summarized on Table 4.7-7 indicate that the following 10 intersections are projected to experience deficient AM and/or PM peak hour traffic operations within the study area for 2025 With Project Without the Tonner Canyon Road Connection conditions with the City of Brea currently adopted fee program intersection lane geometries:

Table 4.7-7 - 2025 With Project Intersection Levels of Service

#	Intersection	With Tonner Connection								Without Tonner Connection							
		City of Brea Currently Adopted Fee Program				Proposed Fee Program				City of Brea Currently Adopted Fee Program				Proposed Fee Program			
		Peak Hour ICU*		Level of Service		Peak Hour ICU*		Level of Service		Peak Hour ICU*		Level of Service		Peak Hour ICU*		Level of Service	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
	Puente St. (NS) at:																
21	- Central Ave. (EW)	0.54	0.70	A	B	0.50	0.60	A	A	0.54	0.69	A	B	0.49	0.60	A	A
17	- Lambert Rd. (EW	0.60	0.67	A	B	0.60	0.64	A	B	0.59	0.69	A	B	0.59	0.66	A	B
	Berry St. (NS) at:																
20	- Central Ave. (EW)	0.63	0.61	B	B	0.63	0.61	B	B	0.63	0.61	B	B	0.63	0.61	B	B
16	- Lambert Rd. (EW)	0.62	0.68	B	B	0.62	0.68	B	B	0.59	0.69	A	B	0.59	0.69	A	B
	Brea Blvd. (NS) at:																
24	- SR 57 SB On-Ramp (EW)	1.43	1.70	F	F	0.74	0.88	B	D	1.44	1.68	F	F	0.74	0.87	C	D
23	- Tonner Canyon Rd. (EW)	0.98	1.43	E	F	0.65	1.08	B	F	1.16	1.28	F	F	0.63	0.87	B	D
18	- Central Ave. (EW)	0.84	1.19	D	F	0.84	1.08	D	F	0.90	1.23	D	F	0.90	1.11	D	F
15	- Lambert Rd. (EW)	0.69	0.72	B	C	0.69	0.72	B	C	0.70	0.73	B	C	0.70	0.73	B	C
	State College Blvd. (NS) at:																
14	- Lambert Rd. (EW	0.92	0.93	E	E	0.92	0.93	E	E	0.94	0.96	E	E	0.94	0.96	E	E
7	- Birch St. (EW)	0.61	0.84	B	D	0.61	0.84	B	D	0.60	0.83	B	D	0.60	0.83	A	D
	SR 57 SB Off-Ramp (NS) at:																
26	- Brea Canyon Rd. (EW)	0.91	0.98	E	E	0.68	0.91	C	E	0.93	0.91	E	E	0.68	0.87	B	D
	SR 57 NB On-Ramp (NS) at:																
25	- Brea Canyon Rd. (EW)	0.86	0.67	D	B	0.86	0.67	D	B	0.85	0.68	D	B	0.85	0.68	D	B
	SR 57 NB Off-Ramp (NS) at:																
22	- Tonner Canyon Rd. (EW)	0.25	0.48	A	A	0.25	0.48	A	A	0.20	0.36	A	A	0.20	0.36	A	A
	SR 57 SB Ramps (NS) at:																
13	- Lambert Rd. (EW	0.88	1.19	E	F	0.88	1.19	D	F	0.88	1.18	D	F	0.88	1.18	D	F
	SR 57 NB Ramps (NS) at:																
12	- Lambert Rd. (EW)	0.83	0.76	D	C	0.83	0.72	D	C	0.86	0.78	D	C	0.86	0.74	D	C
	Pointe Dr. (NS) at:																
11	- Lambert Rd. (EW)	0.56	0.82	A	D	0.56	0.82	A	D	0.57	0.83	A	D	0.57	0.83	A	D
	N. Associated Rd./Wild Cat Way																
9	(NS) at:																
5	- Lambert Rd. (EW)	0.75	0.60	C	A	0.75	0.60	C	A	0.76	0.61	C	B	0.76	0.61	C	B
	- Birch St. (EW)	0.75	0.75	C	C	0.75	0.75	C	C	0.74	0.76	C	C	0.74	0.76	C	C

#	Intersection	With Tonner Connection								Without Tonner Connection							
		City of Brea Currently Adopted Fee Program				Proposed Fee Program				City of Brea Currently Adopted Fee Program				Proposed Fee Program			
		Peak Hour ICU*		Level of Service		Peak Hour ICU*		Level of Service		Peak Hour ICU*		Level of Service		Peak Hour ICU*		Level of Service	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
	S. Associated Rd. (NS) at:																
6	- Birch St. (EW)	0.75	0.84	C	D	0.65	0.65	B	B	0.76	0.83	C	D	0.66	0.64	B	B
1	- Imperial Hwy. (EW)	0.61	0.81	B	D	0.61	0.81	B	D	0.62	0.82	B	D	0.62	0.82	B	D
	Kraemer Blvd. (NS) at:																
8	- Lambert Rd. (EW)	0.96	0.83	E	D	0.96	0.73	E	C	0.97	0.85	E	D	0.97	0.75	E	C
30	- Birch St. (EW)	0.78	0.97	C	E	0.63	0.67	B	B	0.82	0.88	D	D	0.67	0.61	B	B
31	- Imperial Hwy. (EW)	0.72	0.88	C	D	0.72	0.88	C	D	0.74	0.87	C	D	0.74	0.87	C	D
34	- Bastanchury Rd. (EW)	0.69	0.78	B	C	0.69	0.78	B	C	0.68	0.77	B	C	0.68	0.77	B	C
	Valencia Ave. (NS) at:																
28	- Carbon Canyon Rd./Lambert Rd.																
29	(EW)	0.86	0.60	D	A	0.86	0.60	D	A	0.83	0.49	D	A	0.83	0.49	D	A
32	- Birch St. (EW)	0.98	0.96	E	E	0.98	0.96	E	E	0.84	0.79	D	C	0.84	0.79	D	C
	- Imperial Hwy. (EW)	0.96	0.93	E	E	0.76	0.72	C	C	0.97	0.90	E	D	0.77	0.73	C	C
	Rose Dr. (NS) at:																
33	- Imperial Hwy. (EW)	0.84	1.12	D	F	0.84	1.12	D	F	0.83	1.04	D	F	0.83	1.04	D	F
	Imperial Hwy. (NS) at:																
10	- Bastanchury Rd. (EW)	0.94	1.02	E	F	0.94	1.02	E	F	0.95	0.97	E	E	0.95	0.97	E	E

*ICU = Intersection Capacity Utilization

Brea Boulevard (NS) at:
- SR 57 Southbound On-Ramp (EW)
- Tonner Canyon Road (EW)
- Central Avenue (EW)

State College Boulevard (NS) at:
- Lambert Road (EW)

SR 57 Southbound Off-Ramp (NS) at:
- Brea Canyon Road (NS)

SR 57 Southbound Ramps (NS) at:
- Lambert Road (EW)

Kraemer Boulevard (NS) at:
- Lambert Road (EW)

Valencia Avenue (NS) at:
- Imperial Highway (EW)

Rose Drive (NS) at:
- Imperial Highway (EW)

Imperial Highway (NS) at:
- Bastanchury Road (EW)

ICU calculations have also been performed assuming implementation of the City of Brea proposed traffic improvement fee program. The results of this analysis are summarized on Table 4.7-7. A total of 6 intersections will experience deficient peak hour traffic operations for 2025 No Project Without Tonner Canyon Road Connection conditions, with the City of Brea proposed fee program improvements. The intersections where deficiencies are projected are:

Brea Boulevard (NS) at:
- Central Avenue (EW)

State College Boulevard (NS) at:
- Lambert Road (EW)

SR 57 Southbound Ramps (NS) at:
- Lambert Road (EW)

Kraemer Boulevard (NS) at:
- Lambert Road (EW)

Rose Drive (NS) at:
- Imperial Highway (EW)

Imperial Highway (NS) at:
- Bastanchury Road (EW)

Discussion of proposed mitigation measures to address these impacts is provided below.

d. Mitigation Analysis

Where it has been determined that the project will have a significant impact at an intersection, mitigation of that significant impact will be required. Where an intersection has been identified as being deficient, and the project contributes measurable traffic to that intersection, the project should be required to contribute its pro rata share toward the cost of removing the deficiency.

Mitigation analysis is provided for Near Term conditions. This section of also discusses the mitigation required for the project for long range (2025) conditions both with and without the Tonner Canyon Road connection conditions. Near Term conditions mitigation is discussed first. All of the mitigation analysis has been performed assuming that the project will participate in both the currently adopted and proposed City at Brea traffic fee programs. Pursuant to City of Brea direction, all currently adopted and proposed fee program improvements are deemed to be in-place for the long range buildout conditions. Mitigation measures are presented for all significant project impacts. There are no significant impacts that cannot be mitigated.

(1) Near Term Mitigation

The existing conditions ICU calculation results are compared to Near Term conditions ICU calculation results on Table 4.7-8. Locations where a significant project impact occurs are shown in boldface type. As shown on Table 4.7-8, six intersections are projected to experience deficient traffic operations for Near Term conditions and are also expected to experience an increase in ICU of 0.01 compared to Existing conditions. These six locations are therefore significantly impacted by the project:

Brea Boulevard (NS) at:
- SR 57 Southbound On-Ramp (EW)
- Tonner Canyon Road (EW)
- Central Avenue (EW)

State College Boulevard (NS) at:
- Lambert Road (EW)

SR 57 Southbound Ramps (NS) at:
- Lambert Road (EW)

Kraemer Boulevard (NS) at:
- Lambert Road (EW)

Table 4.7-8 - Near Term Conditions Project Impact Summary

Intersection		AM			PM		
#	Description	No Project ICU	With Project ICU	ICU Change	No Project ICU	With Project ICU	ICU Change
	Puente St. (NS) at:						
21	- Central Ave. (EW)	0.48	0.48	0.00	0.58	0.60	0.02
17	- Lambert Rd. (EW)	0.48	0.49	0.01	0.61	0.62	0.01
	Berry St. (NS) at:						
20	- Central Ave. (EW)	0.54	0.55	0.01	0.52	0.54	0.02
16	- Lambert Rd. (EW)	0.52	0.53	0.01	0.60	0.61	0.01
	Brea Blvd. (NS) at:						
24	- SR 57 SB On-Ramp (EW)	1.10		0.01	1.32	1.33	0.01
23	- Tonner Canyon Rd. (EW)	1.08	1.11	0.05	1.23	1.28	0.05
18	- Central Ave. (EW)	1.00	1.13	0.01	1.03	1.05	0.02
15	- Lambert Rd. (EW)	0.59	1.01	0.02	0.65	0.67	0.02
	State College Blvd. (NS) at:						
14	- Lambert Rd. (EW)	0.79	0.82	0.03	0.85	0.92	0.07
7	- Birch St. (EW)	0.53	0.53	0.00	0.67	0.69	0.02
	SR 57 SB Off-Ramp (NS) at:						
26	- Brea Canyon Rd. (EW)	0.67	0.81	0.14	0.75	0.77	0.02
	Sr 57 SB On-Ramp (NS) at:						
25	- Brea Canyon Rd. (EW)	0.52	0.53	0.01	0.52	0.57	0.05
	SR 57 NB Off-Ramp (NS) at:						
22	- Tonner Canyon Rd. (EW)	0.06	0.15	0.09	0.19	0.27	0.08
	SR 57 NB Ramps (NS) at:						
12	- Lambert Rd. (EW)	0.75	0.77	0.02	0.69	0.75	0.06
	SR 57 SB Ramps (NS) at:						
13	- Lambert Rd. (EW)	0.76	0.78	0.02	1.13	1.18	0.05
	Pointe Dr. (NS) at:						
11	- Lambert Rd. (EW)	0.44	0.49	0.05	0.70	0.73	0.03
	N. Associated Rd./Wild Cat Way (NS) at:						
9	- Lambert Rd. (EW)	0.64	0.69	0.05	0.50	0.57	0.07
5	- Birch St. (EW)	0.62	0.65	0.03	0.62	0.65	0.03
	S. Associated Rd. (NS) at:						
6	- Birch St. (EW)	0.62	0.64	0.02	0.71	0.74	0.03
1	- Imperial Hwy. (EW)	0.61	0.61	0.00	0.82	0.83	0.01
	Kraemer Blvd. (NS) at:						
8	- Lambert Rd. (EW)	0.79	0.91	0.12	0.63	0.74	0.11
30	- Birch St. (EW)	0.55	0.57	0.02	0.69	0.77	0.08
31	- Imperial Hwy. (EW)	0.59	0.60	0.01	0.72	0.74	0.02
34	- Bastanchury Rd. (EW)	0.53	0.54	0.01	0.66	0.67	0.01
	Valencia Ave. (NS) at:						
28	- Carbon Cyn. Rd./Lambert Rd. (EW)	0.68	0.70	0.02	0.73	0.73	0.00
29	- Birch St. (EW)	0.54	0.54	0.00	0.52	0.54	0.02
32	- Imperial Hwy. (EW)	0.67	0.68	0.01	0.64	0.65	0.01

Intersection		AM			PM		
#	Description	No Project ICU	With Project ICU	ICU Change	No Project ICU	With Project ICU	ICU Change
33	Rose Dr. (NS) at: - Imperial Hwy. (EW)	0.55	0.56	0.01	0.76	0.78	0.02
10	Imperial Hwy. (NS) at: - Bastanchury Rd. (EW)	0.69	0.70	0.01	0.74	0.75	0.01

ICU = Intersection Capacity Utilization

Table 4.7-9 presents the mitigation identified throughout the study area for the existing plus project condition. It is possible to mitigate all of the intersection deficiencies identified. The intersection operations with proposed mitigation are summarized in Table 4.7-8. Level of Service "D" or better conditions during the peak hours are provided at every intersection in the study area.

Table 4.7-9 - Near Term Intersection Levels of Service with Mitigation

	Intersection	Peak Hour ICU		Level of Service	
		AM	PM	AM	PM
	Brea Blvd. at:				
24	• SR 57 SB On Ramp (EW)	0.58	0.70	A	B
23	• Tonner Canyon Rd. (EW)	0.62	0.89	B	D
18	• Central Av. (EW)	0.88	0.86	D	D
	State College Bl. (NS) at:				
14	• Lambert Rd. (EW)	0.80	0.90	D	D
	SR 57 SB Ramps (NS) at:				
13	• Lambert Rd. (EW)	0.70	0.87	B	D
	Kraemer Bl. (NS) at:				
8	• Lambert Rd. (EW)	0.78	0.77	C	C

The near term improvements necessary and project responsibility are summarized for each individual intersection below.

- Brea Boulevard (NS) at SR 57 Southbound On-Ramp (EW)

A second northbound and a second southbound through lane are required at this intersection to mitigate project impacts and provide acceptable peak hour intersection operations at this location. This location currently experiences deficient operations. Therefore, the project is only responsible for a fair share contribution at this location. The proposed improvement is also part of the City of Brea proposed fee program. Any project contribution/construction should be credited towards the project's fees.

- Brea Boulevard (NS) at Tonner Canyon Road (EW)

A second northbound and a second southbound through lane are required at this intersection to mitigate project impacts. This improvement will provide acceptable AM and PM peak hour intersection operations. This location currently experiences deficient operations. Therefore, the project is only responsible for a fair share contribution at this location. The proposed improvement is also part of the City of Brea proposed fee program. Any project contribution/construction should be credited towards the project's fees.

- Brea Boulevard (NS) at Central Avenue (EW)

A second southbound left turn lane is required at this intersection, as well as a southbound right turn overlap (arrow) to mitigate project impacts. In addition, the eastbound approach has to be restriped/reconstructed to provide 1 (additional) exclusive right turn lane. The westbound approach also has to be restriped/reconstructed to provide 2 thru lanes and 1 exclusive right turn lane. This improvement will fully mitigate AM and PM peak hour impacts (as well as nearly all of the existing AM and PM peak hour deficiencies) at this location. This location currently experiences deficient operations. Therefore, the project is only responsible for a fair share contribution at this location. The proposed second southbound left turn lane improvement is also part of the City of Brea proposed fee program. Any project contribution/construction of this improvement should be credited towards the project's fees.

- State College Boulevard (NS) at Lambert Road (EW)

The traffic signal should be modified to provide a northbound right turn arrow (overlap). This improvement will fully mitigate the PM peak hour impact (there is no AM peak hour deficiency) at this location. The project is wholly responsible for this improvement.

- SR 57 Southbound Ramps (NS) at Lambert Road (EW)

The eastbound approach should be restriped/reconstructed to provide 2 exclusive through lanes, a shared through-right turn lane, and an exclusive right turn lane (this location is currently includes three exclusive through lanes and an exclusive right turn lane). This will provide acceptable PM peak hour operations (there is no AM peak hour deficiency). This location currently experiences deficient operations. Therefore, the project is only responsible for a fair share contribution at this location. This will occur on a cash payment basis to the County of Orange prior to project occupancy.

- Kraemer Boulevard (NS) at Lambert Road (EW)

The eastbound approach should be restriped to provide 1 exclusive through lane, a shared through-right turn lane, and an exclusive right turn lane (this location is currently includes two exclusive through lanes and an exclusive right turn lane). This will provide acceptable AM peak hour operations (there is no PM peak hour deficiency). The project is wholly responsible for this improvement.

(2) 2025 With Project With Tonner Canyon Road Connection Mitigation

The 2025 Without Project With Tonner Canyon Road Connection conditions ICU calculation results are compared to the 2025 With Project With Tonner Canyon Road Connection conditions ICU calculation results on Table 4.7-10. Both sets of calculations assume that both the currently adopted and proposed City of Brea traffic fee program improvements have been implemented. Locations where a significant project impact occurs are shown in boldface type. As shown on Table 4.7-10, 6 intersections are projected to experience deficient traffic operations for 2025 With Project With Tonner Canyon Road Connection conditions and are also expected to experience an increase in ICU of 0.01 compared to without project conditions. These 6 locations are therefore significantly impacted by the project:

Brea Boulevard (NS) at:
- Tonner Canyon Road (EW)

State College Boulevard (NS) at:
- Lambert Road (EW)

SR 57 Southbound Off-Ramp (NS) at:
- Brea Canyon Road (EW)

Kraemer Boulevard (NS) at:
- Lambert Road (EW)

Valencia Avenue (NS) at:
- Birch Street (EW)

Imperial Highway (NS) at:
- Bastanchury Rd. (EW)

Table 4.7-10 - 2025 Conditions with Tonner Canyon Road Connection with City of Brea Proposed Fee Program Improvements - Project Impact Summary

Intersection		AM			PM		
#	Description	No Project ICU	With Project ICU	ICU Change	No Project ICU	With Project ICU	ICU Change
	Puente St. (NS) at:						
21	- Central Ave. (EW)	0.50	0.50	0.00	0.60	0.60	0.00
17	- Lambert Rd. (EW)	0.61	0.60	-0.01	0.64	0.64	0.00
	Berry St. (NS) at:						
20	- Central Ave. (EW)	0.63	0.63	0.00	0.60	0.61	0.01
16	- Lambert Rd. (EW)	0.63	0.62	-0.01	0.68	0.68	0.00
	Brea Blvd. (NS) at:						
24	- SR 57 SB On-Ramp (EW)	0.74	0.74	0.00	0.87	0.88	0.01
23	- Tonner Canyon Rd. (EW)	0.61	0.65	0.04	1.06	1.08	0.02
18	- Central Ave. (EW)	0.84	0.84	0.00	1.08	1.08	0.00
15	- Lambert Rd. (EW)	0.69	0.69	0.00	0.71	0.72	0.01

Intersection		AM			PM		
#	Description	No Project ICU	With Project ICU	ICU Change	No Project ICU	With Project ICU	ICU Change
	State College Blvd. (NS) at:						
14	- Lambert Rd. (EW)	0.91	0.92	0.01	0.92	0.93	0.01
7	- Birch St. (EW)	0.60	0.61	0.01	0.79	0.84	0.05
	SR 57 SB Off-Ramp (NS) at:						
26	- Brea Canyon Rd. (EW)	0.65	0.68	0.03	0.90	0.91	0.01
	Sr 57 SB On-Ramp (NS) at:						
25	- Brea Canyon Rd. (EW)	0.72	0.86	0.14	0.68	0.67	-0.01
	SR 57 NB Off-Ramp (NS) at:						
22	- Tonner Canyon Rd. (EW)	0.25	0.25	0.00	0.45	0.48	0.03
	SR 57 NB Ramps (NS) at:						
12	- Lambert Rd. (EW)	0.83	0.83	0.00	0.73	0.72	-0.00
	SR 57 SB Ramps (NS) at:						
13	- Lambert Rd. (EW)	0.89	0.88	-0.01	1.19	1.19	0.00
	Pointe Dr. (NS) at:						
11	- Lambert Rd. (EW)	0.54	0.56	0.02	0.78	0.82	0.04
	N. Associated Rd./Wild Cat Way (NS) at:						
9	- Lambert Rd. (EW)	0.73	0.75	0.02	0.56	0.60	0.04
5	- Birch St. (EW)	0.73	0.75	0.03	0.69	0.75	0.06
	S. Associated Rd. (NS) at:						
6	- Birch St. (EW)	0.63	0.65	0.02	0.58	0.65	0.07
1	- Imperial Hwy. (EW)	0.60	0.61	0.01	0.78	0.81	0.03
	Kraemer Blvd. (NS) at:						
8	- Lambert Rd. (EW)	0.87	0.96	0.09	0.63	0.73	0.10
30	- Birch St. (EW)	0.60	0.63	0.03	0.62	0.67	0.05
31	- Imperial Hwy. (EW)	0.70	0.72	0.02	0.85	0.88	0.03
34	- Bastanchury Rd. (EW)	0.66	0.69	0.03	0.77	0.78	0.01
	Valencia Ave. (NS) at:						
28	- Carbon Cyn. Rd./Lambert Rd. (EW)	0.85	0.86	0.01	0.59	0.60	0.01
29	- Birch St. (EW)	0.96	0.98	0.02	0.95	0.96	0.01
32	- Imperial Hwy. (EW)	0.77	0.76	-0.01	0.71	0.72	0.01
	Rose Dr. (NS) at:						
33	- Imperial Hwy. (EW)	0.83	0.84	0.01	1.12	1.12	0.00
	Imperial Hwy. (NS) at:						
10	- Bastanchury Rd. (EW)	0.94	0.94	0.00	1.01	1.02	0.01

ICU = Intersection Capacity Utilization

Table 4.7-11 presents the proposed mitigation and ICU summaries with project with the Tonner Canyon Road connection. The improvements necessary and project responsibility for each improvement/mitigation are summarized for each individual intersection.

Table 4.7-11 - 2025 With Project With Tonner Canyon Road Connection Intersection Levels of Service with Mitigation

	Intersection	Peak Hour ICU		Level of Service	
		AM	PM	AM	PM
23	Brea Blvd. at: - Tonner Canyon Rd. (EW)	0.62	0.89	B	D
14	State College Bl. (NS) at: - Lambert Rd. (EW)	0.90	0.90	D	D
26	SR 57 SB Ramps (NS) at: - Brea Canyon Rd. (EW)	0.68	0.81	B	D
8	Kraemer Bl. (NS) at: - Lambert Rd. (EW)	0.82	0.78	C	C
29	Valencia Av. (NS) at: - Birch St. (EW)	0.71	0.94	C	E
10	Imperial Hwy. (NS) at: - Bastanchury Rd. (EW)	0.92	0.96	E	E

- Brea Boulevard (NS) at Tonner Canyon Road (EW)

The westbound approach should be restriped from an exclusive left turn lane and an exclusive right turn lane to provide a shared left-right turn lane and an exclusive right turn lane. This improvement will provide acceptable PM peak hour intersection operations (there was no AM peak hour deficiency projected at this location). This location is projected to experience deficient operations under Without Project conditions. Therefore, the project is only responsible for a fair share contribution at this location. If this improvement is constructed by the project, a credit against other fees/obligations should be considered.

- State College Boulevard (NS) at Lambert Road (EW)

The project impact at this location can be mitigated by constructing an additional (second) southbound left turn lane and converting the current shared southbound left turn-through lane to an exclusive through lane. This improvement will fully mitigate the project AM and PM peak hour impacts at this location (although it will not provide acceptable traffic operations). The project is wholly responsible for this improvement. The feasibility of this improvement has been reviewed based on field reconnaissance and/or aerial photographs. Based upon this review, it appears that this improvement can be implemented. The project responsibility shall be addressed with payment of the full improvement cost, allocated over the phased development of the project on a fee basis.

- SR 57 Southbound Off-Ramp (NS) at Brea Canyon Road (EW)

The traffic at this location is heavily influenced by freeway (and other) traffic congestion in the study area. Due to heavy traffic movements that divert from the SR 57 Freeway to utilize Brea Canyon Road as an alternate travel route, PM peak hour traffic operations are projected to in the LOS "E" range, with or without the proposed project. The primary conflicting movements are the eastbound through movement on Brea Canyon Road and the southbound right turn movement from the SR 57 Southbound Off-Ramp. A review of the existing traffic count data indicates that only a very limited number of off-ramp vehicles turn left and back track in the direction of Diamond Bar (1 vehicle in the PM peak hour and 14 vehicles in the AM peak hour). Eliminating this left turn movement would allow channelization of the extremely heavy eastbound through movement on Brea Canyon Road (2,740 vehicle per hour in the PM peak hour) to eliminate the need to stop at this intersection. The remaining conflicting movements would experience LOS "A" traffic operations, while the eastbound through movement would exhibit a volume/capacity ratio (ICU) of 0.81, or LOS D conditions. An alternate approach would allow southbound left turns and would only channelize one eastbound travel lane for free flow travel. This would also result in acceptable traffic operations at this location. A third possibility would be to construct a separate slip ramp for traffic wishing to exit the southbound SR 57 Freeway and proceed east (north) on Brea Canyon Road. It would be necessary to provide an acceleration lane/merging section to achieve acceptable traffic operations for this alternative. This location is projected to experience deficient operations under Without Project conditions. Therefore, the project is only responsible for a fair share contribution towards the preferred improvement.

- Kraemer Boulevard (NS) at Lambert Road (EW)

The eastbound approach should be restriped to provide 2 exclusive through lanes, a shared through-right turn lane, and an exclusive right turn lane (this location is planned to include three exclusive through lanes and an exclusive right turn lane). This will provide acceptable AM peak hour operations (there is no PM peak hour deficiency). This location is also projected to experience deficient operations under Without Project conditions. Therefore, the project is only responsible for a fair share contribution towards the recommended improvement. If this improvement is constructed by the project, a credit against other fees/obligations should be considered.

- Valencia Avenue (NS) at Birch Street (EW)

Deficiencies are projected for both AM and PM peak hour traffic operations and for both Without Project and With Project conditions. The southbound approach should be restriped to eliminate the exclusive right turn lane and provide a second southbound left turn lane. This improvement will provide acceptable AM peak hour traffic operations and will more than mitigate the project PM peak hour impact. As this location is also projected to experience deficient operations under Without Project conditions, the project is only responsible for a fair share contribution towards the recommended improvement.

- Imperial Highway (NS) at Bastanchury Road (EW)

Deficiencies are projected for both AM and PM peak hour conditions, although the project contributes to a significant impact only during the PM peak hour. The southbound approach should be restriped to eliminate the exclusive right turn lane and provide a second southbound left turn lane instead. This improvement will more than mitigate the project impact at this location. This location experiences deficient operations under Without Project conditions. The project is therefore only responsible for a fair share contribution towards the recommended improvement.

(3) 2025 With Project Without Tonner Canyon Road Connection Mitigation

The 2025 Without Project Without Tonner Canyon Road Connection conditions ICU calculation results are compared to the 2025 With Project Without Tonner Canyon Road Connection conditions ICU calculation results on Table 4.7-12. Both sets of calculations assume that both the currently adopted and proposed City of Brea traffic fee program improvements have been implemented. Locations where a significant project impact occurs are shown in boldface type. As shown on Table 4.7-12, three intersections are projected to experience deficient traffic operations for 2025 With Project With Tonner Canyon Road Connection conditions and are also expected to experience an increase in ICU of 0.01 compared to without project conditions. These three locations are therefore significantly impacted by the project:

Brea Boulevard (NS) at:
- Central Avenue (EW)

State College Boulevard (NS) at:
- Lambert Road (EW)

Kraemer Boulevard (NS) at:
- Lambert Road (EW)

Table 4.7-12 - 2025 Conditions Without Tonner Canyon Road Connection with City of Brea Proposed Fee Program Improvements - Project Impact Summary

Intersection		AM			PM		
#	Description	No Project ICU	With Project ICU	ICU Change	No Project ICU	With Project ICU	ICU Change
	Puente St. (NS) at:						
21	- Central Ave. (EW)	0.49	0.49	0.00	0.60	0.60	0.00
17	- Lambert Rd. (EW)	0.61	0.59	-0.02	0.66	0.66	0.00
	Berry St. (NS) at:						
20	- Central Ave. (EW)	0.63	0.63	0.00	0.61	0.61	0.00
16	- Lambert Rd. (EW)	0.60	0.59	-0.01	0.71	0.69	-0.02

Intersection		AM			PM		
#	Description	No Project ICU	With Project ICU	ICU Change	No Project ICU	With Project ICU	ICU Change
	Brea Blvd. (NS) at:						
24	- SR 57 SB On-Ramp (EW)	0.70	0.74	0.04	0.80	0.87	-0.02
23	- Tonner Canyon Rd. (EW)	0.59	0.63	0.04	0.85	0.87	0.02
18	- Central Ave. (EW)	0.90	0.90	0.00	1.10	1.11	0.01
15	- Lambert Rd. (EW)	0.70	0.70	0.00	0.73	0.73	0.00
	State College Blvd. (NS) at:						
14	- Lambert Rd. (EW)	0.94	0.94	0.00	0.94	0.96	0.02
7	- Birch St. (EW)	0.61	0.60	-0.01	0.80	0.83	0.03
	SR 57 SB Off-Ramp (NS) at:						
26	- Brea Canyon Rd. (EW)	0.67	0.68	0.01	0.90	0.87	-0.03
	SR 57 SB On-Ramp (NS) at:						
25	- Brea Canyon Rd. (EW)	0.84	0.85	0.01	0.71	0.68	-0.03
	SR 57 NB Off-Ramp (NS) at:						
22	- Tonner Canyon Rd. (EW)	0.16	0.20	0.04	0.31	0.36	0.05
	SR 57 NB Ramps (NS) at:						
12	- Lambert Rd. (EW)	0.87	0.86	-0.01	0.73	0.74	0.01
	SR 57 SB Ramps (NS) at:						
13	- Lambert Rd. (EW)	0.93	0.88	-0.05	1.18	1.18	0.00
	Pointe Dr. (NS) at:						
11	- Lambert Rd. (EW)	0.56	0.57	0.01	0.79	0.83	0.04
	N. Associated Rd./Wild Cat Way (NS) at:						
9	- Lambert Rd. (EW)	0.75	0.76	0.01	0.57	0.61	0.04
5	- Birch St. (EW)	0.71	0.74	0.03	0.71	0.76	0.05
	S. Associated Rd. (NS) at:						
6	- Birch St. (EW)	0.64	0.66	0.02	0.59	0.64	0.05
1	- Imperial Hwy. (EW)	0.61	0.62	0.01	0.81	0.82	0.01
	Kraemer Blvd. (NS) at:						
8	- Lambert Rd. (EW)	0.95	0.97	0.02	0.65	0.75	0.10
30	- Birch St. (EW)	0.65	0.67	0.02	0.59	0.61	0.02
31	- Imperial Hwy. (EW)	0.72	0.74	0.02	0.84	0.87	0.03
34	- Bastanchury Rd. (EW)	0.67	0.68	0.01	0.76	0.77	0.01
	Valencia Ave. (NS) at:						
28	- Carbon Cyn. Rd./Lambert Rd. (EW)	0.82	0.83	0.01	0.49	0.49	0.00
29	- Birch St. (EW)	0.83	0.84	0.01	0.77	0.79	0.02
32	- Imperial Hwy. (EW)	0.77	0.77	0.00	0.72	0.73	0.01
	Rose Dr. (NS) at:						
33	- Imperial Hwy. (EW)	0.82	0.82	0.01	1.04	1.04	0.00
	Imperial Hwy. (NS) at:						
10	- Bastanchury Rd. (EW)	0.95	0.95	0.00	0.97	0.97	0.00

ICU = Intersection Capacity Utilization

Table 4.7-13 presents the proposed mitigation and ICU summaries for with project without Tonner Canyon Road connection. The improvements necessary and project responsibility for each improvement/mitigation are summarized for each individual intersection.

Table 4.7-13 - 2025 With Project Without Tonner Canyon Road Connection Intersection Levels of Service with Mitigation

	Intersection	Peak Hour ICU		Level of Service	
		AM	PM	AM	PM
18	Brea Blvd. at: • Central Av. (EW)	0.90	0.94	D	E
14	State College Bl. (NS) at: • Lambert Rd. (EW)	0.92	0.94	E	E
8	Kraemer Bl. (NS) at: • Lambert Rd. (EW)	0.81	0.76	D	C

- Brea Boulevard (NS) at Central Avenue (EW)

A southbound right turn arrow (overlap) is required at this intersection. This improvement was discussed previously in the section on Existing Plus Project conditions impact mitigation. This improvement will fully mitigate the projected PM peak hour impact (as well as the projected PM peak hour deficiency) at this location. This location is also projected to experience deficient operations under Without Project conditions. Therefore, the project is only responsible for a fair share contribution towards this improvement.

- State College Boulevard (NS) at Lambert Road (EW)

The project impact at this location can be mitigated by constructing an additional (second) left turn lane and converting the current shared left turn-through lane to an exclusive through lane. This improvement will fully mitigate the project PM peak hour impact (there is no AM peak hour impact) at this location. The proposed improvement will not provide acceptable traffic operations. For the Without Tonner Canyon Road Connection scenario, this location is also projected to experience deficient operations under Without Project conditions. Therefore, the project is only responsible for a fair share contribution towards this improvement under these conditions. At the same time, the proposed improvement only improves operations to the No Project level of service / ICU value. This means that the fair share would still calculate to 100% of the mitigation cost. The feasibility of this improvement has been reviewed based on field reconnaissance and/or aerial photographs. Based upon this review, it appears that this improvement can be implemented.

- Kraemer Boulevard (NS) at Lambert Road (EW)

The eastbound approach should be restriped to provide 2 exclusive through lanes, a shared through-right turn lane, and an exclusive right turn lane (this location is planned to include three exclusive through lanes and an exclusive right turn lane). This will provide acceptable AM peak hour operations (there is no PM peak hour deficiency). This location is also projected to experience deficient operations under Without

Project conditions. Therefore, the project is only responsible for a fair share contribution towards the recommended improvement.

In addition to the arterial roadway impacts and mitigation identified in this study effort, the project also contributes to existing local residential street deficiencies along Balsa Avenue between State College Boulevard and Carmichael Drive. Typical complaints include the volume and speed of travel by neighborhood traffic along local residential streets carrying upwards of 1,200 vehicles per day (Balsa Avenue currently serves approximately 2,700 vehicles per day north of State College Boulevard). The project would add another 480 vehicles per day on Balsa Avenue.

The project should therefore contribute on a fair share basis to any agreed upon traffic calming/mitigation measures along Balsa Avenue. Possible traffic calming measures that should be considered include narrowing the cross-section of the street, planting of trees designed to give a sense of place and further roadway width restrictions, neighborhood traffic circles / roundabouts, chokers or neckdowns, textured pavements, raised cross walks, speed tables, or speed humps. Less permanent measures that can also be considered include placement of portable speed monitoring / reporting devices or traffic enforcement. The Technical Appendix includes more detailed descriptions of a number of these measures.

All of these measures are designed to decrease travel speeds, although some measures are more effective than others. The more effective measures tend to be those that reinforce the narrow, residential character of the roadway (e.g., roadway narrowing measures or increased plantings). Physical measures such as speed humps, etc. often have a very limited effect on actual average travel speeds, as drivers tend to accelerate to even higher speeds between physical measures. New nuisance factors related to increased traffic noise in the vicinity of the measures are also a common result of such physical measures.

(4) Project Fair Share Analysis for Near Term and Year 2025 Improvements

The costing analysis consists of two steps. The first step is determining the project fair share contribution percentages at each significantly impacted intersection. The second step is to determine the overall cost of improvements, this second step will be determined prior to issuance of building permits for the first phase of development. The project share of the overall cost can then be determined by multiplying the project fair share percentage by the overall cost. The preferred approach to this process is to include these mitigation measures in the City of Brea proposed impact fee program.

The first step in the costing analysis is estimating the project's fair share contribution at each location which is significantly impacted by the project. The project's contribution as a percentage of new (rather than existing) traffic in the study area at each significantly impacted location must be calculated. The distinction between new and existing traffic is a key point in this analysis, unless an existing deficiency has been identified. In these instances, the local jurisdiction may be responsible for the existing traffic contribution to the projected overall deficiency.

A key characteristic of various impact fee structures which have withstood court challenges is the ability to demonstrate the relationship between the projected deficiencies of the roadway system and the users who are being asked to pay for improvements necessary to correct these deficiencies. Various court decisions have shown that it is incorrect, for instance, to ask existing users to shoulder the cost of correcting deficiencies which do not occur under existing conditions. At the same time, recent court decisions have made it clear that a particular roadway user should not be required to pay more than their fair share of the overall cost of improvement.

Table 4.7-14 summarizes the fair share calculations for existing plus project conditions (near term) and mitigation measures. The baseline traffic share is a function of the existing ICU, the future with project ICU, and the ICU after mitigation. If the ICU after mitigation is acceptable, then all future (new) traffic should contribute equally to the improvement. If the mitigated ICU is still deficient, then the future baseline is equal to the ICU valve after mitigation. For existing conditions, existing traffic is only responsible for the existing deficiency contribution. The project fair share contribution for the various arterial roadway mitigation measures ranges from a minimum of 2.3% to a maximum of 100%. The local street traffic mitigation responsibility of the project ranges between 24.2% and 49.0%, depending on the existing daily traffic volume along Balsa Avenue.

Table 4.7-14 - Fair Share Contribution Calculations for Near-Term Conditions

Intersection	Time	Existing ICU	Existing Plus Project ICU	Existing Plus Proj. With Mitigation ICU	Baseline	Total Needed/ Provided Capacity	Project Share (ICU)[1]	Project Share (%)[2]
Brea Blvd. (NS)/ SR 57 SB On-Ramp (EW)	AM	1.10	1.11	0.58	0.90	0.21	0.01	4.8%
Brea Blvd. (NS)/ SR 57 SB On-Ramp (EW)	PM	1.32	1.33	0.70	0.90	0.43	0.01	2.3%
Brea Blvd. (NS)/ Tonner Cyn Rd. (EW)	AM	1.08	1.13	0.62	0.90	0.23	0.05	21.7%
Brea Blvd. (NS)/Tonner Cyn Rd. (EW)	PM	1.23	1.28	0.89	0.90	0.38	0.05	13.2%
Brea Blvd. (NS)/Central Ave. (EW)	AM	1.00	1.01	0.88	0.90	0.11	0.01	9.1%
Brea Blvd. (NS)/Central Ave. (EW)	PM	1.03	1.05	0.86	0.90	0.15	0.02	13.3%
State College Blvd. (NS)/ Lambert Rd. (EW)	PM	0.85	0.92	0.90	0.90	0.02	0.02	100.0%
SR 57 SB Ramps (NS)/ Lambert Rd. (EW)	PM	1.13	1.18	0.87	0.90	0.28	0.05	17.9%
Kraemer Blvd. (NS)/ Lambert Rd. (EW)	AM	0.79	0.91	0.78	0.90	0.01	0.01	100.0%

Local Street Mitigation Fair Share Contribution Calculation								
Location	Time	Existing Volume	Existing Plus Project Volume	Existing Plus Proj. With Mitiga-tion	Baseline	Total Needed/ Provided Capacity	Project Share	Project Share (%)[2]
Balsa Ave. North of State College Blvd.	ADT	2,700	3,180	2,700	1,200	1,980	480	24.2%
Balsa Ave. South of Carmichael Dr.	ADT	1,700	2,180	2,700	1,200	980	480	49.0%

[1] Project Share (ICU) = ICU growth beyond baseline
[2] Project Share (%) = % of growth beyond baseline

The project fair share contribution calculations for 2025 With Tonner Canyon Road Connection conditions are summarized on Table 4.7-15. The project responsibility for future improvement needs for this scenario range between 4.4% (Valencia Avenue at Birch Street) and 60.0% Kraemer Boulevard at Lambert Road).

Table 4.7-15 summarizes the fair share contribution calculations for 2025 Without Tonner Canyon Road Connection conditions. The range of project fair share (5.9% to 100%) is very similar to the calculations presented for 2025 With Tonner Canyon Road Connection conditions.

Table 4.7-15 - Fair Share Contribution Calculations for 2025 Conditions With the Tonner Canyon Road Connection

Intersection	Time	Existing ICU	Future No Project ICU	Future With Project ICU	Future With Proj. With Mitigation ICU	Baseline	Total Future Traffic Share	Project Traffic Share (ICU)[1]	Project Share (%)[2]
Brea Blvd. (NS)/ Tonner Cyn Rd. (EW)	PM	1.23	1.06	1.08	0.89	0.90	0.18	0.02	11.1%
Brea Blvd. (NS)/Tonner Cyn Rd. (EW)	AM	0.79	0.91	0.92	0.90	0.79	0.13	0.01	7.7%
State College Blvd. (NS)/ Lambert Rd. (EW)	PM	0.85	0.92	0.93	0.90	0.85	0.08	0.01	12.5%
SR 57 SB Off-Ramp (NS)/ Brea Cyn. Rd. (EW)	PM	0.77	0.90	0.91	0.81	0.77	0.14	0.01	7.1%
Kraemer Blvd. (NS)/ Lambert Rd. (EW)	AM	0.86	0.87	0.96	0.82	0.86	0.10	0.06	60.0%
Valencia Ave. (NS)/ Birch St. (EW)	AM	0.54	0.96	0.98	0.71	0.54	0.44	0.02	4.5%
Valencia Ave. (NS)/ Birch St. (EW)	PM	0.52	0.95	0.96	0.94	0.94	0.02	0.01	50.0%
Imperial Hwy. (NS)/ Bastanchury Rd. (EW)	PM	0.74	1.01	1.02	0.96	0.96	0.06	0.01	16.7%

[1] Project Share (ICU) = ICU growth beyond baseline
[2] Project Share (%) = % of growth beyond baseline

Parking

The proposed project will be required to meet the County's parking standards for both commercial and residential areas. It is not anticipated that parking will have any significant impacts on the surrounding areas as adequate parking will be provided for all uses.

Pedestrian Circulation

One of the stated objectives of the project is to "Provide for a circulation network that promotes pedestrian, equestrian, and bicycling activities while facilitating appropriate vehicular movement throughout the project site." Pedestrian walkways will connect from existing walkways at access points to the project. No mitigation measures are required.

Conclusion

The project mitigation analysis assumes that the project will participate in both the currently adopted and proposed City of Brea traffic improvement fee programs. Pursuant to City of Brea direction, all currently adopted and proposed fee program improvements are deemed to be complete and in-place for the long range buildout conditions. Table 4.7-16 summarizes the intersections that will be impacted for various time frames, based upon this assumption.

As shown on Table 4.7-16, 6 intersections will be impacted based upon the Existing Plus Project conditions analysis. Of these 6 intersections, 4 already experience deficient operations under existing conditions. The remaining 2 intersections are projected to experience deficient operations for Existing Plus Project conditions, but not for Existing Conditions.

Table 4.7-16 - Summary of Impacted Intersections

Intersection		Scenario		
#	Description	Existing	2025 With Tonner Canyon Road Connection	2025 Without Tonner Canyon Road Connection
	Brea Blvd. (NS) at:			
24	• SR 57 SB On Ramp (EW)	X		
23	• Tonner Canyon Rd. (EW)	X	X	
18	• Central Av. (EW)	X		X
	State College Bl. (NS) at:			
14	• Lambert Rd. (EW)	X	X	X
	SR 57 SB Off Ramp (NS) at:			
26	• Brea Canyon Rd. (EW)		X	
	SR 57 SB Off Ramp (NS) at:			
13	• Lambert Rd. (EW)	X		
	Kraemer Bl. (NS) at:			
8	• Lambert Rd. (EW)	X	X	X
31	• Imperial Hwy. (EW)			

29	Valencia Av. (NS) at: • Birch St. (EW)		X	
10	Imperial Hwy. (NS) at: • Bastanchury Rd. (EW)		X	

A total of 6 intersections will be impacted under 2025 conditions for with the Tonner Canyon Road Connection conditions or 3 intersections for the Without Tonner Canyon Road Connection conditions. The level of impact, required mitigation, and responsibility of the project (fair share or fully responsible) varies depending on the status of the Tonner Canyon Road connection. The mitigation requirements for each individual intersection are summarized below.

Mitigation measures are provided for all significant project impacts. There are no significant impacts that cannot be mitigated.

4.7.4 Mitigation Measures

The following mitigation measures assume the implementation of the existing Master Plan of Arterial Highways (i.e., with the Tonner Canyon Road connection conditions). Timing of improvements would be dependent upon when anticipated deficiencies and/or a project significant impact would be expected to occur. Intersections currently experiencing deficiencies would require mitigation prior to occupancy of the project phase that would trigger a significant impact. Locations where deficiencies do not occur until sometime in the future would require mitigation at the time when the deficiency and a significant project impact are expected. For locations where a deficiency would not occur until after project completion, mitigation would be required prior to project occupancy.

T-1 Brea Boulevard (NS) at SR 57 Southbound On-Ramp (EW)

Near Term Conditions: Prior to issuance of certificates of use and occupancy, the developer shall pay to the County on a fair share basis for provision of a second northbound and a second southbound through lane. The proposed improvement is also part of the City of Brea proposed fee program. Any project contribution should be credited toward the project's impact fees.

T-2 Brea Boulevard (NS) at Tonner Canyon Road (EW)

Near Term Conditions: Prior to issuance of certificates of use and occupancy, the developer shall pay to the County on a fair share basis for provision of a second northbound and a second southbound through lane. The proposed improvement is also part of the City of Brea proposed fee program. Any project contribution/construction should be credited toward the project's impact fees.

2025 Conditions: The developer shall pay to the County on a fair share basis for restriping the westbound approach from an exclusive left turn lane and exclusive right turn lane to provide a shared left-right turn lane and an exclusive right turn lane. If this improvement is constructed by the project, a credit against other fees/obligations should be considered.

T-3 Brea Boulevard (NS) at Central Avenue (EW)

Near Term Conditions: Prior to issuance of certificates of use and occupancy, the developer shall pay to the County on a fair share basis for:

- Construction of a second southbound left turn lane and a southbound right turn overlap (arrow).
- Restriping/reconstructing the eastbound approach to provide one (additional) exclusive right turn lane.
- Restriping/reconstructing the westbound approach to provide two through lanes and one exclusive right turn lane.

All improvements are part of the City of Brea proposed fee program except for the eastbound exclusive right turn lane and southbound right turn overlap (arrow) which shall require fair share fees paid to the County of Orange.

T-4 State College Boulevard (NS) at Lambert Road (EW)

Near Term and 2025 Conditions: Prior to issuance of certificates of use and occupancy for 70% of the project or occupancy of Planning Area 8, the developer shall pay to the County the entire amount for providing an additional (second) southbound left turn lane and converting the current shared southbound left turn-through lane to an exclusive through lane.

T-5 SR 57 Southbound Off-Ramp at Brea Canyon Road

Near Term Conditions: Prior to issuance of certificates of use and occupancy, the developer shall pay to the County on a fair share basis for one of the three following alternatives:

- Eliminate the left turn movement allowing channelization of the eastbound through movement on Brea Canyon Road to eliminate the need to stop at this intersection.
- Allow southbound left turns and only channelize one eastbound travel lane for free flow travel.
- Construct a separate slip ramp for traffic to exit the southbound Orange (SR 57) Freeway and proceed east (north) on Brea Canyon Road including an acceleration lane/merging section to achieve acceptable traffic operations.

T-6 SR 57 Southbound Ramps (NS) at Lambert Road (EW)

Near Term Conditions: Prior to issuance of certificates of use and occupancy, the developer shall pay to the County on a fair share basis for restriping/reconstructing the eastbound approach to provide two exclusive through lanes, a shared through-right turn lane, and an exclusive right turn lane. (This location currently includes three exclusive through lanes and an exclusive right turn lane.)

T-7 Kraemer Boulevard (NS) at Lambert Road (EW)

Near Term Conditions: Prior to issuance of certificates of use and occupancy, the developer shall pay to the County the entire amount for restriping the eastbound approach to provide one exclusive through lane, a shared through-right turn lane, and an exclusive right turn lane. (This location currently includes two exclusive through lanes and an exclusive right turn lane.)

2025 Conditions: The developer shall pay to the County on a fair share basis for restriping the eastbound approach to provide two exclusive through lanes, a shared through-right turn lane, and an exclusive right turn lane. (This location is planned to include three exclusive through lanes and an exclusive right turn lane as part of the City of Brea proposed fee program.) If this improvement is constructed by the project, a credit against other fees/obligations should be considered.

T-8 Valencia Avenue (NS) at Birch Street (EW)

2025 Conditions: The developer shall pay to the County on a fair share basis for restriping the southbound approach to eliminate the existing exclusive right turn lane and provide a second southbound left turn lane.

T-9 Imperial Highway (NS) at Bastanchury Road (EW)

Prior to issuance of certificates of use and occupancy, the developer shall pay to the County on a fair share basis for restriping the southbound approach to eliminate the existing exclusive right turn lane and provide a second southbound left turn lane.

T-10 Balsa Avenue between State College Boulevard and Carmichael Drive

Prior to issuance of certificates of use and occupancy for residences within Planning Area 8, the developer shall pay to the County on a fair share basis for any agreed upon traffic calming measures along Balsa Avenue.

T-11 City of Brea Fee Program

Prior to issuance of building permits, the project shall participate in both the City of Brea currently adopted fee program and the City of Brea proposed fee program for transportation improvements. These fees shall be paid on a per unit basis.

4.7.5 Cumulative Impacts

Development of the proposed Tonner Hills Planned Community and Area Plan will result in an incremental increase in traffic upon roadways in the project vicinity. The cumulative impacts of project-related traffic are analyzed in the prior discussions of "Project Impacts." Measures to mitigate these cumulative traffic impacts are also provided. All intersections impacted by cumulative traffic are mitigated to a level of insignificance (Level of Service "D" or better).

4.7.6 Unavoidable Adverse Impacts

With implementation of the recommended mitigation measures, project transportation/circulation impacts will be reduced to a less than significant level.

4.8 Air Quality

This section analyzes the potential air quality impacts associated with this project and is based on the project air quality assessment prepared by the Mestre Greve Associates (April 2002), which is included in its entirety in the Technical Appendices to this EIR. Traffic volume and generation information used to project air quality emissions was provided by Urban Crossroads and is presented in the traffic study for the project. Regional air quality impacts from construction and operation of the proposed project are analyzed, as well as potential impacts on local air quality concentrations.

Local air quality impacts will be analyzed for two circulation scenarios in the future with and without the project. Currently the Master Plan of Arterial Highways has Tonner Canyon Road connecting through from the Orange (SR 57) Freeway down to Valencia. It is possible that in the future this connection will be deleted. Therefore, both scenarios are assessed with and without the project. The deletion of the connection of Tonner Canyon Road does not substantially affect regional emissions from the project

The proposed project site is within the South Coast Air Basin (SCAB) and thus is subject to review with respect to the South Coast Air Quality Management District's (SCAQMD) Air Quality Management Plan (AQMP). The SCAB comprises all of Orange County and the non-desert portions of Los Angeles, Orange and San Bernardino Counties.

4.8.1 Existing Conditions

a. Climate

The climate in and around the project area, as with all of Southern California, is controlled largely by the strength and position of the subtropical high pressure cell over the Pacific Ocean. It maintains moderate temperatures and comfortable humidity, and limits precipitation to a few storms during the winter "wet" season. Temperatures are normally mild, except in the summer months, which commonly bring substantially higher temperatures. In all portions of the basin, temperatures well above 100° F have been recorded in recent years. The annual average temperature in the basin is approximately 62° F.

Winds in the project area are usually driven by the dominant land/sea breeze circulation system. Regional wind patterns are dominated by daytime onshore sea breezes. At night the wind generally slows and reverses direction, traveling towards the sea. Wind direction will be altered by local canyons, with wind tending to flow parallel to the canyons. During the transition period from one wind pattern to the other, the dominant wind direction rotates into the south and causes a minor wind direction maximum from the south. The frequency of calm winds (less than 2 miles per hour) is less than 10 percent. Therefore, there is little stagnation in the project vicinity, especially during busy daytime traffic hours.

Southern California frequently has temperature inversions that inhibit the dispersion of pollutants. Inversions may be ground based or elevated. Ground based inversions, sometimes referred to as radiation inversions, are most severe during clear, cold, early winter mornings. Under conditions of a ground based inversion, very little mixing or turbulence occurs, and high concentrations of primary pollutants may occur

local to major roadways. Elevated inversions can be generated by a variety of meteorological phenomena. Elevated inversions act as a lid or upper boundary and restrict vertical mixing. Below the elevated inversion, dispersion is not restricted. Mixing heights for elevated inversions are lower in the summer and more persistent. This low summer inversion puts a lid over the SCAB and is responsible for the high levels of ozone observed during summer months in the air basin.

b. Air Quality Management

The proposed project is located in the South Coast Air Basin (SCAB) and, jurisdictionally, is the responsibility of the South Coast Air Quality Management District (SCAQMD) and the California Air Resources Board (CARB). The SCAQMD sets and enforces regulations for stationary sources in the basin and develops and implements Transportation Control Measures. The CARB is charged with controlling motor vehicle emissions. CARB establishes legal emission rates for new vehicles and is responsible for the vehicle inspection program. Other important agencies in the air quality management for the basin include the U.S. Environmental Protection Agency (EPA) and the Southern California Association of Governments (SCAG). The EPA implements the provisions of the federal Clean Air Act. This Act establishes ambient air quality standards that are applicable nationwide. In areas that are not achieving the standards, the Clean Air Act requires that plans be developed and implemented to meet the standards. The EPA oversees the efforts in this air basin and ensures that appropriate plans are being developed and implemented. The primary agencies responsible for writing the plan are SCAG and the SCAQMD, and the plan is called the Air Quality Management Plan (AQMP). SCAG prepares the transportation component of the AQMP.

SCAQMD and SCAG, in coordination with local governments and the private sector, have developed the Air Quality Management Plan (AQMP) for the air basin. The AQMP is the most important air management document for the basin because it provides the blueprint for meeting state and federal ambient air quality standards. The region is currently governed by the 1997 AQMP with 1999 Amendments. SCAQMD and SCAG are currently in the process preparing a 2001 AQMP.

The South Coast Air Basin has been designated by the U.S. Environmental Protection Agency (EPA) as a non-attainment area for ozone, carbon monoxide, and suspended particulates. Nitrogen dioxide in the SCAB has met the federal standards for the third year in a row, and therefore, is qualified for redesignation to attainment. A maintenance plan for nitrogen dioxide is included in the 1997 AQMP. The Federal Clean Air Act (CAA) mandates the implementation of the program that will achieve the California Ambient Air Quality Standards (CAAQS), and the CAA mandates the implementation of new air quality performance standards.

Attainment of all federal PM10 (particulates) health standards is to be achieved by December 31, 2006, and ozone standards are to be achieved by November 15, 2010. For CO, the deadline was December 31, 2000. The basin was very close to CO attainment at the end of 2000 and was granted a two-year extension. Attainment is expected in 2002.

The overall control strategy for the AQMP is to meet applicable state and federal requirements and to demonstrate attainment with ambient air quality standards. The 1997 AQMP uses two tiers of emission reduction measures: (1) short-term and intermediate-term measures, and (2) long-term measures.

Short- and intermediate-term measures propose the application of available technologies and management practices between 1994 and the year 2005. These measures rely on known technologies and proposed actions to be taken by several agencies that currently have statutory authority to implement such measures. Short- and intermediate-term measures in the 1997 AQMP include 35 stationary source, 7 on-road, 6 off-road, 1 transportation control and indirect source, 5 advanced transportation technology, and 1 further study measures. All of these measures are proposed to be implemented between 1995 and 2005.

To ultimately achieve ambient air quality standards, additional emission reductions will be necessary beyond the implementation of short- and intermediate-term measures. Long-term measures rely on the advancement of technologies and control methods that can reasonably be expected to occur between 1997 and 2010. These long-term measures rely on further development and refinement of known low- and zero-emission control technologies for both mobile and stationary sources, along with technological breakthroughs.

c. Monitored Air Quality

Air quality at any site is dependent on the regional air quality and local pollutant sources. Regional air quality is determined by the release of pollutants throughout the air basin. Estimates for the SCAB have been made for existing emissions ("1997 Air Quality Management Plan," October 1996). The data indicate that mobile sources are the major source of regional emissions. Motor vehicles (i.e., on-road mobile sources) account for approximately 51 percent of volatile organic compounds (VOC), 63 percent of nitrogen oxide (NO_X) emissions, and approximately 78 percent of carbon monoxide (CO) emissions.

The project site is located in SCAQMD Source Receptor Area 17 (Anaheim-Harbor). Air quality data for this area is collected at the Anaheim-Harbor monitoring station. The data collected at this station is considered representative of the air quality experienced in the vicinity of the project. The air pollutants measured at the Anaheim-Harbor station include ozone, carbon monoxide (CO), nitrogen dioxide (NO_2) and particulates (PM10). The air quality monitored data from 1998 to 2000 for all of these pollutants are shown in the following table, which also presents the federal and state air quality standards.

The Anaheim-Harbor monitoring data presented in Table 4.8-1 shows that ozone is the air pollutant of primary concern in the project area. The state ozone standard was exceeded 9 days in 2000, 1 day in 1999, and 10 days in 1998. The federal standard was exceeded 1 day in 2000 and 2 days in 1998. The federal standard was not exceeded in 1999. The data from the past three years does not show a definite trend in the maximum ozone concentrations and the number of days exceeding the state and federal ozone standards.

Table 4.8-1 - Air Quality Levels Measured at the Anaheim-Harbor Monitoring Stations

Pollutant	California Standard	National Standard	Year	Maximum Level	Days State Standard Exceeded
Ozone	0.09 ppm for 1 hour	0.12 ppm for 1 hour	2000 1999 1998	0.13 0.10* 0.14	9 1* 10
CO	20 ppm for 1 hour	35 ppm for 1 hour	2000 1999 1998	7.9 8.3 7.3	0 0 0
CO	9.0 ppm for 8 hours	9 ppm for 8 hours	2000 1999 1998	6.7 5.3 5.3	0 0 0
PM10**	50 µg/m3 for 24 hours	150 µg/m3 for 24 hours	2000 1999 1998	126 122 81	45 90 82
NO2	0.25 ppm for 1 hour	0.053 ppm AAM	2000 1999 1998	0.14 0.12 0.14	0 0 0

** PM10 measurements are collected every 6 days. The number of days above the standard is the number of measured days above the standard multiplied by 6. This is not necessarily the number of violations of the standard for the year.

* Less than 12 full months of data. May not be representative.

Ozone is a secondary pollutant; it is not directly emitted. Ozone is the result of chemical reactions between other pollutants, most importantly hydrocarbons and NO_2, which occur only in the presence of bright sunlight. Pollutants emitted from upwind cities react during transport downwind to produce the oxidant concentrations experienced in the area. Many areas of the SCAQMD contribute to the ozone levels experienced at the monitoring station, with the more significant areas being those directly upwind.

Carbon monoxide (CO) is another important pollutant that is due mainly to motor vehicles. Currently, CO levels in the project region are in compliance with the state and federal 1-hour and 8-hour standards. High levels of CO commonly occur near major roadways and freeways. CO may potentially be a continual problem in the future for areas next to freeways and other major roadways.

PM10 is another air pollutant of primary concern in the area. The state standards for PM10 have been exceeded at the Anaheim-Harbor monitoring station between 45 and 90 days over the past three years. There does not appear to be any trend toward fewer days of exceedances, but the maximum levels do show a downward trend. The maximum level in 1998 was the lowest in the past three years. PM10 levels in the area are due to natural sources, grading operations and motor vehicles.

According to the EPA, some people are much more sensitive than others to breathing fine particles (PM10). People with influenza, chronic respiratory and cardiovascular diseases, and the elderly may suffer worsening illness and premature death due to breathing these fine particles. People with bronchitis can expect aggravated symptoms from breathing in fine particles. Children may experience decline in lung function due to breathing in PM10. Other groups considered sensitive are smokers and people who cannot

breathe well through their noses. Exercising athletes are also considered sensitive, because many breathe through their mouths.

The monitored data shown in Table 4.8-1 shows that other than ozone and PM10 exceedances as mentioned above, no state or federal standards were exceeded for the remaining criteria pollutants.

d. Local Air Quality

(1) Introduction and Criteria

Local air quality is a major concern along roadways. Carbon monoxide is a primary pollutant. Unlike ozone, carbon monoxide is directly emitted from a variety of sources. The most notable source of carbon monoxide is motor vehicles. For this reason, carbon monoxide concentrations are usually indicative of the local air quality generated by a roadway network and are used to assess its impacts on the local air quality. Comparisons of levels with state and federal carbon monoxide standards indicate the severity of the existing concentrations for receptors in the project area. The federal and state standards for carbon monoxide are presented in the table below.

Table 4.8-2 - Federal and State Carbon Monoxide Standards

	Averaging Time	Standard
Federal	1 hour 8 hours	35 ppm 9 ppm
State	1 hour 8 hours	20 ppm 9 ppm

(2) Existing CO Modeling Results

Carbon monoxide levels in the project vicinity due to nearby roadways were assessed with the CALINE4 computer model. CALINE4 is a fourth generation line source air quality model developed by the California Department of Transportation ("CALINE4," Report No. FHWA/CA/TL-84/15, June 1989). The remainder of this section discusses the resulting existing carbon monoxide levels in comparison to the state and federal carbon monoxide standards.

Peak p.m. traffic data were utilized in the CALINE4 CO modeling to represent the worst case scenario. The composite emission factors were derived from EMFAC2000 prepared by CARB.

CALINE4 modeling was conducted for the three key intersections in the vicinity of the project. These intersections were selected because they are projected to have Level of Service D or worse in the future and show the greatest increases in traffic due to the project. These intersections are Birch Street at So. Associated Road, Birch Street at Kraemer Boulevard, and Lambert Road at Kraemer Boulevard. The analysis intersections are shown in Exhibit 4.8-1. The CO modeling was performed for four receptors at each intersection. The receptors were located approximately 10 feet from each corner. The worst-case

concentrations at each of the intersections are presented in Table 4.8-3 below. At the first two intersections – Birch at S. Associated and Birch at Kraemer – p.m. peak hour traffic characteristics resulted in the highest concentrations. At Lambert Road and Kraemer Boulevard the a.m. peak hour traffic resulted in the highest concentrations.

The existing (2001) background CO concentrations were estimated using the highest of the CO monitoring data for the last three years. The nearest available CO background data for the project area is the Anaheim-Harbor monitoring station. The highest CO background data at the Anaheim-Harbor monitoring station in the last three years are 8.3 ppm for 1-hour and 6.7 ppm for 8-hour. Therefore, 8.3 ppm is added to the worst case meteorological 1-hour projections, and 6.7 ppm to the 8-hour projections, to account for the existing background carbon monoxide levels. The 8-hour CO concentration is estimated utilizing a persistence factor of 0.7. The modeling results of the existing CO levels are presented in the table below.

Table 4.8-3 - Existing Carbon Monoxide Concentrations (ppm)

Receptor and Location	Carbon Monoxide Concentrations (ppm)	
	1 Hour	8 Hour
1 Birch St. at S. Associated Rd.	11.0	8.6
2 Birch St. at Kraemer Blvd.	10.0	7.9
3 Lambert Rd. at Kraemer Blvd.	11.1	8.7
Summary of carbon monoxide state standard exceedances	Sites exceeding 20 ppm = 0	Sites exceeding 9 ppm = 0

Note: The CO concentrations include the ambient concentrations of 8.3 ppm for 1-hour levels, and 6.7ppm for 8-hour levels.

Table 4.8-3 presents the modeling results for the existing CO concentrations at the three receptor locations. The existing CO concentrations are estimated to range between 10.0 and 11.1 ppm for 1-hour, and between 7.9 and 8.7 ppm for 8 hours at the receptors. The data indicate that the existing CO concentrations in the vicinity of the project site currently comply with the 1-hour and 8-hour state and federal standards.

(3) Existing Oil Field Emissions

The project site is currently an operating oil production facility. Oil extraction and processing occur throughout the site. Approximately 210 active wells and related facilities exist within the project site, along with 82 idle wells and 87 abandoned wells. The oil production areas contain oil and gas production equipment and related facilities such as pipelines, storage tanks, electric pumps, etc. Further, there are two turbines on the site that burn natural gas and generate electricity. Existing on-site oil production emissions were obtained from Torch Operating Company and their Annual Emissions Report of July 2000 through June 2001 filed with the South Coast Air Quality Management District. These emissions are presented below.

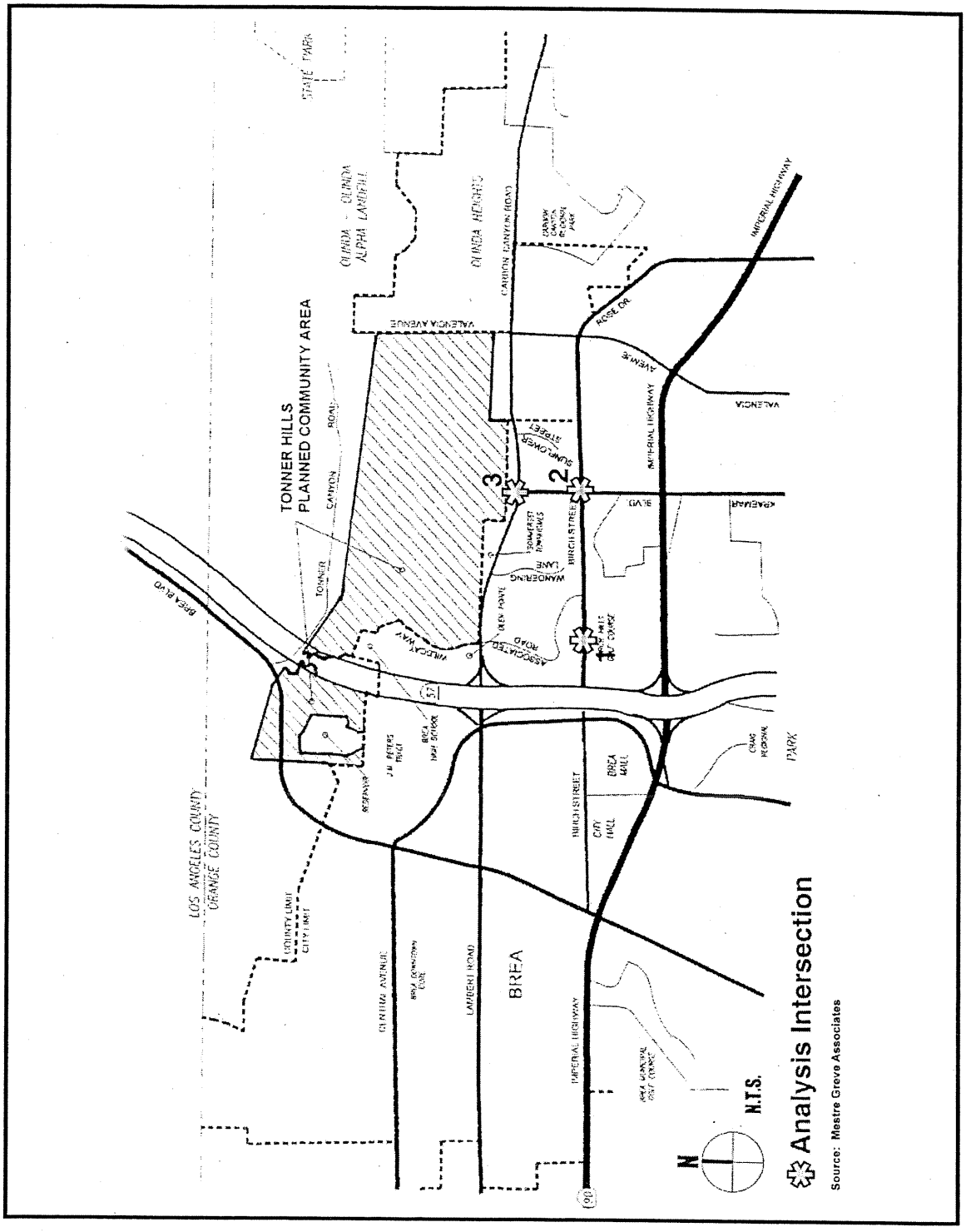

Exhibit 4.8-1

Local CO Concentration Analysis Locations

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Also presented is an estimate of the total vehicular emissions associated with the operations of the oilfield. This assumes 30 employees traveling 20 miles per day (per SCAQMD trip length guidelines). Vehicular emissions also include the transportation of oil-related products – seven trucks per month transport propane off-site and one truck per month delivers ammonia on-site. Some of these emissions will occur on-site and some will occur off-site.

Therefore, Table 4.8-4 shows that nitrogen oxides (NO_X) and organic gases (TOG) are the most significant pollutants emitted from the oil production on site. Although carbon monoxide (CO) emissions are greater than TOG emissions, more CO emissions are typically allowed than TOG emissions pursuant to SCAQMD thresholds. Most of the NO_X emissions are due to the flare and the turbines. The flare burns off excess natural gas. The turbines use the excess natural gas to generate electricity. In November 2000 the second turbine on the site began operation. The intention is that both turbines will utilize most, if not all, of the natural gas currently being burned off at the flare. Therefore, flare emissions will drop significantly in the future when both turbines are operated at 100% capacity. The first turbine is currently operating on a variance to its permitted pollutant emissions. Additional pollution control measures will be added to this turbine that will substantially reduce NO_X emissions in the future to below the permitted level.

Most of the TOG emissions are from the well heads and the well cellars located on the sites, with a substantial portion from fugitive emissions associated with valves, fittings, hatches, sight-glasses, meters, pumps, and compressors. Note that these emissions are estimated using the number of each potential source (listed) multiplied by an estimated emission factor. The emissions from the site are not measured directly, and the condition of the equipment can affect the actual emissions.

Table 4.8-4 - Existing Oil Production Related Emissions

Source	Pollutant Emissions (lbs/day)				
	CO	**TOG**	**NOx**	**PM10**	**SOx**
On-Site Emissions					
Heater	0.95	0.19	3.52	0.20	0.02
Flare	25.75	5.15	56.36	5.52	0.61
Internal Combustion Engines	0.08	0.03	0.37	0.03	0.01
Tank	--	8.64	--	--	–
Fugitive Emissions[1]	--	1.91	--	--	–
Miscellaneous Emissions[2]	--	5.57	--	--	–
Turbines	33.54	0.35	141.09	0.00	0.58
Subtotal	60.3	21.8	201.3	5.7	1.2
On-/Off-Site Emissions					
Vehicular	35.44	2.44	5.02	0.22	0.14
Total	95.8	24.3	206.4	5.9	1.4

[1] Includes fugitive emissions from valves, fittings, hatches, sight-glasses, meters pumps and compressors
[2] Includes well heads and well cellars

4.8.2 Thresholds of Significance

In its "1993 CEQA Air Quality Handbook," the SCAQMD established significance thresholds to assess the regional impact of project-related air pollutant emissions. Table 4.8-5 presents these significance thresholds. There are separate thresholds for short-term construction and long-term operational emissions. A project with daily emission rates below these thresholds is considered to have a less than significant effect on regional air quality throughout the South Coast Air Basin.

Table 4.8-5 - SCAQMD Regional Pollutant Emission Thresholds of Significance

	Pollutant Emissions (lbs/day)				
	CO	**ROG**	**NO_X**	**PM10**	**SO_X**
Construction	550	75	100	150	150
Operation	550	55	55	150	150

The significance thresholds for local air quality impacts include the state standards of 20 ppm for 1-hour CO concentration levels, and 9 ppm for 8-hour CO concentration levels. If the future CO concentration levels with the project are below the standards, there is no significant impact. If CO concentrations are over the standards and the project increases the concentrations by 1 ppm for the 1-hour and 0.45 ppm for the 8 hour, the project results in a significant local air quality impact.

The County has determined that these thresholds are appropriate for the project in order to evaluate air quality impacts and are based on the best scientific information available. The AQMD thresholds are used to assure consistency with air quality planning in the South Coast Air Basin.

4.8.3 Project Impacts

Air quality impacts are typically divided into short-term and long-term impacts. Short-term impacts are usually the result of construction or grading operations. Long-term impacts are associated with the built out condition of the proposed project.

a. Short-Term Impacts

(1) Construction Air Pollutant Emissions

Temporary impacts will result from project construction activities. Air pollutants will be emitted by construction equipment, and fugitive dust will be generated during demolition of the existing facilities and grading of the site.

Typical emission rates for construction equipment were obtained from the 1993 CEQA Air Quality Handbook. These emission factors are presented in terms of pounds of pollutant per hour of equipment operation. It should be noted that most of these emission factors were initially published in 1985 in the EPA's AP-42 Compilation of Emission Factors and have not been updated since their original publication.

Several state and federal regulations have been enacted since this time that require reduced emissions from construction equipment. The effect of these regulations is not included in the emission factors used to calculate construction equipment emissions presented below. The actual emissions from construction equipment, therefore, will likely be lower than presented below. However, the exact reduction is not known. It would be dependent on the age of the specific equipment used at the construction site. As time passes, older equipment will be replaced with newer equipment manufactured with the lower emission requirements. Therefore, construction occurring farther in the future would likely be reduced by a greater amount versus near-term construction.

Emission rates for employee vehicle trips and heavy truck operations were taken from EMFAC2000. EMFAC2000 is a computer program generated by the California Air Resources Board that calculates composite emission rates for vehicles. Emission rates are reported by the program in grams per trip and grams per mile.

(2) Grading

The project will be developed in three phases. The first phase includes Neighborhoods 1, 2 and 3 as well as the public use area. The second phase includes Neighborhoods 4, 5 and 7 and the commercial area. The third phase includes Neighborhoods 6 and 8.

Grading for Phase 1 will encompass approximately 174 acres. The specific grading equipment that will be required has not been determined. It is estimated that a maximum of approximately 38 pieces of heavy equipment will be required at any one time – 18 scrapers, 9 tractors, 9 graders and 2 water trucks were assumed. Up to 50 construction employees would be expected on-site on any day. Using this information, the pollutant emissions associated with grading of Phase 1 were estimated and are presented in the table below.

Table 4.8-6 - Phase 1 Construction Emissions

	Pollutant Emissions (lbs/day)				
	CO	**ROG**	**NOx**	**PM10**	**SOx**
Earth-Moving/Grading	0.0	0.0	0.0	2292.8	0.0
Construction Equipment	244.9	53.4	761.7	85.9	79.5
Trucks	0.0	0.0	0.0	0.0	0.0
Employee Travel	58.6	3.9	6.5	0.3	0.2
Grading Emissions Total	303	57	768	2,379	80
SCAQMD Thresholds	550	75	100	150	150

Grading for Phase 2 will encompass approximately 92 acres. The specific grading equipment that will be required has not been determined. It is estimated that a maximum of approximately 22 pieces of heavy equipment will be required at any one time – 10 scrapers, 5 tractors, 5 graders and 2 water trucks were assumed. Up to 30 construction employees would be expected on-site on any day. Using this information the pollutant emissions associated with grading of Phase 2 were estimated and are presented in Table 4.8-7.

Table 4.8-7 - Phase 2 Construction Emissions

	Pollutant Emissions (lbs/day)				
	CO	**ROG**	**NOx**	**PM10**	**SOx**
Earth-Moving/Grading	0.0	0.0	0.0	1228.9	0.0
Construction Equipment	148.8	31.0	452.8	50.9	46.0
Trucks	0.0	0.0	0.0	0.0	0.0
Employee Travel	35.1	2.3	3.9	0.2	0.1
Grading Emissions Total	184	33	457	1,280	46
SCAQMD Thresholds	550	75	100	150	150

Grading for Phase 3 will encompass approximately 39 acres. The specific grading equipment that will be required has not been determined. It is estimated that a maximum of approximately 9 pieces of heavy equipment will be required at any one time – 4 scrapers, 2 tractors, 2 graders and 1 water truck were assumed. Up to 16 construction employees would be expected on site on any day. Using this information the pollutant emissions associated with grading of Phase 3 were estimated and are presented in Table 4.8-8.

Table 4.8-8 - Phase 3 Construction Emissions

	Pollutant Emissions (lbs/day)				
	CO	**ROG**	**NOx**	**PM10**	**SOx**
Earth-Moving/Grading	0.0	0.0	0.0	518.8	0.0
Construction Equipment	62.4	12.7	187.8	21.1	18.8
Trucks	0.0	0.0	0.0	0.0	0.0
Employee Travel	18.7	1.2	2.1	0.1	0.1
Grading Emissions Total	81	14	190	540	19
SCAQMD Thresholds	550	75	100	150	150

Tables 4.8-6, 4.8-7 and 4.8-8 show that NO_X and PM10 emissions during grading of all three phases are greater than the significance thresholds established by the SCAQMD in the CEQA Air Quality Handbook. Therefore, the project construction emissions are considered to be significant. Mitigation measures to address these significant impacts, such as compliance with SCAQMD Rule 403, are recommended in Section 4.8.4 beginning on page 4.8-24. Tables 1 and 2 of SCAQMD Rule 403 are provided as Exhibits 4.8-2 and 4.8-3.

TABLE 1
BEST [REASONABLY]* AVAILABLE CONTROL MEASURES FOR HIGH WIND CONDITIONS

FUGITIVE DUST SOURCE CATEGORY	CONTROL MEASURES
Earth-moving	(1A) Cease all active operations; OR (2A) Apply water to soil not more than 15 minutes prior to moving such soil.
Disturbed surface areas	(0B) On the last day of active operations prior to a weekend, holiday, or any other period when active operations will not occur for not more than four consecutive days: apply water with a mixture of chemical stabilizer diluted to not less than 1/20 of the concentration required to maintain a stabilized surface for a period of six months; OR (1B) Apply chemical stabilizers prior to wind event; OR (2B) Apply water to all unstabilized disturbed areas 3 times per day. If there is any evidence of wind driven fugitive dust, watering frequency is increased to a minimum of four times per day; OR (3B) Take the actions specified in Table 2, Item (3c); OR (4B) Utilize any combination of control actions (1B), (2B), and (3B) such that, in total, these actions apply to all disturbed surface areas.
Unpaved roads	(1C) Apply chemical stabilizers prior to wind event; OR (2C) Apply water twice [once] per hour during active operation; OR (3C) Stop all vehicular traffic.
Open storage piles	(1D) Apply water twice [once] per hour; OR (2D) Install temporary coverings.
Paved road track-out	(1E) Cover all haul vehicles; OR (2E) Comply with the vehicle freeboard requirements of Section 23114 of the California Vehicle Code for both public and private roads.
All Categories	(1F) Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 1 may be used.

Source: CEQA Air Quality Handbook

Exhibit 4.8-2
SCAQMD Rule 403 Table 1

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TABLE 2
DUST CONTROL ACTIONS FOR EXEMPTION FROM PARAGRAPH (d)(3)

FUGITIVE DUST SOURCE CATEGORY	CONTROL ACTIONS
Earth-moving (except construction cutting and filling areas, and mining operations)	(1a) Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Executive Officer, the California Air Resources Board, and the U.S. EPA. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations each subsequent four-hour period of active operations; OR (1a-1) For any earth-moving which is more than 100 feet from all property lines, conduct watering as necessary to prevent visible dust emissions from exceeding 100 feet in length in any direction.
Earth-moving: Construction fill areas:	(1b) Maintain soil moisture content at a minimum of 12 percent, as determined by ASTM method D-2216, or other equivalent method approved by the Executive Officer, the California Air Resources Board, and the U.S. EPA. For areas which have an optimum moisture content for compaction of less than 12 percent, as determined by ASTM Method 1557 or other equivalent method approved by the Executive Officer and the California Air Resources Board and the U.S. EPA, complete the compaction process as expeditiously as possible after achieving at least 70 percent of the optimum soil moisture content. Two soil moisture evaluations must be conducted during the first three hours of active operations during a calendar day, and two such evaluations during each subsequent four-hour period of active operations.
Earth-moving: Construction cut areas and mining operations:	(1c) Conduct watering as necessary to prevent visible emissions from extending more than 100 feet beyond the active cut or mining area unless the area is inaccessible to watering vehicles due to slope conditions or other safety factors.
Disturbed surface areas (except completed grading areas)	(2a/b) Apply dust suppression in sufficient quantity and frequency to maintain a stabilized surface. Any areas which cannot be stabilized, as evidenced by wind driven fugitive dust must have an application of water at least twice per day to at least 80 [70] percent of the unstabilized area.
Disturbed surface areas: Completed grading areas	(2c) Apply chemical stabilizers within five working days of grading completion; OR (2d) Take actions (3a) or (3c) specified for inactive disturbed surface areas.
Inactive disturbed surface areas	(3a) Apply water to at least 80 [70] percent of all inactive disturbed surface areas on a daily basis when there is evidence of wind driven fugitive dust, excluding any areas which are inaccessible to watering vehicles due to excessive slope or other safety conditions; OR (3b) Apply dust suppressants in sufficient quantity and frequency to maintain a stabilized surface; OR (3c) Establish a vegetative ground cover within 21 [30] days after active operations have ceased. Ground cover must be of sufficient density to expose less than 30 percent of unstabilized ground within 90 days of planting, and at all times thereafter; OR (3d) Utilize any combination of control actions (3a), (3b), and (3c) such that, in total, these actions apply to all inactive disturbed surface areas.
Unpaved Roads	(4a) Water all roads used for any vehicular traffic at least once per every two hours of active operations [3 times per normal 8 hour work day]; OR (4b) Water all roads used for any vehicular traffic once daily and restrict vehicle speeds to 15 miles per hour; OR (4c) Apply a chemical stabilizer to all unpaved road surfaces in sufficient quantity and frequency to maintain a stabilized surface.
Open storage piles	(5a) Apply chemical stabilizers; OR (5b) Apply water to at least 80 [70] percent of the surface area of all open storage piles on a daily basis when there is evidence of wind driven fugitive dust; OR (5c) Install temporary coverings; OR (5d) Install a three-sided enclosure with walls with no more than 50 percent porosity which extend, at a minimum, to the top of the pile.
All Categories	(6a) Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified in Table 2 may be used.

Source: CEQA Air Quality Handbook

Exhibit 4.8-3
SCAQMD Rule 403 Table 2

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b. Long-Term Impacts - Local Air Quality

Because the project will introduce changes in traffic on the roadways serving the project, a detailed analysis of carbon monoxide concentrations at sensitive areas in the project vicinity was conducted.

(1) Methodology

Carbon monoxide (CO) is the pollutant of major concern along roadways because the most notable source of carbon monoxide is motor vehicles. For this reason carbon monoxide concentrations are usually indicative of the local air quality generated by a roadway network, and are used as an indicator of its impacts on local air quality. Local air quality impacts can be assessed by comparing future carbon monoxide levels with state and federal carbon monoxide standards moreover by comparing future CO concentrations with and without the project. The federal and state standards for carbon monoxide were presented earlier in Table 4.8-2 on page 4.8-5.

Future carbon monoxide concentrations with the project were forecasted with the CALINE4 computer model. CALINE4 is a fourth generation line source air quality model developed by the California Department of Transportation ("CALINE4," Report No. FHWA/CA/TL-84/15, June 1989). The purpose of the model is to forecast air quality impacts near transportation facilities in what is known as the microscale region. The microscale region encompasses the region of a few thousand feet around the pollutant source. Given source strength, meteorology, site geometry, and site characteristics, the model can reliably predict pollutant concentrations.

The worst case meteorology was assessed. Details on the methodology used to estimate worst case are contained in the Air Quality Assessment Report in the appendix. Specifically, a late afternoon winter period with a ground-based inversion was considered.

Composite emissions factors utilized with the CALINE4 computer model were derived from EMFAC2000 prepared by ARB. The traffic data used in the CALINE4 CO computer modeling were obtained from the traffic study prepared by Urban Crossroads.

The peak hour volumes and the level-of-service data at the critical intersections were used in the CALINE4 computer modeling. The level-of-service data are important in the CALINE4 computer modeling in that they determine the speeds and the emission factors. The lower the speeds, the higher the emission factors – hence, the higher the CO results.

Generally, the 1-hour CO level is considered the peak maximum CO level since it is the highest CO measured for an hour. According to the Caltrans Air Quality Technical Analysis Notes, changes in meteorology and traffic over time disperse the CO concentration levels and cause it to be less severe. Therefore, it is highly unlikely that the 1-hour CO levels would persist for a full eight hours. As a result, a 1-hour CO level is generally considered to be the peak level and is usually higher than an 8-hour CO level.

Local air quality impacts were be analyzed for two circulation scenarios in the future with and without the project. Currently, the Master Plan of Arterial Highways has Tonner Canyon connecting through from the Orange (SR 57) Freeway down to Valencia. It is possible that in the future this connection will be deleted. Therefore, both scenarios are assessed with and without the project. The deletion of the connection of Tonner Canyon does not substantially affect regional emissions from the project.

CALINE4 modeling was conducted for the three key intersections in the vicinity of the project. These intersections were selected because they are projected to have Level of Service D or worse in the future and show the greatest increases in traffic due to the project. These intersections are Birch Street at S. Associated Road, Birch Street at Kraemer Boulevard, and Lambert Road at Kraemer Boulevard. The analysis intersections are shown in Exhibit 4.8-1 on page 4.8-7. The CO modeling was performed for four receptors at each intersection. The receptors were located approximately 10 feet from each corner. The worst-case concentrations at each of the intersections are presented in Table 4.8-9 below. At the first two intersections – Birch at S. Associated and Birch at Kraemer – p.m. peak hour traffic characteristics resulted in the highest concentrations. At Lambert Road and Kraemer Boulevard the a.m. peak hour traffic resulted in the highest concentrations.

The future ambient (background) concentration levels for CO are not available. For the purpose of the analysis, it is assumed that the background levels for year 2025 is the same as existing year 2001. This can be considered as the worst case situation since the background levels are anticipated to decrease in future years.

(2) Carbon Monoxide (CO) Modeling Results

The results of the CALINE4 CO modeling are summarized in Table 4.8-9 and are for year 2025. The CO modeling results are shown for the projected future 1 hour and 8 hour CO concentration levels. The pollutant levels are expressed in parts per million (ppm) for each receptor. The carbon monoxide levels reported in Table 4.8-9 are composites of the background levels of carbon monoxide coming into the area plus those generated by the local roadways.

The data indicate that the future CO concentration levels for the four future scenarios are almost identical. At most the project results in a 0.2 ppm increase in both 1-hour and 8-hour concentrations. This increase is not significant. Because of this insignificant increase and the fact that no receptors are projected to exceed the state standard, the project will not result in a significant local air quality impact.

There is essentially no difference in the concentrations with and without the Tonner Canyon Road Connection. At one receptor the 1-hour and 8-hour concentrations are projected to increase by 0.1 ppm with the connection compared to no connection for either the with project or no project scenarios. This increase is not significant. There is no difference in the concentrations at the other two intersections.

Table 4.8-9 - Worst Case Projections of Carbon Monoxide Concentrations – 2025

	Existing Modeled CO Concentrations	Future CO Concentrations (ppm)			
		With Tonner Canyon Rd. Connection		Without Tonner Canyon Rd. Connection	
		No Proj.	With Proj.	No Proj.	With Proj.
1-hour					
Birch St. at S. Associated Rd.	11.0	8.8	8.9	8.8	8.9
Birch St. at Kraemer Blvd.	10.0	8.9	9.0	8.9	9.1
Lambert Rd. at Kraemer Blvd.	11.1	9.1	9.1	9.0	9.1
No. of sites exceeding 1-hour state standard of 20 ppm	**0**	**0**	**0**	**0**	**0**
8-hour					
Birch St. at S. Associated Rd.	8.6	7.1	7.1	7.1	7.1
Birch St. at Kraemer Blvd.	7.9	7.1	7.2	7.1	7.3
Lambert Rd. at Kraemer Blvd.	8.7	7.3	7.3	7.2	7.3
No. of sites exceeding 1-hour state standard of 9 ppm	**0**	**0**	**0**	**0**	**0**

NOTE: The CO concentrations include the ambient concentrations of 8.3 ppm for 1-hour levels, and 6.7 ppm for 8-hour levels.

Comparison of the future concentrations with the existing concentrations shows that the future with project CO concentration levels will be lower than the existing CO levels. In fact, the future 1-hour CO concentration levels will be reduced by between 0.9 and 2.1 ppm, and 8-hour concentrations will be reduced by between 0.6 and 1.5 ppm. This is mainly due to the anticipated decrease in the future emission factors. Local traffic actually increases in the future, but this increase is more than offset by the decrease of emission rates resulting in lower pollutant concentration.

c. Long Term Impacts - Regional Emissions

The primary source of regional emissions generated by the proposed project will be from motor vehicles. Other emissions will be generated from the combustion of natural gas for space heating and the generation of electricity. Emissions generated by the use of natural gas and oil for the generation of electricity are assumed to occur off-site.

The emissions factors from version EMFAC2000 were used to calculate the vehicular emissions. The EMFAC2000 emission factors were obtained from the Air Resources Board (ARB). The EMFAC2000 emission factors, at an average speed of 25 miles per hour, were used in the estimates.

The data used to estimate the on-site combustion of natural gas, and off-site electrical usage are based on the proposed land uses in terms of dwelling units and square footages, and emission factors taken from the 1993 CEQA Handbook.

The traffic study prepared for the project shows that the project will generate 18,132 daily trips. The average trip length for the proposed project is assumed to be 9 miles. This is a composite trip length derived from data contained in the SCAQMD CEQA Handbook. The product of the project daily trips and trip length, translate to total of 163,188 vehicle miles traveled (VMT) generated by the proposed project. An average speed of 25 miles per hour was assumed.

Additional pollutant emissions associated with the project will be generated on-site by the combustion of natural gas for space heating and water heating and off-site due to electrical usage. The project will have approximately 77,000 square feet of commercial uses, and 914 single family dwelling units. The square footages and emission factors utilized in calculating the emissions with these sources are provided in the appendix. The emissions are projected for 2020. The total project emissions are presented in Table 4.8-10.

Table 4.8-10 - Total Project Emissions

	Pollutant Emissions (lbs/day)				
	CO	**ROG**	**NOx**	**PM10**	**SOx**
Vehicular Trips	965.5	69.9	118.9	21.4	104.3
Natural Gas Consumption	4.1	1.1	16.9	0.0	0.0
Electrical Generation	3.5	0.2	20.4	0.7	2.1
Total Project Emissions	973.1	71.2	156.1	22.2	106.5

Table 4.8-10 shows that the primary source of emissions from the project is vehicular trips associated with the project. Table 4.8-11 compares the total project emissions to the SCAQMD thresholds. Emissions greater than the SCAQMD thresholds are shown in bold italics. Further, the emissions are compared to SCAB emissions for the year 2010 as presented in the 1997 AQMP. This is the furthest year projected in the 1997 AQMP.

Table 4.8-11 shows that the project-related emissions of CO, ROG and NO_X. are above the SCAQMD Thresholds. Since the project emissions are above the significance thresholds, the project will result in a significant regional air quality impact. Mitigation measures to reduce long term emissions are recommended in Section 4.8-4. Table 4.8-11 also shows that the project represents a very small fraction of the total regional emissions. For the three pollutants above the thresholds, the project represents, at most, .015% of the total regional emissions.

Table 4.8-11 - Comparison of Project Emissions to Thresholds and Regional Emissions

	Air Pollutant Emissions				
	CO	**ROG**	**NOx**	**PM10**	**SOx**
Total Project Emissions (lbs/day)	***973.1***	***71.2***	***156.1***	22.2	106.5
SCAQMD Thresholds (lbs/day)	550.0	55.0	55.0	150.0	150.0
Total Project Emissions (tons/day)	0.49	0.036	0.08	0.011	0.05
2010 SCAB (tons/day)	3,341	769	697	457	70
Percent Regional	0.015%	0.005%	0.011%	0.002%	0.076%

Although electricity is produced on the project site that could support the proposed project, emissions associated with the generation of electricity (use of natural gas and oil) have been assumed to be off-site to provide for a conservative analysis. Even if the electricity produced on-site were used to offset off-site electricity generation needed, the potential changes in emission levels would not reduce project emissions to less than significant levels.

(1) Future Oil Production Emissions

Oil production facilities and the electricity generating turbines will remain on the site with the project. The number of operating wells will decrease over time. However, the amount of oil produced at the site is not expected to decrease in the immediate future. This results in the amount of pollutant emissions from most of the sources associated with oil production to remain essentially constant. However, because of changes in the AQMD fee structure, calculated miscellaneous emissions will be reduced starting in the 2002-03 reporting year. Prior to the 2001-2002 reporting year, oil production facilities were not charged by the SCAQMD for non-permitted emissions, such as well cellars, which do not require permits. The facilities will now be charged a fee for these emissions. With this charge, the monitoring of the factors contributing to well cellar emissions and the calculation of the emissions will be improved and result in much lower reported well cellar emissions. The actual emissions are not expected to change greatly, but the reporting of emissions will change to more accurately reflect the actual total emissions produced. The future emissions presented below assume a 75% reduction in the well cellar related emissions. This is a conservative estimate.

As discussed previously, emissions associated with the turbines and the flare are expected to be reduced in the future. When both turbines are operating at capacity, the flaring of gas will not regularly be required and will be subsequently reduced. This will greatly reduce the emissions associated with the flare. Currently, the first turbine is running with a variance to its permitted NO_x emissions. Emission control measures will be added to this turbine to reduce emissions to below the permitted level. The future turbine emissions presented in Table 4.8-12 assume that the turbines are operating at their maximum permitted emission levels. The future flare emissions presented in the table assume that the flare is burning natural gas at the same rate as it averaged during the three lowest months of the 2000-2001 reporting year when both turbines were operating.

Table 4.8-12 presents the projected future air pollutant emissions associated with the oil production facility. The data presented in the table is based on the existing reported emissions with the changes discussed above.

The reductions in oil production facility emissions over existing conditions discussed above result in a decrease of CO emissions by 40%, TOG emissions by 40%, NO_X Emissions by 63%, PM10 emissions by 84% and SO_X emissions by 26%. The CO, NO_X, SO_X and PM10 emission reductions are primarily due to the reduction in emissions from the flare and the turbines. The reduction in the TOG emissions is primarily due to the reduction in calculated emissions from well cellars. The majority of emissions from the oil production facility are regulated and permitted by SCAQMD. The facility will continue to operate in conformance with these regulations and permits, which are established and regulated by the AQMD to

protect the surrounding air quality environs. Therefore, the oil production emissions do not result in a significant impact on the project.

Table 4.8-12 - Future Oil Production Related Air Pollutant Emissions

	Air Pollutant Emissions (lbs/day)				
Source	**CO**	**TOG**	**NOx**	**PM10**	**SOx**
On-Site Emissions					
Heater	0.95	0.19	3.52	0.20	0.02
Flare	2.69	0.54	5.89	0.58	0.06
Internal Combustion Engines	0.08	0.03	0.37	0.03	0.01
Tank	--	8.64	--	--	--
Fugitive Emissions[1]	--	1.91	--	--	--
Miscellaneous Emissions[2]	--	2.30	--	--	--
Turbines	44.74	0.47	65.06	0.00	0.77
Subtotal	48.46	14.08	74.85	0.81	0.86
On-Site/Off-Site Emissions					
Vehicular	6.40	0.54	1.96	0.20	0.14
Total	54.9	14.6	76.8	1.0	1.0

[1] Includes fugitive emissions from valves, fittings, hatches, sight-glasses, meters pumps and compressors
[2] Includes well heads and well cellars

A potential issue for oil production operations is odors. The AQMD CEQA Handbook describes methods for evaluating and analyzing odors. This analysis depends on such variables as wind speed, wind direction, and the sensitivities of receptors to different odors. The AQMD recommends two methods for evaluating odors. Method E679-79 relies on the sensory responses of a selected group of individuals called "panelists." The measurement/detection thresholds in this method range from detection that a very small amount of odor-inducing substance is present but not recognized or identified to detection, recognition and identification of the added substance.

Observations of the preparer of the air quality technical study and other panelists during two site visits revealed no noticeable odors from the oil production operations. Typical oil odors are generated from oil evaporating along the production process. This evaporation typically would occur at loose fittings from the equipment. Ensuring all fittings, valves, and machinery are secured and free from leaks will eliminate any potential evaporative oil odor sources.

The oil production operations will need to comply with SCAQMD Rule 402 which prohibits discharge of any air contaminants that cause "nuisance or annoyance to any considerable number of persons of the public" (SCAQMD Rule 402). This will ensure that the oil production operations do not result in a significant impact on the project due to odors.

d. Compliance with Air Quality Planning

The following sections deal with the major air planning requirements for this project. Specifically, consistency of the project with the AQMP is addressed. As discussed below, consistency with the AQMP is a requirement of CEQA.

An EIR must discuss any inconsistencies between the proposed project and applicable General Plans and regional plans (CEQA Guidelines §15125). Regional plans that apply to the proposed project include the South Coast Air Quality Management Plan (AQMP). In this regard, this section will discuss any inconsistencies between the proposed project with the AQMP.

The purpose of the consistency discussion is to set forth the issues regarding consistency with the assumptions and objectives of the AQMP and discuss whether the project would interfere with the region's ability to comply with federal and state air quality standards. If the decision-makers determine that the project is inconsistent, the lead agency may consider project modifications or inclusion of mitigation to eliminate the inconsistency.

SCAQMD's CEQA Handbook states that "New or amended General Plan Elements (including land use zoning and density amendments), Specific Plans, and significant projects must be analyzed for consistency with the AQMP." Strict consistency with all aspects of the plan is usually not required. A proposed project should be considered to be consistent with the plan if it furthers one or more policies and does not obstruct other policies. The Handbook identifies two key indicators of consistency:

1. Whether the project will result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP (except as provided for CO in Section 9.4 for relocating CO hot spots).

2. Whether the project will exceed the assumptions in the AQMP in 2010 or increments based on the year of project buildout and phase.

Based on the air quality modeling analysis contained in this report, it is expected that there will be short-term construction impacts for the proposed project. It is unlikely that short-term construction activities will increase the frequency or severity of existing air quality violations due to required compliance with SCAQMD Rules and Regulations, but emissions will be generated in excess of SCAQMD's threshold criteria.

The proposed project will increase regional emissions, and will increase regional emissions by an amount greater than the SCAQMD thresholds for CO, ROG and NOx. However, the project is not projected to contribute to the local air quality when compared to no project. The results show that the future CO concentration levels with the proposed project will comply with the 1-hour and 8-hour state and federal standards. Because the project is not projected to impact the local air quality, the project is found to be *consistent* with the AQMP for the first criterion.

Consistency with the AQMP assumptions is determined by performing an analysis of the project with the assumptions in the AQMP. Thus, the emphasis of this criterion is to insure that the analyses conducted for the project are based on the same forecasts as the AQMP.

Since the SCAG forecasts are not detailed, the test for consistency of this project with the AQMP is not specific. The traffic modeling upon which much of the air quality assessment is based on is the Orange County Congestion Management Program (CMP) and the Growth Management Program (GMP). The traffic modeling has growth projections for year 2025, which is the project's buildout year. The future traffic growth projections include approved projects to be constructed around year 2025. The growth forecasts for the proposed project, at the project's buildout year, are consistent with the SCAG growth forecasts. The forecasts made for the project EIR are based on the same demographics as the AQMP, and therefore, the second criterion is met for consistency with the AQMP.

e. Landfill Odors

The Olinda Alpha Landfill is located one-half mile to the northeast of the project site. A potential impact is the emanation of odors from the landfill which may affect project residents. However, prevailing winds coming from the south primarily direct odors northward during the day. In addition, the operations of the landfill are required to adhere to SCAQMD Rule 402 which prohibits discharge of any air contaminants that cause "nuisance or annoyance to any considerable number of persons of the public." No significant air quality impacts have been identified.

4.8.4 Mitigation Measures

a. Short-Term Construction Impacts

AQ-1 During grading and construction phases, the project shall apply measures contained in Table 1 and Table 2 of SCAQMD Rule 403. Prior to the issuance of grading permit, the applicant shall obtain appropriate permits from the SCAQMD and submit them to the Manager, Subdivision and Grading Services.

AQ-2 During grading and construction phases, the project shall reduce construction equipment emissions by implementing the following measures, which shall be included in grading and improvement plans specifications for implementation by contractors:

- Use low emissions mobile construction equipment.
- Maintain construction equipment engines by keeping them tuned.
- Use low sulfur fuel for stationary construction equipment. This is required by SCAQMD Rules 431.1 and 431.2.
- Utilize existing power sources (i.e., power poles) when feasible. This measure would minimize the use of higher polluting gas or diesel generators.

- Configure construction parking to minimize traffic interference.
- Minimize construction of through-traffic lanes. When feasible, construction should be planned so that lane closures on existing streets are kept to a minimum.
- Schedule construction operations affecting traffic for off-peak hours.
- Develop a traffic plan to minimize traffic flow interference from construction activities (the plan may include advance public notice of routing, use of public transportation and satellite parking areas with a shuttle service.

AQ-3 Prior to issuance of building permits, the applicant shall obtain approval of an Air Quality Mitigation Plan by the Manager, Environmental and Project Planning. The Plan shall address each applicable control measure listed below in order to determine which control measures are feasible, recommend implementation conditions, and establish methods of applying conditions to contractors, buyers, lessees, tenants and occupants to comply with Rule 402 and Rule 403. The project applicant shall reimburse the County for costs of an independent third party peer review, if necessary, of this Plan. Specific mitigation measures could include:

a. Transportation Demand Management Measures
   1. Schedule truck deliveries and pickups during off-peak hour.
   2. Provide adequate ingress and egress at all entrances to public facilities to minimize vehicle idling at curbsides.
   3. Provide dedicated turn lanes as appropriate and provide roadway improvements at heavily congested roadways.

b. Energy Efficient Measures
   5. Improve thermal integrity of the buildings and reduce thermal load with automated time clocks or occupant sensors.
   6. Install energy efficient street lighting.
   7. Capture waste heat and re-employ it in nonresidential buildings.
   8. Landscape with native drought-resistant species to reduce water consumption and to provide passive solar benefits.
   9. Provide lighter color roofing and road materials and tree planning programs to comply with the AQMP Miscellaneous Sources MSC-01 measure.
   10. Comply with the AQMP Miscellaneous Sources PRC-03, and Stationary Sources Operations Enhanced Inspection and Maintenance and ADV-MISC to reduce emissions of restaurant operations.
   11. Provide bicycle lanes, storage areas, and amenities, and ensure efficient parking management.
   12. Provide preferential parking to high occupancy vehicles and shuttle services. Also, designate additional car pool or vanpool parking. The air quality benefit cannot be quantified.
   13. Employers should provide variable work hours and telecommuting to employees to comply with the AQMP Advanced Transportation Technology ATT-01 and ATT-02 measures.

14. Provide dedicated parking spaces with electrical outlets for electrical vehicles.
15. Develop a trip reduction plan to comply with SCAQMD Rule 2202.
16. Employers should provide ride-matching, guaranteed ride home, or car pool or vanpool to employees as a part of the TDM program and to comply with the AQMP Transportation Improvements TCM-01 measure.
17. Synchronize traffic signals.
18. Encourage the use of alternative fuel or low emission vehicles to comply with the AQMP On-Road Mobile M2 measure, and Off-Road Mobile Sources M9 and M10 measures.
19. Introduce window glazing, wall insulation, and efficient ventilation methods.

4.8.5 Cumulative Impacts

The short-term and long-term regional air quality impacts due to the proposed project with the recommended measures above will be reduced to an extent; however, the construction-related emissions for PM10 and NO_X and operational emissions for CO, NO_X, and ROG would still be significant. The project's emissions will contribute incrementally to a cumulatively significant adverse air quality impact in a non-attainment area. This impact on basin-wide air quality is considered cumulatively significant and unavoidable.

4.8.6 Unavoidable Adverse Impacts

Implementation of the recommended short-term mitigation measures will substantially lessen construction-related particulate emissions. Construction-related PM10 and NO_X emissions from grading of project phases cannot be completely mitigated and will continue to exceed SCAQMD threshold criteria and is therefore considered significant and adverse.

Project operational CO, NO_X and ROG emissions cannot be completely mitigated below established SCAQMD threshold levels; therefore, long-term air quality impacts can be considered unavoidable and significant.

4.9 Noise

The data and discussion presented in this section are based on the noise analysis prepared by Mestre Greve Associates for the proposed project entitled "Noise Assessment for Tonner Hills Planned Community," dated February 14, 2002. The complete noise assessment is provided in the Technical Appendices of this EIR.

4.9.1 Existing Conditions

The Planned Community area is currently used for oil producing activities. Noise on-site includes oil operations and traffic along surrounding streets. Occasional aircraft flyovers, barking dogs, landscape maintenance, and other activities typical of a developed suburban setting are also sources of noise. On-site existing land uses also include a gas turbine electricity generation plant located within the project boundaries (see Exhibit 4.9-1). Land uses surrounding the project area are primarily residential but also include commercial, office and retail uses, a high school, and a landfill. Truck traffic is associated with the landfill. Noise sensitive uses in the immediate proximity of the project site include a townhome complex located between Lambert Road and the southern project boundary, single-family residences located south of Lambert Road, and single-family residences on the west side of Carmichael Drive. Brea-Olinda High School, located between the Orange (SR 57) Freeway and the project site, is also considered to be a noise sensitive land use.

a. Background Information on Noise

(1) Noise Criteria Background

Sound is technically described in terms of the loudness (amplitude) of the sound and the frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Decibels are based on a logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dB higher than another is judged to be twice as loud, 20 dB higher is four times louder, and so forth. Everyday sounds normally range from 30 dB (very quiet) to 100 dB (very loud).

Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear. Community noise levels are measured in terms of the "A-weighted decibel," abbreviated dBA. Exhibit 4.9-2 provides examples of various noises and their typical A-weighted noise level.

Sound levels decrease as a function of distance from the source as a result of wave divergence, atmospheric absorption, and ground attenuation. As the sound wave form travels away from the source, the sound

energy is dispersed over a greater area, thereby dispersing the sound power of the wave. Atmospheric absorption also influences the levels that are received by the observer. The greater the distance traveled, the greater the influence and the resultant fluctuations. The degree of absorption is a function of the frequency of the sound as well as the humidity and temperature of the air. Turbulence and gradients of wind, temperature and humidity also play a significant role in determining the degree of attenuation. Intervening topography can also have a substantial effect on the perceived noise levels.

Noise has been defined as unwanted sound, and it is known to have several adverse effects on people. From these known effects of noise, criteria have been established to help protect the public health and safety and prevent disruption of certain human activities. This criteria is based on such known impacts of noise on people as hearing loss, speech interference, sleep interference, physiological responses, and annoyance. Each of these potential noise impacts on people is briefly discussed in the following narratives:

- **Hearing Loss** is not a concern in community noise situations of this type. The potential for noise-induced hearing loss is more commonly associated with occupational noise exposures in heavy industry or very noisy work environments. Noise levels in neighborhoods, even in very noisy airport environs, is not sufficiently loud to cause hearing loss.

- **Speech Interference** is one of the primary concerns in environmental noise problems. Normal conversational speech is in the range of 60 to 65 dBA, and any noise in this range or louder may interfere with speech. There are specific methods of describing speech interference as a function of distance between speaker and listener and voice level.

- **Sleep Interference** is a major noise concern for traffic noise. Sleep disturbance studies have identified interior noise levels that have the potential to cause sleep disturbance. Note that sleep disturbance does not necessarily mean awakening from sleep, but can refer to altering the pattern and stages of sleep.

- **Physiological Responses** are those measurable effects of noise on people that are realized as changes in pulse rate, blood pressure, etc. While such effects can be induced and observed, the extent is not known to which these physiological responses cause harm or are signs of harm.

- **Annoyance** is the most difficult of all noise responses to describe. Annoyance is a very individual characteristic and can vary widely from person to person. What one person considers tolerable can be quite unbearable to another of equal hearing capability.

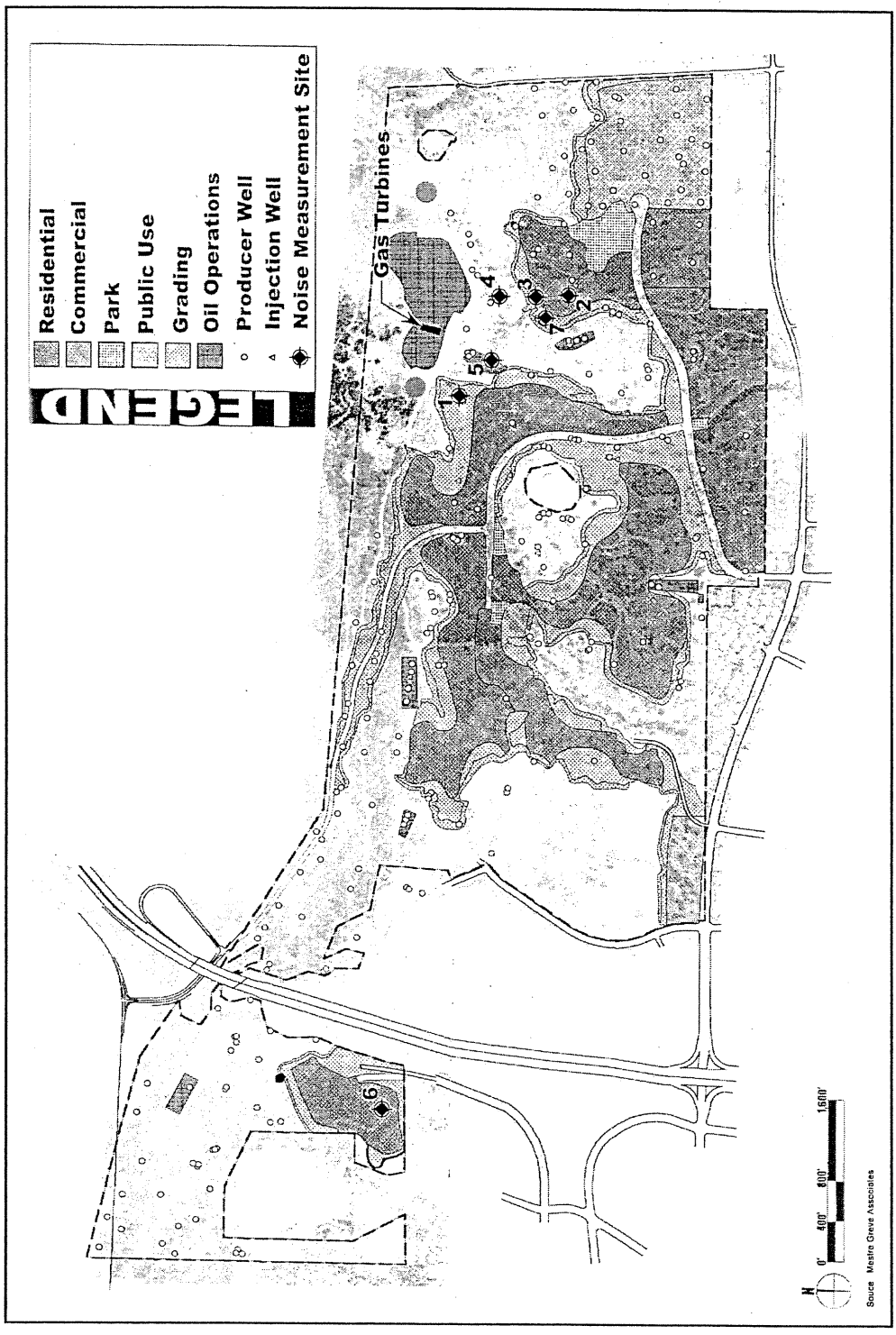

Exhibit 4.9-1
Noise Measurement Locations

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Sound Levels and Loudness of Illustrative Noises in Indoor and Outdoor Environments

(Numbers in Parentheses Are the A-Scale Weighted Sound Levels for that Noise Event)

dB(A)	Overall Level (Sound Pressure Level Reference: 0.0002 Microbars)	Community (Outdoor)	Home or Industry (Indoor)	Loudness (Human Judgment of Different Sound Levels)
130		Military jet aircraft take-off with after-burner from aircraft carrier @ 50 ft (130)	Oxygen torch (121)	120 dB(A) 32 times as loud
120 110	Uncomfortably loud	Turbo fan aircraft @ take-off power @ 200 ft (110)	• Riveting machine (110) • Rock and roll (114)	110 dB(A) 16 times as loud
100		• Jet flyover @ 1000 ft (103) • Boeing 707, DC-8 @ 6080 ft. before landing (106) • Bell J-2A helicopter @ 100 ft (100)		100 dB(A) 8 times as loud
90	Very loud	• Power mower (96) • Boeing 737, DC-9 @ 6080 ft. before landing (97) • Motorcycle @ 25 ft (90)	Newspaper press (97)	90 dB(A) 4 times as loud
80		• Car wash @ 20 ft (89) • Prop airplane flyover @ 1000 ft (88) • Diesel truck, 40 mph @ 50 ft (84) • Diesel train, 45 mph @ 100 ft (83)	• Food blender (88) • Milling machine (85) • Garbage disposal (80)	80 dB(A) 2 times as loud
70	Moderately loud	• High urban ambient sound (80) • Passenger car, 65 mph @ 25 ft (77) • Freeway @ 50 ft from pavement edge, 10:00 a.m. (76, ±6)	• Living room music (76) • TV-audio, vacuum cleaner (78)	70 dB(A)
60		Air conditioning unit @ 100 ft (60)	• Cash register @ 10 ft (65-70) • Electric typewriter @ 10 ft (64) • Dishwasher (rinse) @ 10 ft (60) • Conversation (60)	60 dB(A) 1/2 as loud
50	Quiet	Large transformers @ 100 ft (50)		50 dB(A) 1/4 as loud
40		• Bird calls (44) • Lower limit urban ambient sound (40)		40 dB(A) 1/8 as loud
20	Just audible	Desert at night (dB(A) scale interrupted)		
10	Threshold of hearing			

Source: Reproduced from Melville C. Branch and R. Dale Beland, "Outdoor Noise in the Metropolitan Environment," published by the City of Los Angeles, 1970, p. 2.

Exhibit 4.9-2

Typical A-Weighted Noise Levels

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(2) Noise Assessment Metrics

The description, analysis, and reporting of community noise levels around communities are made difficult by the complexity of human response to noise and the myriad of noise metrics that have been developed for describing noise impacts. Each of these metrics attempts to quantify noise levels with respect to community response. Most of the metrics use the A-weighted noise level to quantify noise impacts on humans. A-weighting is a frequency weighting that accounts for human sensitivity to different frequencies.

Noise metrics can be divided into two categories: single event and cumulative. Single-event metrics describe the noise levels from an individual event such as an aircraft flyover or perhaps a heavy equipment pass-by. Cumulative metrics average the total noise over a specific time period, which is typically 1 or 24 hours for community noise problems. For this type of analysis, cumulative noise metrics will be used.

Several rating scales have been developed for measuring community noise. These account for:

1. The parameters of noise that have been shown to contribute to the effects of noise on man,
2. The variety of noises found in the environment,
3. The variations in noise levels that occur as a person moves through the environment, and
4. The variations associated with the time of day.

The scales are designed to account for the known health effects of noise on people described previously. Based on these effects, the observation has been made that the potential for a noise to impact people is dependent on the total acoustical energy content of the noise. A number of noise scales have been developed to account for this observation. Two of the predominant noise scales are the Equivalent Noise Level (LEQ) and the Community Noise Equivalent Level (CNEL). These scales are described in the following paragraphs.

- **LEQ** is the sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period. LEQ is the "energy" average noise level during the time period of the sample. LEQ can be measured for any time period, but is typically measured for 1 hour. This 1-hour noise level can also be referred to as the Hourly Noise Level (HNL). It is the energy sum of all the events and background noise levels that occur during that time period.

- **CNEL**, Community Noise Equivalent Level, is the predominant rating scale now in use in California for land use compatibility assessment. The CNEL scale represents a time weighted 24-hour average noise level based on the A-weighted decibel. Time weighted refers to the fact that noise that occurs during certain sensitive time periods is penalized for occurring at these times. The evening time period (7 p.m. to 10 p.m.) penalizes noises by 5 dBA, while nighttime (10 p.m. to 7 a.m.) noises are penalized by 10 dBA. These time periods and penalties were selected to reflect people's increased sensitivity to noise during these time periods. A CNEL noise level may be reported as a "CNEL of 60 dBA," "60

dBA CNEL," or simply "60 CNEL." Typical noise levels in terms of the CNEL scale for different types of communities are presented in Exhibit 4.9-3.

- **Ldn**, the day-night scale, is similar to the CNEL scale except that evening noises are not penalized. It is a measure of the overall noise experienced during an entire day. This noise scale is time-weighted, which means that noise that occurs during certain sensitive time periods is penalized for occurring at these times. In the Ldn scale, those noise levels that occur during the night (10:00 p.m. to 7:00 a.m.) are penalized by 10 dB. This penalty was selected to attempt to account for increased human sensitivity to noise during the quieter period of a day, where home and sleep are the most probable activities.

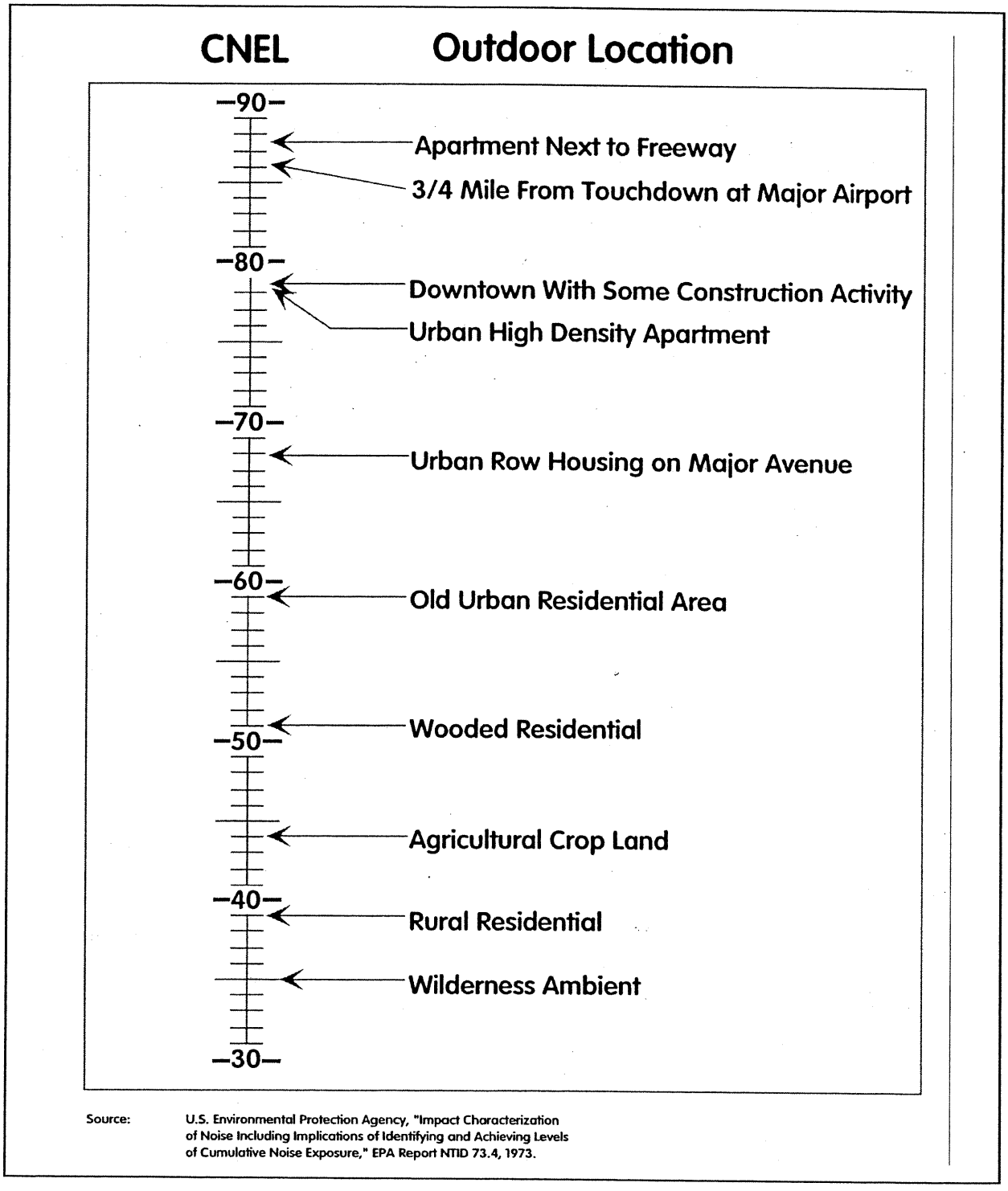
- **L(%)** is a statistical method of describing noise which accounts for variance in noise levels throughout a given measurement period. L(%) is a way of expressing the noise level exceeded for a percentage of time in a given measurement period. For example, since 5 minutes is 25% of 20 minutes, L(25) is the noise level that is equal to or exceeded for 5 minutes in a 20-minute measurement period. It is L(%) that is used for most noise ordinance standards. For example, most daytime city, state, and county noise ordinances use an ordinance standard of 55 dBA for 30 minutes per hour or an L(50) level of 55 dBA. In other words, the noise ordinance states that no noise level should exceed 55 dBA for more that 50 percent of a given period.

b. Noise Criteria

(1) County of Orange Noise Element

The County of Orange specifies outdoor and indoor noise limits for various land uses impacted by transportation noise sources. The noise limits specified in the County's Noise Element are in terms of the Community Noise Equivalent Level (CNEL). The standard states that for residential land use, the exterior noise exposure level shall not exceed 65 CNEL and the interior noise exposure level shall not exceed 45 CNEL.

For retail uses the interior Leq(12) cannot exceed 55 dBA. For a typical traffic time distribution the CNEL level is 1.4 dB higher than the daytime Leq. Therefore, the County's Leq(12) standard of 55 dBA is equivalent to a CNEL limit of 56.4 dB. There are no outdoor standards for retail uses or parks.



Source: U.S. Environmental Protection Agency, "Impact Characterization of Noise Including Implications of Identifying and Achieving Levels of Cumulative Noise Exposure," EPA Report NTID 73.4, 1973.

Exhibit 4.9-3
Typical Outdoor Noise Levels

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(2) County of Orange Noise Ordinance

Division 6, Section 4.6.1 of the County of Orange Municipal Code defines the noise ordinance that establishes exterior and interior noise standards that protect residential zoned areas. Table 4.9-1 presents noise ordinance standards. The Noise Ordinance is designed to control unnecessary, excessive, and annoying sounds from sources on private property by setting limits that cannot be exceeded at adjacent properties. The noise ordinance requirements cannot be applied to mobile noise sources such as heavy trucks when traveling on public roadways. Control of the mobile noise sources on public roads is preempted by federal and state laws. However, the noise ordinance does apply to vehicles on private property.

The noise ordinance specifies dBA noise levels that cannot be exceeded at residential areas for a specified period of time. The time limits are listed in the first column of Table 4.9-1. Column 2 lists the equivalent noise metric in terms of "percent noise level" or L%. The percent noise level describes the noise level that is exceeded during a certain percentage of the measurement period. For example, the L50 noise level is the level exceeded 50% of the measurement period or 30 minutes in an hour. Columns 3 and 4 list the daytime and nighttime noise levels for the specified metric that cannot be exceeded under the noise ordinance. Greater noise levels are permitted during the day (7 a.m. to 10 p.m.) as compared to nighttime (10 p.m. to 7 a.m.).

Table 4.9-1 - County of Orange Noise Ordinance Standards

Maximum Time of Exposure	Noise Metric	Noise Level Not To Be Exceeded Residential Zone	
		7 a.m. to 10 p.m. (daytime)	10 p.m. to 7 a.m. (nighttime)
Exterior Noise Standards			
30 minutes/hour	L50	55 dBA	50 dBA
15 minutes/hour	L25	60 dBA	55 dBA
5 minutes/hour	L8.3	65 dBA	60 dBA
1 minute/hour	L1.7	70 dBA	65 dBA
Any period of time	Lmax	75 dBA	70 dBA
Interior Noise Standards			
5 minutes/hour	L8.3	55 dBA	45 dBA
1 minute/hour	L1.7	60 dBA	50 dBA
Any period of time	Lmax	65 dBA	55 dBA

The noise ordinance states that the daytime noise level for a noise source measured at an outdoor area of a residential property cannot exceed 75 dBA ever, 70 dBA for more than 1 minute of any hour, 65 dBA for more than 5 minutes of any hour, 60 dBA for more than 15 minutes of any hour, or 55 dBA for more than 30 minutes of any hour. Nighttime noise level limits are reduced by 5 dB to reflect the increased sensitivity to noise occurring during this time period. The noise ordinance also states that the noise level for a source

measured at an indoor area of a residential property cannot exceed 65 dBA ever, 60 dBA for more than 1 minute of any hour, and 55 dBA for more than 5 minutes of any hour. The nighttime interior noise level limits are reduced by 10 dB. In the event that the ambient noise level exceeds any of the noise limit categories, the cumulative period applicable to that category shall be increased to reflect the ambient noise level.

c. Existing Noise Measurements

Ambient noise measurements were made on October 9, 2001 between 3:00 p.m. and 5:30 p.m. and on October 10, 2001 between 12:00 p.m. and 1:00 p.m. at seven locations. The locations of the noise measurement sites are shown in Exhibit 4.9-1. Four sites were selected to document the noise levels from the gas turbine electricity generating facility (Sites 1, 3, 4 and 5). Sites 1 and 3 represented locations nearest the proposed residential areas potentially affected by the noise from the turbines that were accessible. However, the turbines were not audible at Site 3 due to topography breaking the line of sight to the turbines, and the turbines were only barely audible at Site 1. Measurements were made at Sites 4 and 5 because they had direct line of sight. The turbines were only slightly audible at these sites.

Sites 2 and 7 were selected to measure noise levels from existing oil production operations. Site 7 was located approximately 50 feet from a standard oil pumping station and Site 2 was taken 190 feet from to an injector well.

Site 6 was selected to measure noise levels from the Orange (SR 57) Freeway at the residential area proposed west of the freeway. Traffic noise modeling presented below is typically used to assess traffic noise levels and typically quite accurate. However, there is complex topography that affects the noise from the freeway to this area. This site was selected to examine the topographic effects.

The measurements were made with a Brüel & Kjær Modular Precision Sound Level Meter, Type 2236. The systems were calibrated before and after each measurement series with calibration traceable to the National Institute of Standards and Technology. Sustained wind speeds during the time of measurements were light (0 to 5 miles per hour) with gusts up to 10 mph.

Ten-minute measurements were made at each of the measurement sites except for Sites 2 and 7. The noise levels from the existing oil pumps were relatively constant, and only 5-minute measurements were required.

The measurement results are presented in terms of the equivalent noise levels (Leq), maximum noise levels (Lmax), minimum noise levels (Lmin) and percentile noise levels (L%). The L50 percentile level is the noise level exceeded 50 percent of the time, and represents the median ambient noise level. The L90 noise levels represent the background noise levels which are exceeded 90 percent of the time.

Table 4.9-2 - Existing Noise Measurements

Site	Time	Leq	Lmax	L10	L50	L90	Lmin
1	3:24 p.m.	49	62	50	48	47	46
2	3:48 p.m.	58	60	59	58	58	57
3	3:57 p.m.	44	57	46	40	38	37
4	4:22 p.m.	48	58	50	48	47	45
5	12:02 p.m.	49	60	51	48	46	44
5	4:41 p.m.	48	55	49	48	47	45
6	12:45 p.m.	60	64	62	60	58	55
6	5:14 p.m.	61	64	62	60	59	58
7	12:21 p.m.	47	60	47	45	44	43

Measurements at Sites 1, 3, 4 and 5 show that the gas turbine electricity generation facility generates noise levels less than 50 dBA at the nearest planned residential areas. Sites 4 and 5 were located closer to the facility than the planned residential areas and had direct line of sight to the facility. The planned residential areas will have elevations substantially below the turbine plant, and the topography will interrupt the line of site reducing the noise levels. The facility was only slightly audible at Sites 4 and 5, barely audible at Site 1 and not audible at Site 3.

Measurements at Site 7 show that the standard oil pumps generate noise levels of less than 50 dBA at a distance of 50 feet. Some of the oil pumps will be retained with the project and will be located within the planned residential areas. The measurement at Site 2 shows that an injector well can generate a substantial amount of noise. The noise level measured at Site 2 equates to a noise level of 70 dBA at a distance of 50 feet. Some of the oil pumps and injector wells will be retained with the project and will be located within the planned residential areas.

The noise level measured at Site 6 indicates a traffic noise level several dB lower than would be indicated through the noise modeling presented below. This is due some screening of line of sight from the measurement site and the roadway. The modeling will present the worst-case noise levels in this area.

d. Existing Roadway Noise Levels

An estimate of highway noise levels in terms of CNEL was computed for the roadways affected by project traffic. Because the noise impact of traffic has predictable characteristics, it is standard industry practice to model roadway noise rather than take site specific measurements. The Highway Noise Model published by the Federal Highway Administration was utilized. The CALVENO noise emission curves developed by Caltrans were used with the FHWA model. These curves better model the California vehicle mix. The FHWA model uses traffic volume, vehicle mix, vehicle speed, and roadway geometry to compute the "equivalent noise level." To determine CNEL levels the equivalent noise levels for each of the time periods used in the calculation of CNEL are calculated. Weighting these noise levels and summing them results in the CNEL for the traffic projections used. The distances to 60, 65, and 70 CNEL contours can then be

calculated from this information. A CNEL contour is the "reach" of the particular sound level at a specific point.

The distances to the existing 60, 65 and 70 CNEL contours for the roadways whose noise levels are changed by more than 0.5 dB by the proposed project are given in Table 4.9-3. These represent the distance from the centerline of the road to the contour value shown. The CNEL at 100 feet from the roadway centerline is also presented. The values given in Table 4.9-3 represent existing noise levels and do not take into account the effect of any existing noise barriers or topography that may affect ambient noise levels. Tables in the project noise assessment appendix present the traffic data used to calculate the noise levels as well as the noise levels and distances to contours for all roadways in the vicinity of the project analyzed.

Table 4.9-3 shows that there are substantial noise levels (i.e., above 65 CNEL) generated along Lambert Road where the model predicts the CNEL ranging from 66.1 to 67.4 CNEL as measured from 100 feet from the centerline of the roadway. Noise levels along the other roadway segments presented in the table would be considered moderate to significant. Note that the noise levels and distances to contours presented in the table do not take into account any noise barriers or topography. In many places a 5- to 6-foot wall exists along the major roadways where there are adjacent residential land uses. Typically, these walls also mitigate traffic noise levels to below 65 CNEL.

Table 4.9-3 - Modeled Existing Roadway Traffic Noise Levels

		Distance To CNEL Contour from Centerline of Roadway (feet)		
Roadway Segment	**CNEL @ 100'**	**70 CNEL**	**65 CNEL**	**60 CNEL**
Valencia Avenue				
North of Carbon Canyon	62.3	31	66	142
Carbon Canyon to Birch/Rose	63.9	39	85	183
Lambert Road				
SR 57 NB to Pointe	67.4	67	144	310
East of Pointe	67.4	67	144	310
West of Wild Cat	67.4	67	144	310
East of Wild Cat	66.1	55	118	254
West of Kraemer	66.1	55	118	254
Rose Drive				
South of Valencia	63.4	36	78	167
Brea Canyon Road				
East of Tonner Canyon	63.4	36	78	169
Brea Boulevard				
North of Central	64.0	40	86	186
Kraemer Boulevard				
Lambert Road to Birch	63.5	37	80	171

4.9.2 Thresholds of Significance

For the purposes of this EIR, the thresholds of significance for evaluating project impacts are based upon suggested criteria from the County of Orange Environmental Checklist and the CEQA Environmental Checklist found within Appendix G of the CEQA Guidelines. The project would result in a significant impact if it would:

- Increase existing noise levels;
- Expose people to noise levels exceeding adopted County standards; or
- If located within an airport land use plan or, where such plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels.

Off-site impacts from on-site activities, temporary and long-term, are measured against the County of Orange Noise Ordinance presented previously. Construction activities, oil production activities, the gas turbine electricity generation plant, and commercial area activities must comply with the Noise Ordinance.

Long-term off-site impacts from traffic noise are measured against two criteria. Both criteria must be met for a significant impact to be identified. First, project traffic must cause a significant noise level increase on a roadway segment adjacent to a noise-sensitive land use. Second, the resulting future with project noise level must exceed the criteria level for the noise sensitive land use. In this case the criteria level is 65 CNEL for residential land uses.

In community noise assessment, changes in noise levels greater than 3 dB are often identified as significant, while changes less than 1 dB will not be discernible to local residents. In the range of 1 to 3 dB, residents who are very sensitive to noise may perceive a slight change. Note that no scientific evidence is available to support the use of 3 dB as the significance threshold. In laboratory testing situations, humans are able to detect noise level changes of slightly less than 1 dB. In a community noise situation, however, noise exposures are over a long time period, and changes in noise levels occur over years, rather than the immediate comparison made in a laboratory. Therefore, the level at which changes in community noise become discernible is likely to be some value greater than 1 dB, and 3 dB appears to be appropriate for most people. In this case, many residential areas adjacent to roadways in the project vicinity are projected to have future noise levels approaching the 65 CNEL standard. Therefore, for this project, a 1 dB traffic noise level increase due to the project is considered significant.

Cumulative impacts are measured in terms of the total noise increase due to the project and other growth in the area over existing conditions. Because increases over existing conditions will take place over a long period of time, a 3 dB increase over existing conditions will be considered cumulatively significant.

Long-term on-site impacts are measured against the noise level limits applied by the County. For residential land uses and schools, the exterior noise standard is 65 CNEL and the interior noise standard is 45 CNEL. For retail uses the interior noise standard is equivalent to 56 CNEL.

4.9.3 Project Impacts Prior to Mitigation

The proposed project consists of a comprehensive plan to develop land used for oil and gas production for the past 100 years and still in operation. The proposed project involves the development of residences distributed in eight distinct neighborhoods, neighborhood parks, mixed use development, continuing oil and gas production activities and facilities, and a site reserved for public use. A majority of the site will be reserved as open space.

This section analyzes the potential noise impacts associated with the Tonner Hills Planned Community. The impacts of noise generated by project traffic are evaluated. Traffic noise impacts on the project site are identified. Traffic volume information used in this report to project traffic noise levels was provided by Urban Crossroads[10]. As shown in the Area Plan for the project, solid walls are provided along community streets. Wall details will be provided by the builder of each planning area at the time of development pursuant to the review and approval by the County of Orange. Since the design of the walls is not known at this time, project noise levels evaluated do not assume noise barriers or sound walls.

Under the Master Plan of Arterial Highways, Tonner Canyon Road is planned to be connected through from Brea Canyon to Valencia Avenue. Because this is the current plan, this scenario must be analyzed. However, this connection may not be constructed. Therefore, a scenario with the Tonner Canyon connection not being constructed is also examined.

There is a gas turbine electricity plant located within the project boundaries. Further, some of the oil production operations within the project site will be retained with the proposed project. Some of these facilities will exist within or near residential neighborhoods. Oil production facilities within or near residential areas are proposed to be vaulted underground. The locations of the gas turbine facility, as well as the retained oil production facilities, are shown in Exhibit 4.9-1. Noise impacts on the proposed residences from the retained oil and gas production, as well as the existing turbine electricity generating station, are examined. Noise impacts from project site activity on nearby uses are also discussed.

Potential noise impacts are commonly divided into two groups: temporary and long-term. Temporary impacts are usually associated with noise generated by construction activities. Long-term impacts are further divided into impacts on surrounding land uses generated by the proposed project and those impacts that occur at the proposed project site.

a. Short-Term Impacts

Construction noise represents a short-term impact on ambient noise levels. The primary source of construction noise is heavy equipment. Noise generated by construction equipment, including trucks, graders, bulldozers, concrete mixers, and portable generators, can reach high levels. Grading will generate the highest levels of noise during construction.

[10] "Tonner Hills Traffic Analysis" dated February 2002.

Worst-case examples of construction noise at 50 feet are presented in Exhibit 4.9-3. The peak noise level for most of the heavy equipment that will be used during the grading is 70 to 95 dBA at a distance of 50 feet. At 200 feet, the peak construction noise levels range from 58 to 83 dBA. At 400 feet the peak noise levels range from 52 to 77 dBA. Note that these noise levels are based on worst-case conditions. Typically, noise levels near the site will be less. Noise measurements made by Mestre Greve Associates for other projects show that the noise levels generated by commonly used grading equipment (e.g., loaders, graders and trucks) generate noise levels that typically do not exceed the middle of the range shown in Exhibit 4.9-4.

The nearest homes to grading activities are located across Valencia Avenue to the east of the project. These homes are currently under construction and are located approximately 150 feet from the public use area to be located in the southeastern corner of the project site. There are sound walls to protect these homes from traffic noise that will also be effective in reducing construction noise. A noise barrier that breaks the line of sight from a noise source to a receiver reduces noise levels by at least 5 dBA. Most of the grading activity will take place at distances greater than 50 feet from any home. Only as heavy equipment passes nearest to the homes will the homes experience the noise levels shown in Exhibit 4.9-4. As the equipment travels away from the homes, the noise levels will drop off quickly. When equipment is 200 feet from the homes, the noise levels will be 12 dB lower than their highest level. This is perceived as reducing the noise level by more than half.

The next nearest homes to the grading activities are south of the project site, north of Lambert Road, and west of Kraemer Road. These homes are between 160 and 350 feet from the nearest areas to be graded by the project. The nearest homes will experience maximum noise levels 10 dB lower than those shown in Exhibit 4.9-4, and the farthest homes will experience maximum noise levels 17 dB lower. For the portion of the project west of the Orange (SR 57) Freeway, grading will occur as close as 300 feet from the existing residential uses. Maximum grading noise levels will be 16 dB lower than those shown in Exhibit 4.9-4. As before, these levels will only occur as equipment travels along the edge of the project area to be graded closest to the homes. For most of the grading the noise levels will be lower than the maximum levels.

The County of Orange has adopted a Noise Ordinance that excludes control of noise generated by construction activities during the hours between 7:00 a.m. and 8:00 p.m. on weekdays and Saturdays. Construction noise occurring during these hours is not considered significant. Construction outside these hours or on federal holidays or Sundays is required to comply with the noise ordinance. Any construction or grading within 500 feet of existing residential areas will need to be limited to the hours excluded from the Noise Ordinance limits.

In order to not result in a significant noise impact, construction activities will need to comply with the County of Orange Noise Ordinance as identified in Mitigation Measure N-1.

b. Long-Term Off-Site Impacts

This section examines noise impacts from the proposed project on the land uses in the vicinity of the project. Specifically, traffic noise increases due to the project are examined, as well as noise generated by on-site activities.

(1) Traffic Noise

Table 4.9-4 presents the changes in traffic noise levels on roadways in the vicinity of the project. Note that only roadways with increases due to the project of greater than 0.5 dB or changes greater than 0.5 dB due to the deletion of the connection of Tonner Canyon Road are presented in Table 4.9-4. Changes in traffic noise levels for all roads analyzed are presented in the noise assessment appendix. Currently, the Master Plan of Arterial Highways shows Tonner Canyon Road connecting through to Valencia Avenue From Brea Canyon Road. This connection may not be constructed. This analysis must examine the noise impacts with the existing plan (i.e., with the connection). Changes in traffic noise levels without the connection are also examined in relation to the project.

The first column of Table 4.9-4 lists the roadway segments. The second and third columns show the increase in traffic noise over existing conditions with the project and the project's contribution to this increase with Tonner Canyon Road connecting Brea Canyon Road and Valencia Avenue. Note that the project contribution column represents the difference in the future noise level with and without the project. The fourth and fifth columns show the same information as the second and third columns except for the scenario where the connection of Tonner Canyon Road is not constructed. The final column shows the effect on the future traffic noise levels with the project due to the deletion of the connection of Tonner Canyon Road from Brea Canyon Road to Carbon Canyon Road. A negative number in the final column shows that the deletion of the connection will reduce the traffic noise level. A positive number indicates an increase in noise level due to the deletion of the connection.

The noise level increases were calculated using traffic volume data presented in the previously referenced traffic study prepared for the project. The traffic volumes used are presented in the noise assessment appendix. Increases greater than 3 dB over existing conditions and 1 dB due to the project are indicated in bold text.

Table 4.9-4 shows that the project results in a substantial noise increase along two road segments, Tonner Canyon Road east of the Orange (SR 57) Freeway and Kraemer Boulevard north of Lambert Road. There are no existing homes along Tonner Canyon Road east of SR 57, and therefore no impact. Kraemer Boulevard north of Lambert Road contains one of the entrances to the project. There are existing homes located on the west side of this road segment.

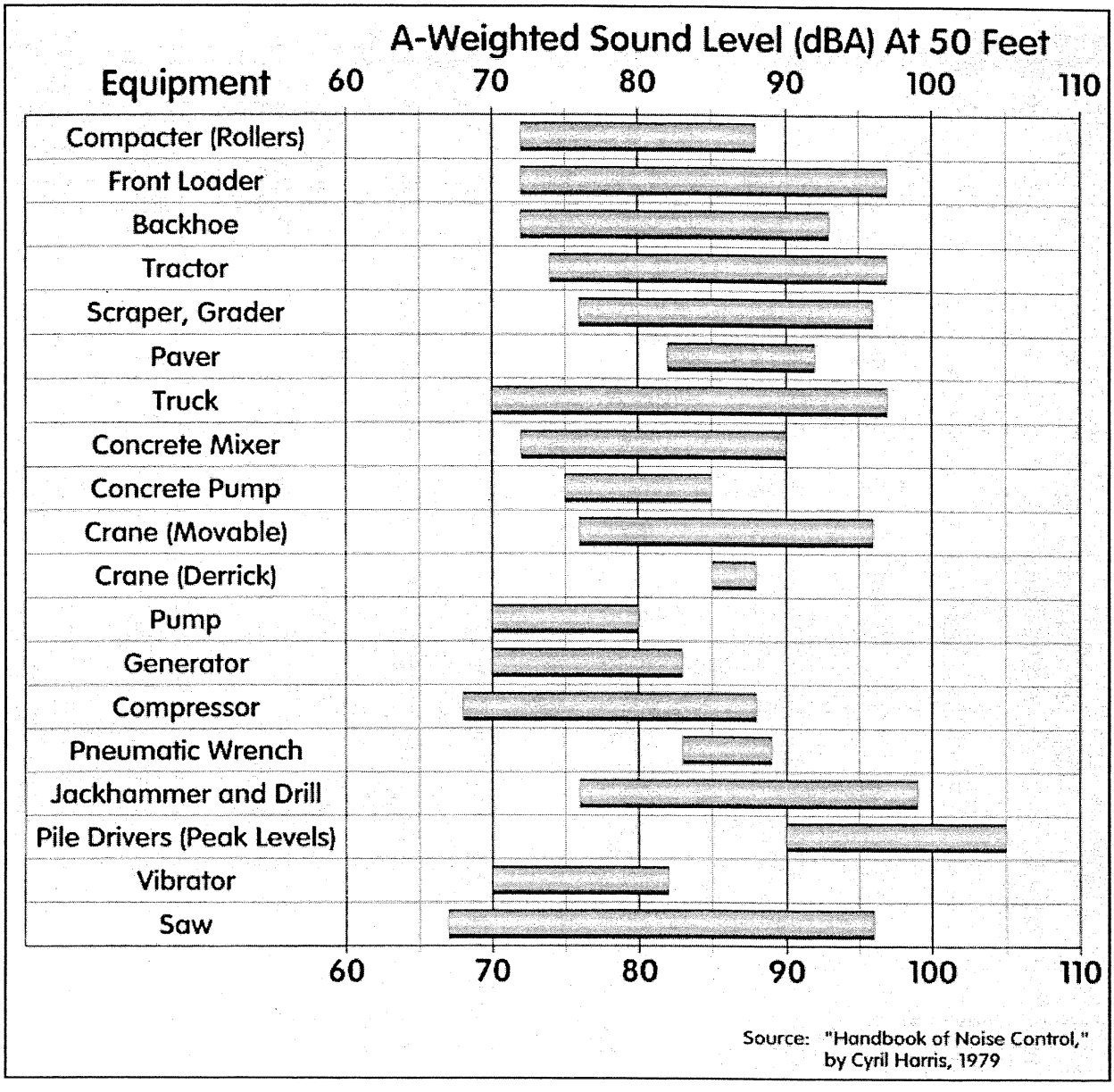

Exhibit 4.9-4

Construction Equipment Noise Levels

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Table 4.9-4 - Traffic Noise CNEL Level Changes with Project

	With Connection		Without Connection		
	Increase in CNEL		Increase in CNEL		Change with Connection Deletion
Roadway Segment	Over Existing	Project Contribution	Over Existing	Project Contribution	
Tonner Canyon Road					
Brea Canyon to SR 57	--	0.7	--	0.9	-1.3
East of SR 57	--	0.9	--	*1.2*	-1.5
Valencia Avenue					
North of Carbon Canyon	*3.0*	0.1	1.6	0.2	-1.4
Carbon Canyon to Birch/Rose	2.4	0.0	2.0	0.1	-0.5
Lambert Road					
SR 57 NB to Pointe	1.9	0.5	2.0	0.4	0.1
East of Pointe	2.0	0.5	2.1	0.5	0.1
West of Wild Cat	2.0	0.5	2.1	0.5	0.1
East of Wild Cat	1.9	0.8	2.1	0.8	0.2
West of Kraemer	1.7	0.6	1.9	0.5	0.2
Rose Dr.					
South of Valencia	2.3	0.1	1.8	0.0	-0.5
Brea Canyon Road					
East of Tonner Canyon	1.6	0.1	2.2	0.1	0.7
Brea Boulevard					
North of Central	1.8	0.1	2.3	0.1	0.5
Kraemer Boulevard					
North of Lambert Road	--	*9.5*	--	*9.5*	0.0
Lambert Road to Birch	2.6	0.7	2.2	0.6	-0.3

-- Roadway traffic volume not reported in traffic study.

The existing homes along Kraemer Boulevard north of Lambert Road are located approximately 100 feet from the centerline for Kraemer Boulevard. In addition, there is a noise barrier located along the edge of the homes. Tables 4.9-5 and 4.9-6 below show that the noise level 100 feet from the centerline of the roadway will be 62 CNEL. This is below the County's 65 CNEL standard. The sound wall will further reduce the traffic noise levels. While the project results in a substantial noise increase at these homes above existing levels, the resulting noise level will be below the County's standard; therefore, the project will not result in a significant noise impact.

Table 4.9-4 shows that one road segment is projected to experience a substantial noise level increase over existing conditions under the with Tonner Canyon Road Connection scenario, Valencia north of Carbon Canyon. Homes are currently under construction on the east side of Valencia north of Carbon Canyon.

These homes have sound walls that will reduce future noise levels to below 65 CNEL. Therefore, there will be no cumulative significant noise impacts at these homes.

The final column shows that the deletion of the Tonner Canyon Connection generally results in the greatest change in noise levels along Tonner Canyon Road and Valencia Avenue. Without the connection the noise levels will be lower than with the connection. As discussed above there are no existing residences located along Tonner Canyon Road. There are residences under construction along Valencia north of Carbon Canyon. However, a sound wall is being constructed along with these homes that will reduce future noise levels with the connection to below 65 CNEL. The greatest noise level increase with the deletion of the connection is 0.7 dB along Brea Canyon Road east of Tonner Canyon Road. This increase is not significant.

The distances to the future build out (Year 2025) 60, 65 and 70 CNEL contours with the proposed project for all of the roadways in the vicinity of the proposed project affected by the project are presented below in Tables 4.9-5 and 4.9-6. Table 4.9-5 presents the noise levels with the Tonner Canyon Road connection, and Table 4.9-6 presents the levels without the connection. These represent the distance from the centerline of the road to the contour value shown. The CNEL at 100 feet from the roadway centerline is also presented. The contours do not take into account the effect of any noise barriers or topography that may affect ambient noise levels. The traffic data used to calculate these noise levels is presented in the appendix. Noise levels generated by all roadways in the project vicinity are also presented in the noise assessment appendix.

Table 4.9-5 - Modeled Future (2025) Roadway Traffic Noise Levels without Tonner Canyon Road Connection

Roadway Segment	CNEL @ 100'*	Distance to CNEL Contour from Centerline of Roadway (feet)		
		70 CNEL	65 CNEL	60 CNEL
Tonner Canyon Road				
Brea Canyon to SR 57	62.2	30	65	141
East of SR 57	62.8	33	72	155
Valencia Avenue				
North of Carbon Canyon	65.3	48	104	225
Carbon Canyon to Birch/Rose	66.4	57	123	265
Lambert Road				
SR 57 NB to Pointe	69.2	89	192	414
East of Pointe	69.3	90	194	419
West of Wild Cat	69.3	90	194	419
East of Wild Cat	68.0	74	159	343
West of Kraemer	67.8	71	154	332
Rose Drive				
South of Valencia	65.7	51	111	239

Roadway Segment	CNEL @ 100'*	Distance to CNEL Contour from Centerline of Roadway (feet)		
		70 CNEL	65 CNEL	60 CNEL
Brea Canyon Road				
East of Tonner Canyon	65.0	46	100	214
Brea Boulevard				
North of Central	65.8	53	114	245
Kraemer Boulevard				
North of Lambert Road	62.0	RW	63	135
Lambert Road to Birch	66.1	55	118	254

* From centerline of roadway
RW = contour falls within roadway right-of-way

Table 4.9-6 - Modeled Future (2025) Roadway Traffic Noise Levels with Tonner Canyon Road Connection

Roadway Segment	CNEL @ 100'*	Distance to CNEL Contour from Centerline of Roadway (feet)		
		70 CNEL	65 CNEL	60 CNEL
Tonner Canyon Road				
Brea Canyon to SR 57	60.9	RW	53	115
East of SR 57	61.3	RW	57	123
Valencia Avenue				
North of Carbon Canyon	63.9	39	84	181
Carbon Canyon to Birch/Rose	65.9	53	115	247
Lambert Road				
SR 57 NB to Pointe	69.4	91	196	423
East of Pointe	69.5	92	198	428
West of Wild Cat	69.5	92	198	428
East of Wild Cat	68.2	76	163	351
West of Kraemer	68.0	73	158	340
Rose Drive				
South of Valencia	65.2	48	103	222
Brea Canyon Road				
East of Tonner Canyon	65.6	51	110	238
Brea Boulevard				
North of Central	66.4	57	124	266
Kraemer Boulevard				
North of Lambert Road	62.0	RW	63	136
Lambert Road to Birch	65.8	52	112	242

* From centerline of roadway
RW = contour falls within roadway right-of-way

Tables 4.9-5 and 4.9-6 show that Lambert Road will continue to generate significant amounts of noise. The remaining roadways shown in the tables will generate moderate to significant noise levels in future years. The noise levels modeled do not include noise barriers/sound walls which typically exist along Lambert road.

(2) On-Site Activities

Noise impacts from on-site activities typically only occur where commercial areas directly abut existing residential areas. The project proposes one mixed use area at the northeast corner of Lambert Road and Wild Cat Way. There are residences located across Lambert Road to the south and near the southeast corner of the project. The roadway provides a buffer between the uses and ensures that under typical circumstances noise levels generated at the commercial center will not exceed the County Noise Ordinance at the residences to the south. For the residences located to the east, an RV/trailer storage area and two community tennis courts provide a buffer so that the mixed use area will not exceed the noise ordinance limits. Therefore, the mixed use area of the project is not expected to result in a significant noise impact. All uses will be required to comply with the County Noise Ordinance and not cause noise levels to exceed the noise ordinance limits. Typical uses should have no issue complying with the noise ordinance.

There is a slight possibility that atypical uses at the mixed use area could generate noise levels in excess of the County's Noise Ordinance limits at the nearest existing residential uses. As specific tenants for the mixed use area are identified, the uses should be screened by Planning and Development Services Department staff to determine if a detailed noise assessment is required to ensure that the use will not result in a violation of the Noise Ordinance. If a study is called for, it will need to be prepared by a County certified acoustical consultant and conform to the requirements presented in the County's Land Use/Noise Compatibility Manual. Mitigation Measure N-3 is recommended to ensure review of potential uses within the mixed use area.

c. Long-Term On-Site Impacts

(1) Traffic Noise

Tables 4.9-7 and 4.9-8 present the distances to the future 60, 65 and 70 CNEL contours with the proposed project for the roadways impacting the project site with and without the Tonner Canyon Road connection. These represent the distance from the centerline of the road to the contour value shown. The contours do not take into account the effect of any noise barriers or topography that may affect ambient noise levels.

Table 4.9-7 - Future Traffic (2025) Noise Levels Impacting Project Site with Tonner Canyon Connection

Roadway Segment	CNEL @ 100'*	Distance to CNEL Contour from Centerline of Roadway (feet)		
		70 CNEL	65 CNEL	60 CNEL
Tonner Canyon Road				
East of SR 57	62.8	33	72	155
E of SR 57 to N of Carbon Canyon	61.3	RW	57	123
Valencia Avenue				
North of Carbon Canyon	65.3	48	104	225
Lambert Road				
East of Wild Cat	68.0	74	159	343
West of Kraemer	67.8	71	154	332
East of Kraemer	65.7	52	111	240
West of Valencia	65.8	52	113	243
Wild Cat Way				
North of Lambert	58.9	RW	39	85
Kraemer Boulevard				
North of Lambert Road	62.0	RW	63	135
Street "A"				
West of Street "B"	60.7	RW	51	111
East of Street "B"	55.5	RW	RW	50
Street "B"				
Street "A" to Street "C"	55.9	RW	RW	54
West of Street "C"	54.4	RW	RW	42
Street "C"				
Street "B" to Tonner Canyon	54.4	RW	RW	42
Orange Freeway (SR 57)				
Lambert to Tonner Canyon	82.2	655	1,410	3,038

* From centerline of roadway
RW = contour falls within roadway right-of-way

Table 4.9-8 - Future Traffic (2025) Noise Levels Impacting Project Site without Tonner Canyon Connection

Roadway Segment	CNEL @ 100'*	Distance to CNEL Contour from Centerline of Roadway (feet)		
		70 CNEL	65 CNEL	60 CNEL
Tonner Canyon Road				
East of SR 57	61.3	RW	57	123
East of SR 57 to N of Carbon Canyon	--	--	--	--
Valencia Avenue				
North of Carbon Canyon	63.9	39	84	181
Lambert Road				
East of Wild Cat	68.2	76	163	351
West of Kraemer	68.0	73	158	340
East of Kraemer	65.8	53	113	244
West of Valencia	65.9	53	115	247
Wild Cat Way				
North of Lambert	58.9	RW	39	85
Kraemer Boulevard				
North of Lambert	62.0	RW	63	136
Street "A"				
West of Street "B"	60.7	RW	52	112
East of Street "B"	55.7	RW	RW	51
Street "B"				
Street "A" to Street "C"	55.9	RW	RW	54
West of Street "C"	54.4	RW	RW	42
Street "C"				
Street "B" to Tonner Canyon	54.4	RW	RW	42
Orange Freeway (SR 57)				
Lambert to Tonner Canyon	82.3	659	1,419	3,057

* From centerline of roadway
RW = contour falls within roadway right-of-way

Residential uses are not located near enough to Tonner Canyon Road, Valencia Avenue, Lambert Road, or Kraemer Boulevard to be potentially impacted by noise from these roadways. Residential uses are planned along Street "A", Street "B" and Street "C". These homes are potentially impacted by noise from these roadways. Planning Area 8 is located close enough to SR 57 to be potentially impacted by noise from the freeway. The commercial uses in Planning Area 9 are located adjacent to Wild Cat Way and Lambert

Road. The noise impacts from these roads on the project are discussed below. Areas significantly impacted by traffic noise are summarized graphically in Exhibit 4.9-5.

- **Residential Outdoor Noise Levels**

Tables 4.9-7 and 4.9-8 show that the noise levels generated along Street "A", Street "B" and Street "C" are essentially the same with or without the Tonner Canyon Road Connection. Noise levels along Street "A" west of Street "B" are slightly higher without the connection. Noise levels along Street "B", Street "C" and Street "A" east of Street "B" do not exceed 65 CNEL outside the right-of-way. Therefore, outdoor noise levels at homes along these roads will not exceed the County's 65 CNEL outdoor residential noise standard and will not be significantly impacted by traffic noise.

Homes in Planning Area 3 could be located directly along the right-of-way of Street "A" west of Street "B". If there are outdoor residential private yard areas located within 52 feet of the centerline, noise levels at these areas will exceed 65 CNEL and will be significantly impacted by traffic noise. Mitigation is discussed in Section 4.9.4 beginning on page 4.9-32.

Planning Area 4 is located more than 52 feet from the centerline of Street "A" west of Street "B". Homes in Planning Area 4 will not be significantly impacted by noise from Street "A".

Planning Area 8 west of SR 57 is located approximately 500 feet from the centerline of SR 57. At this distance the traffic noise level from SR 57 is projected to be 71 dBA. This is in excess of the County's 65 CNEL standard. Mitigation is discussed in Section 4.9.4 beginning on page 4.9-32. Note that as one moves back from the edge of the slope along the freeway, the edge of slope will act as a noise barrier reducing noise levels. Therefore, noise levels will drop off quickly as one moves away from the freeway in the neighborhood.

- **Residential Indoor Noise Levels**

Typical construction achieves at least 20 dB of outdoor-to-indoor noise reduction with closed windows. With windows open, outdoor-to-indoor noise reduction falls to 12 dB. Therefore, homes exposed to noise levels in excess of 57 CNEL will be required to have mechanical ventilation to achieve the 45 CNEL indoor noise standard. Homes with exterior noise levels exceeding 65 CNEL will require more than 20 dB of outdoor-to-indoor noise reduction to achieve the County's 45 CNEL standard. Detailed calculations are required to show that homes achieve more than 20 dB of outdoor-to-indoor noise reduction.

Homes in Planning Area 3 within 52 feet of the centerline of Street "A" west of Street "B" will be exposed to noise levels in excess of 65 CNEL. At this time it is not known if homes will be located this close to the roadway. If they are, they will be significantly impacted by traffic noise and mitigation will be required. Mitigation is discussed in Section 4.9.4 beginning on page 4.9-32.

Homes in Planning Areas 1, 2, 3, 4, 5, 6 and 7 located along Street "A" east of Street "B", Street "B", or Street "C" within the distances shown in Table 4.9-9 will be exposed to noise levels in excess of 57 CNEL but less than 65 CNEL. These homes will require mechanical ventilation to achieve the 45 CNEL indoor noise standard. The mechanical ventilation requirements are discussed in the mitigation Section 4.9.4 beginning on page 4.9-32.

Table 4.9-9 - Distances Within Which Homes Will Require Mechanical Ventilation

Road	Distance from Centerline within Which Noise Level Will Exceed 57 CNEL
Street "A"	
West of Street "B"	177
East of Street "B"	82
Street "B"	
Street "A" to Street "C"	85
West of Street "C"	67
Street "C"	
Street "B" to Tonner Canyon	67

Homes located in Neighborhood 8, on the west side of SR 57, will be exposed to noise levels in up to 71 CNEL and require up to 26 dB of outdoor to indoor noise reduction. These homes are significantly impacted by traffic noise and mitigation will be required. Mitigation is discussed in Section 4.9.4 beginning on page 4.9-32.

- **Commercial Interior Noise Levels**

The buildings in the commercial area proposed by the project could be within 50 feet of the centerline of Lambert Road and 40 feet of the centerline of Wild Cat Way. Assuming a 20-foot roadway setback, these buildings would be exposed to noise levels up to 71 CNEL from Lambert Road and 62 CNEL from Wild Cat Way. Buildings at the corner would experience noise levels up to 71 CNEL. To meet the County's 55 dBA Leq(12) standard (equivalent to 56 CNEL) the buildings will need to provide up to 16 dB of outdoor-to-indoor reduction. This level of reduction is achieved with typical commercial construction that includes mechanical ventilation. The commercial area is not significantly impacted by traffic noise.

(2) On-Site Activities

The existing gas turbine electricity generation plant and the retained oil production operations have the potential to generate noise levels that could impact the residential areas proposed by the project. These impacts are discussed below.

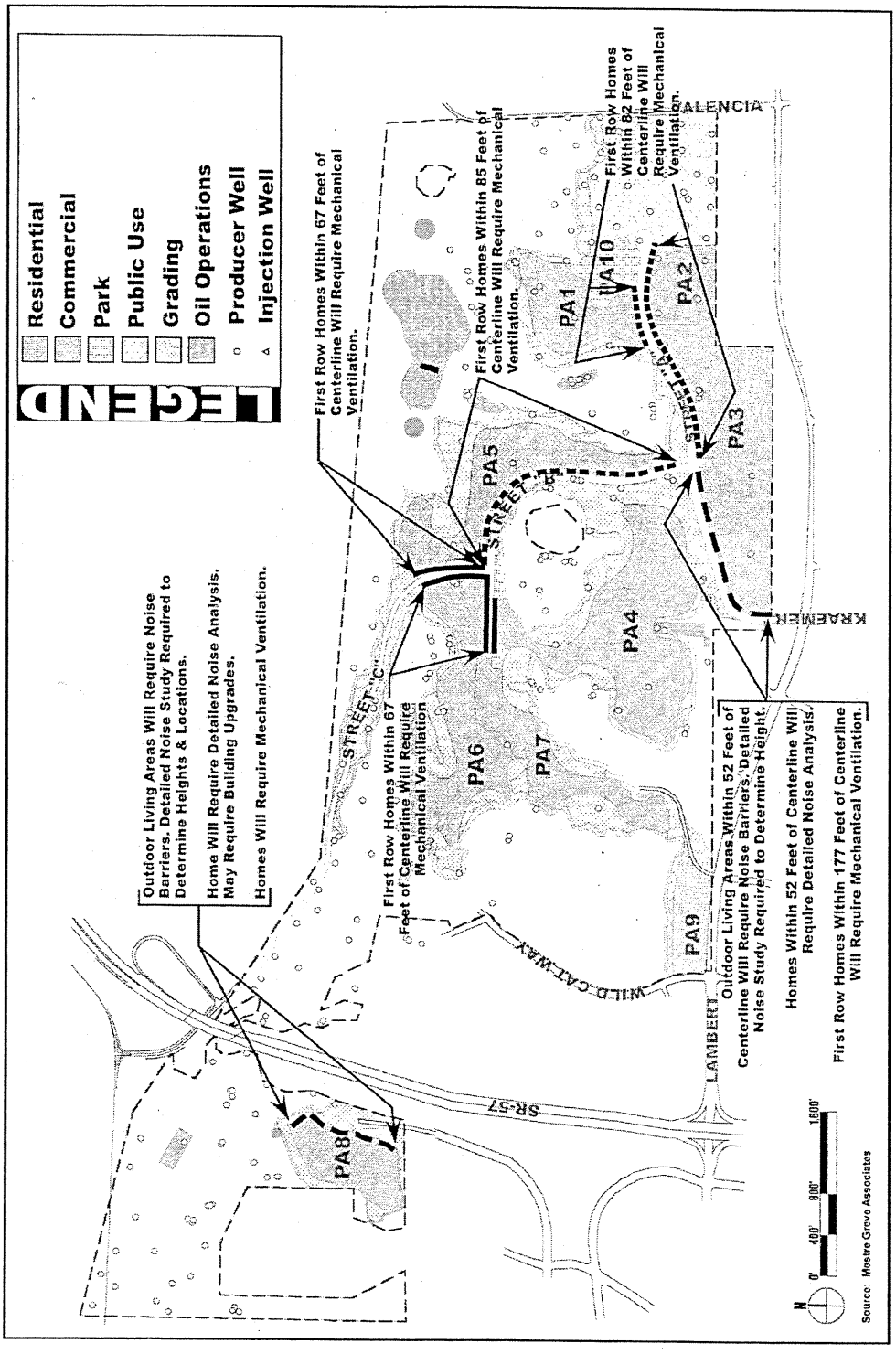

Exhibit 4.9-5

On-Site Traffic Noise Impact Summary

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- **Gas Turbine Electricity Generation**

The gas turbine electricity generation plant generates an essentially constant noise level 24 hours a day. In this case, the most stringent standard of the Noise Ordinance is the nighttime outdoor 50 dBA L50 standard. If the noise level from the plant is below 50 dBA at the residential areas it will comply with all of the noise ordinance standards.

The measurements indicated that the plant does not generate noise levels in excess of 50 dBA in areas of the project that are both closer to the plant than the proposed residences and have direct line of sight to the plant. The proposed residential areas are typically located at lower elevations than the plant, and the edge of slope between the plant and the proposed residential neighborhoods blocks the line of sight and reduces noise levels at the residential neighborhoods. A solid wall around the plant proposed by the project will further reduce noise levels at the homes. Therefore, the plant will generate noise levels below 50 dBA at the residential areas and not exceed the noise ordinance criteria. The gas turbine electricity generation plant will not result in a significant noise impact at the homes proposed by the project.

- **Oil Production Operation**

Some of the existing oil production facilities will be retained with the project. Some of these will be located near or within the residential uses proposed by the project. The oil wells and injector wells are the primary concerns. These units generate essentially constant noise levels 24 hours a day. As with the gas turbine plant, this results in the most restrictive noise ordinance standard being the outdoor nighttime L50 standard of 50 dBA.

The measurements indicated that oil pumps generate noise levels of less than 50 dBA at a distance of 50 feet from the pumps. Homes within 50 feet of the pumps would experience noise levels in excess of the nighttime noise ordinance standards. Providing adequate buffers around these units within the residential areas will ensure that the noise ordinance criteria are not exceeded. Noise barriers could be used to further reduce the noise levels or reduce the buffer area. There are underground oil pumps available and they will be used to replace some of the existing above-ground pumps. These subterranean pumps are enclosed under ground and produce substantially lower noise levels than the above-ground pumps.

The injector well was shown to generate substantial levels of noise by the measurements. A buffer of 535 feet would be required to reduce noise levels to below the noise ordinance criteria. An enclosure could be used to significantly reduce this buffer requirement. Use of quieter equipment should also be considered for any injector wells near the proposed residential areas.

4.9.4 Mitigation Measures

a. Short-Term Impacts (Construction)

N-1 During grading and construction activities, the project applicant shall comply with the County of Orange Noise Ordinance, including limitations on allowable construction hours.

N-2 Prior to the issuance of grading permits, the project proponent shall produce evidence acceptable to the Manager, Building Permits Services, that:

a. All construction vehicles or equipment, fixed or mobile, operated within 1,000 feet of a dwelling shall be equipped with properly operating and maintained mufflers.

b. All operations shall comply with Orange County Codified Ordinance Division 6 (Noise Control).

c. Stockpiling and/or vehicle staging areas shall be located as far as practicable from dwellings.

Notations in the above format, appropriately numbered and included with other notations on the front sheet of the project's permitted grading plans will be considered as adequate evidence of compliance with this condition.

b. Long-Term Impacts (Operational)

N-3 Prior to issuance of building permits for tenant improvements for proposed uses in the Mixed Use area, proposed uses shall be evaluated by the Manager, Planning Services, to determine if a detailed noise assessment is required to ensure that the use will not result in a violation of the noise ordinance. If a study is called for, the study shall be prepared by a County certified acoustical consultant and conform to the requirements presented in the County's Land Use/Noise Compatibility Manual.

N-4 The applicant shall sound attenuate all residential lots and residential dwellings against present and projected noise (which shall be the sum of all noise impacting the project) so that the composite interior standard of 45 dBA CNEL for habitable rooms and a source specific exterior standard of 65 dBA CNEL for outdoor living areas is not exceeded. The applicant shall provide a report prepared by a County-certified acoustical consultant, which demonstrates that these standards will be satisfied in a manner consistent with Zoning Code §7-9-137.5, as outlined below. At a minimum, the report shall address noise levels of above-ground retained oil production facilities and activities within 500 feet of residential areas, as well as noise generated by traffic on nearby roadways.

a. Prior to the recordation of a subdivision maps or prior to the issuance of grading permits, as determined by the Manager, Building Permits Services, the applicant shall submit an acoustical analysis report to the Manager, Building Permits Services, for approval. The report shall describe in detail the exterior noise environment and preliminary mitigation measures. Acoustical design features to achieve interior noise standards may be included in the report, in which case it may also satisfy item b. below.

b. Prior to the issuance of any building permits for residential construction, the applicant shall submit an acoustical report describing the acoustical design features of the structures required to satisfy the exterior and interior noise standards to the Manager, Building Permits Services, for the approval along with satisfactory evidence which indicates that the sound attenuation measures specified in the approved acoustical report have been incorporated into the design of the project.

c. Prior to the issuance of any building permits, the applicant shall show all free-standing acoustical barriers on the project's plot plan illustrating height, location and construction in a manner meeting the approval of the Manager, Building Permits Services.

d. Prior to the issuance of certificates of use and occupancy, field testing in accordance with the County's Noise Ordinance may be required by the Manager, Building Permits Services to verify compliance with all applicable standards. The project applicant shall reimburse the County for the costs of an independent third party peer review of this evidence.

N-5 Prior to the issuance of any building or grading permits, the applicant shall obtain approval of the Manager, Building Permits Services, of an acoustical analysis report and appropriate plans which demonstrate that the noise levels generated by project noise generating equipment during its operation shall be controlled in compliance with Orange County Codified Ordinance, Division 6 (Noise Control). The report shall be prepared under the supervision of a County-certified acoustical consultant and shall describe the noise generation potential of the project during its operation and the noise mitigation measures, if needed, that shall be included in the plans and specifications of the project to assure compliance with Orange County Codified Ordinance, Division 6 (Noise Control).

4.9.5 Cumulative Impacts

All project-related noise impacts are less than significant or have been reduced to a level of insignificance. Development of the proposed project will represent an incremental addition of automobile traffic to cumulative traffic levels. This increase will, in turn, incrementally increase noise levels in off-site areas adjacent to roadways that serve the project. The incremental increase of project traffic is not large enough to result in significant increases in future noise levels adjacent to these local roadways serving the proposed project.

4.9.6 Unavoidable Adverse Impacts

Construction noise levels are anticipated to be less than significant at the nearest homes with the above mitigation measure. The proposed residential uses could be subject to noise levels above thresholds of significance for interior noise with windows or doors open and for exterior noise levels if barriers cannot mitigate noise to thresholds of significance. These potential impacts are mitigated to a level of insignificance through implementation of mitigation measures noted above relative to provision of sound attenuation.

4.10 Biological Resources

This section analyzes the proposed project's impacts on the various biological resources located in and surrounding the project site.

This section is based on the draft biological assessment and conceptual Mitigation Plan and Monitoring Plan completed in January 2002 by the Chambers Group, additional biological research (including Quino Checkerspot Butterfly Survey, April 1999; California Gnatcatcher Survey, July 1999; Sensitive Plant Survey, January 2001; California Gnatcatcher Survey, July 2001, Technical Reports of Finding for California Red-Legged Frog, Least Bell's Vireo, and Southwestern Willow Flycatcher, September 2001, and Focused Red-Legged Frog Survey, November 2001), and corroborating walk-overs by Culbertson, Adams & Associates personnel. For this section, the information contained in these reports has been condensed and either paraphrased or directly quoted. These studies are available in the Technical Appendices.

In 1998, a constraints analysis was completed to determine the sensitive biological issues on the site in preparation for initiating discussions with the U.S. Fish and Wildlife Service regarding the presence of listed species within the project area. The constraints analysis included focused surveys for California gnatcatchers.

Based on the results of the constraints analysis and focused biological surveys in 1998 and 1999, the development planning for the Tonner Hills project underwent numerous revisions in order to avoid gnatcatchers and to preserve large blocks of occupied habitat. In 1999, the project applicant began informal consultation meetings with the U.S. Fish and Wildlife Service (USFWS), the California Department of Fish and Game (CDFG), and the Army Corps of Engineers (ACOE). Early meetings with the ACOE included a verification of the jurisdictional delineation and a discussion that a Section 7 Consultation was the appropriate process to pursue because the California gnatcatchers utilize the habitat in the drainages as well as on the uplands. Representatives from USFWS and CDFG were provided with an overview of the project planning process and toured the project area. As a result of the initial consultation, the resource agencies requested that the project be redesigned to avoid the Cable Canyon drainage as much as possible and reiterated that avoidance of the listed species was one of the most important parts of the planning process in relation to the Endangered Species Act.

Subsequently, the project was redesigned to avoid development and grading of the Cable Canyon drainage (except for the uppermost portion). After additional focused surveys for the California gnatcatcher in 2001, the neighborhood configurations were revised to avoid gnatcatcher habitat. In addition, a phasing component was added to decrease the temporal loss of coastal sage scrub habitat. The resulting changes resulted in the current Tonner Hills site plan with 914 residential units and a 7.7-acre commercial element.

In September 2001, additional site visits with USFWS and CDFG were conducted with the Chambers Group, providing the agency personnel with a brief history of the project and showing the character of the coastal sage scrub and drainages along with the locations of most of the pairs of gnatcatchers on the site. In January 2002, the draft biological assessment and mitigation plan was submitted to the resource agencies

for initial review. The formal Section 7 consultation process with the ACOE and USFWS began in March 2002.

4.10.1 Existing Conditions

a. Man-Made Facilities

The proposed project site consists of two large parcels of land totaling approximately 789.8 acres located in the northeastern portion of unincorporated Orange County. This land has been actively developed for oil and gas production for over 100 years. Lease roads and flowlines serving the on-site wells cross the site. A total of 210 active oil wells are on-site, in addition to 82 idle wells and 87 abandoned wells.

There are current and ongoing activities on-site (see major features on Exhibit 4.10-1), including:

1. A gas plant in the northeast portion of the site collects and processes natural gas from producing oil fields for sale or lease production operations. The site also contains gas electrical turbines and storage for anhydrous ammonia, LNG, and propane. The turbines generate electricity to power the on-site operations. Excess power is transferred to the state power grid (California Independent System Operator Corporation).

2. Two active tank farms that process crude oil and one inactive tank farm.

3. A dewatering facility in the central portion of site processed oil solids and liquids. This site was abandoned and completely cleaned in 2000.

4. A former gas plant site, cooling tower, and mercury meter repair station. The mercury meter repair station has been completely cleaned per environmental requirements. A closure letter from the County of Orange Health Care Agency is on file.

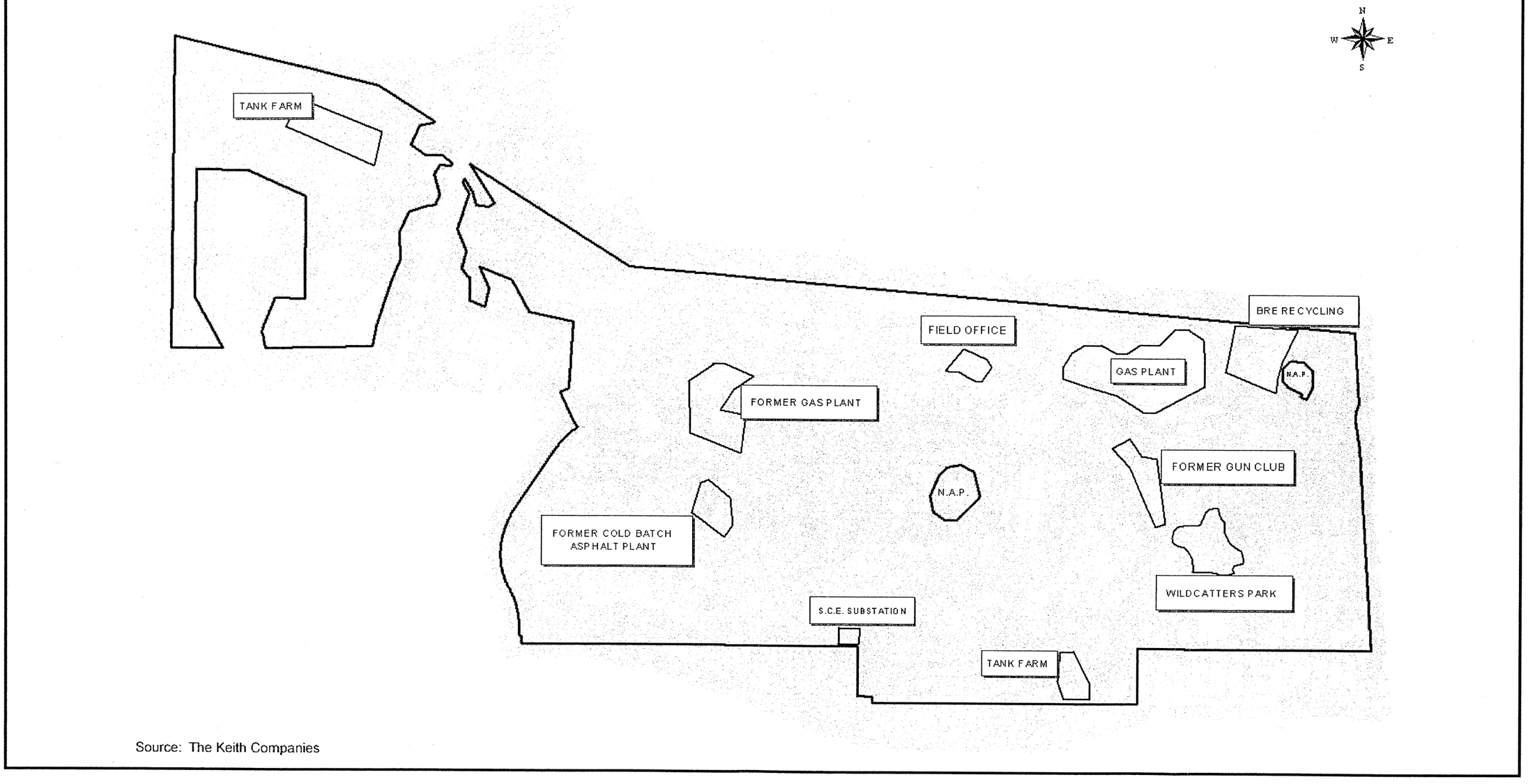
5. Oil sumps.

6. A five-acre leased green recycling facility, Brea Green Recycling, located in the extreme northeast portion of the property.

7. A Southern California Edison electrical substation.

8. The site of a gun club (now closed). Remediation is still in progress. All of the lead-contaminated material will be transported to an off-site Class I facility for disposal.

9. Wildcatters Park, a private recreational park that is leased out for private functions.



Source: The Keith Companies

Exhibit 4.10-1
Man-Made Facilities

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10. Paved and unpaved roads and outbuildings, and core storage buildings located throughout the site.

11. Pipe racks, inactive steam generating engines, a bridge and abutment crossing over Tonner Creek, a bridge over culvert crossing over Tonner Creek, miles of pipelines and roads.

b. Plant Communities

The site is located in the south coast subregion of southwestern California within the California floristic province. The site is characterized by low hills that separate Tonner Canyon from alluvial plains to the south. The hills have several small drainages and canyons that run from north to south, and elevations on-site range from 400 feet above sea level to near 800 feet. Undeveloped portions of the site support coastal sage scrub, riparian communities, woodland communities, and annual grassland. Several of these communities are considered sensitive because they have the potential to support sensitive species such as the California gnatcatcher and the coastal cactus wren.

In surveys by the Chambers Group, Inc., a comprehensive list of plant communities was identified (see Table 4.10-1), including:

- Six sagebrush scrub and sagebrush scrub mix communities
- Two coyote brush scrub and scrub mix communities
- Southern cactus scrub
- Mule fat scrub
- Annual grassland
- Southern arroyo willow woodland
- Coast live oak woodland
- Four California walnut woodland mix communities
- Ornamental woodland and mix communities
- Ruderal and developed communities

Some of these plants may not be present due to a 20-acre fire that occurred June 21, 2001. This vegetation is expected to re-establish over time.

Table 4.10-1 - Plant Communities and Impacts Occurring within the Tonner Hills Planned Community

Vegetation Community	Total Acres Existing	Project Footprint, Sewer, and Grading Impacts	Remedial Grading Impacts	Fuel Modification Zone Impacts	Total Acres Impacted
Scrub Habitats					
Mixed coastal sage scrub (CSS)	54.7	27.1	1.0	9.4	37.5*
Artemisia dominated (sagebrush scrub)	47.0	3.0	0.4	6.6	10.0*
Sagebrush - coyote brush scrub	7.0	3.3	0.3	0.9	4.5*
Mixed CSS - coyote brush scrub	17.4	2.8	2.0	1.2	6.0*

Vegetation Community	Total Acres Existing	Project Footprint, Sewer, and Grading Impacts	Remedial Grading Impacts	Fuel Modification Zone Impacts	Total Acres Impacted
Mixed CSS - southern cactus scrub	15.3	5.8	0.4	1.7	7.9*
Mixed CSS - mule fat scrub	2.4	1.6	0.0	0.2	1.8*
Subtotal - Coastal Sage Scrub	143.8	43.6	4.1	20.0	67.7
Disturbed mixed CSS	43.5	20.2	0.5	8.3	29.0*
Disturbed *Artemisia* (sagebrush scrub)	5.8	0.0	0.0	0.0	0.0
Disturbed *Artemisia* - Coyote brush scrub	1.0	0.0	0.0	0.0	0.0
Disturbed mixed CSS - Southern Cactus Scrub	4.7	0.0	0.0	2.1	2.1*
Subtotal - Disturbed Coastal Sage Scrub	55.0	20.2	0.5	10.4	31.1
Coyote brush scrub	1.5	0.7	0.0	0.8	1.5
Coyote brush - mule fat scrub	3.4	2.4	0.0	1.0	3.4
Mule fat scrub	0.2	0.0	0.0	0.0	0.0
Mule fat scrub - ornamental	1.8	0.0	0.0	0.0	0.0
Annual grassland	145.0	40.7	1.7	27.5	69.9
Southern cactus scrub	9.4	4.6	0.1	0.8	5.5*
Riparian and Woodland Habitats					
Coast live oak woodland	3.5	0.0	0.0	0.0	0.0
California walnut woodland/CSS understory	26.4	5.9	0.6	2.3	8.8
California walnut woodland/grassland understory	18.1	0.9	0.0	0.0	0.9
Mixed California walnut (coast live oak)	5.8	0.0	0.0	0.0	0.0
Southern arroyo willow woodland	12.3	0.1	0.0	0.0	0.1
Subtotal - Woodlands	66.1	6.9	0.6	2.3	9.8
Disturbed California walnut woodland/CSS understory	1.4	0.3	0.0	1.1	1.4
Disturbed mixed California walnut - coast live oak	5.9	0.0	0.0	0.0	0.0
Disturbed California walnut - ornamental	31.2	5.5	0.7	2.0	8.2
Mixed Mexican elderberry - ornamental	1.3	0.0	0.0	0.0	0.0
Subtotal - Disturbed woodlands	39.8	5.8	0.7	3.1	9.6
Ornamental, Disturbed, and Developed Areas					
Ornamental	98.6	65.4	1.9	9.1	76.4
Ruderal	21.5	13.7	0.6	3.1	17.4
Former nursery	19.1	18.1	0.1	0.0	18.2
Developed	184.7	75.0	4.2	18.0	97.2
Subtotal - Ornamental, Disturbed, and Developed Areas	323.9	172.2	6.8	30.2	209.2
Total	789.9	297.1	14.5	96.1	407.7

*total impacted coastal sage scrub acreage

The general distribution of vegetation is shown in Exhibit 4.10-2 and the principal characteristics of the plant communities are summarized below.

1. ***Venturan-Diegan Coastal Sage Scrub Communities*** - The Venturan-Diegan transitional coastal sage scrub vegetation consists primarily of low, drought-deciduous and evergreen shrubs. It is common in Orange County and is considered to be a transitional association which contains elements of two geographical associations, the Venturan and the Diegan coastal sage scrubs. Twelve sub-associations, which are more specific plant associations, have been described within the Venturan-Diegan transitional coastal sage scrub category.

   Four of these sub-associations were identified on the Tonner Hills property. They include sagebrush scrub, coyote brush scrub, southern cactus scrub, and mixed sage scrub. Integrations between these sub-associations were noted in several areas. Where two distinct plant communities occurred in small mosaic patterns over larger areas, the area was mapped as a mix of the two community types.

2. ***Sagebrush Scrub*** - Sagebrush scrub is almost exclusively dominated by California sagebrush *(Artemisia californica)*. The sub-association is encountered on slopes at all aspects and covers approximately 52.8 acres of the site. The sagebrush is typically fairly dense with very little understory species present. Sagebrush scrub habitat at Tonner Hills typically occurs as patches within the annual grassland habitat. Some annual grassland plants are present within the stands; however, in most instances this does not comprise a significant amount. The best examples of this community are in the western portion of the site, just east of the Orange (SR 57) Freeway, where a few large stands can be found.

3. ***Sagebrush Scrub - Coyote Brush Scrub*** - A mixed sagebrush scrub-coyote brush scrub community occurs in several locations on the site and comprises 8.0 aces. This community is dominated by an approximate equal mix of California sagebrush and coyote bush with smaller quantities of other common coastal sage scrub species such as caterpillar phacelia and goldenbush *(Isocoma menziesii)*.

4. ***Mixed Sage Scrub*** - Mixed sage scrub covers approximately 98.2 acres and is characterized by a mix of coastal sage scrub species, including California sagebrush, laurel sumac, California buckwheat *(Eriogonum fasciculatum)*, black sage *(Salvia mellifera)*, orange bush monkey-flower *(Mimulus aurantiacus)*, coastal prickly pear, and bushmallow *(Malacothamnus fasciculatus)*. A representative stand of this community can be found on the slope of a ravine to the north of the developed Unocal park. Nearly half the total mixed sage scrub acreage is considered disturbed.

5. ***Southern Cactus Scrub*** - Southern cactus scrub is found primarily on south-facing slopes on low, inland foothills. This community is composed of coastal sage scrub vegetation with a 20 percent or more relative cover of *Opuntia* species. Stands of southern cactus scrub dominated by coastal prickly pear *(Opuntia littoralis)* occur in scattered patches on several of the southern exposed slopes within the annual grassland and/or sagebrush scrub habitats. Most of these stands

occur on the south-central portion of the project site. Southern cactus scrub comprises 9.4 acres of the site.

6. ***Coyote Brush Scrub*** - The coyote brush scrub sub-association, covering approximately 1.5 acres of the property, is dominated by coyote bush *(Baccharis pilularis)*. It occurs on some of the lower north-facing slopes above Tonner Canyon Creek. This is a highly integrated community and contains a number of subdominants, including laurel sumac *(Malosma laurina)*, southern California black walnut *(Juglans californica* var. *californica)*, mule fat *(Baccharis salicifolia)*, Mexican elderberry *(Sambucus mexicana)*, and caterpillar phacelia *(Phacelia cicutaria* var. *hispida)*.

7. ***Mule Fat Scrub*** - Mule fat scrub consists of dense stands of mule fat. This plant community is generally considered to be a riparian community that typically occurs in intermittent streambeds and seeps. While not a coastal sage scrub community, mule fat is often found in coastal sage scrub communities, particularly at the base of slopes where more moisture may accumulate for longer periods of time, or in disturbed areas. A small area of mule fat scrub occurs at the base of a slope in the west portion of the property and comprises 0.2 acres.

   Mule fat scrub also occurs integrated with a mixed sage scrub in the western portion of the property. This community covers approximately 2.4 acres immediately north of a housing development in an area that had apparently been graded. A second mule fat association – mule fat-coyote brush scrub – occurs in the north-central portion of the property and comprises 3.4 acres.

8. ***California Walnut Woodland*** - Individuals of southern California black walnut, a deciduous native tree considered rare by the California Native Plant Society, can be found scattered throughout the site in most of the plant communities. California walnut woodlands occur where this species is the dominant species in the plant community. This community can occur on the relatively moist soils of riparian corridors and floodplains as well as in upland areas on north-facing slopes. On most sites in southern California, an open canopy favors the development of a grassy understory, but coastal sage scrub species typically dominate the understory on drier sites. California walnut woodland is considered a sensitive plant community by the CDFG.

   The California walnut woodlands at the Tonner Hills property are similar in diversity and species distribution to other walnut woodlands throughout southern California. On north-facing slopes above Tonner Creek in the north portion of the property east of the Orange (SR 57) Freeway, most of the woodlands are characterized by an open canopy with a grassy understory. Non-native annual grass species observed in the understory include red brome, wild oats *(Avena fatua)*, ripgut brome, and soft chess *(Bromus hordeaceus)*. Weedy forbs such as Italian thistle, black mustard, and sweet fennel also occur in the grassland understory. Walnut woodlands in other areas, such as on the steep north-facing slopes west of the Orange (SR 57) Freeway, have a dense understory dominated by coastal sage scrub species.

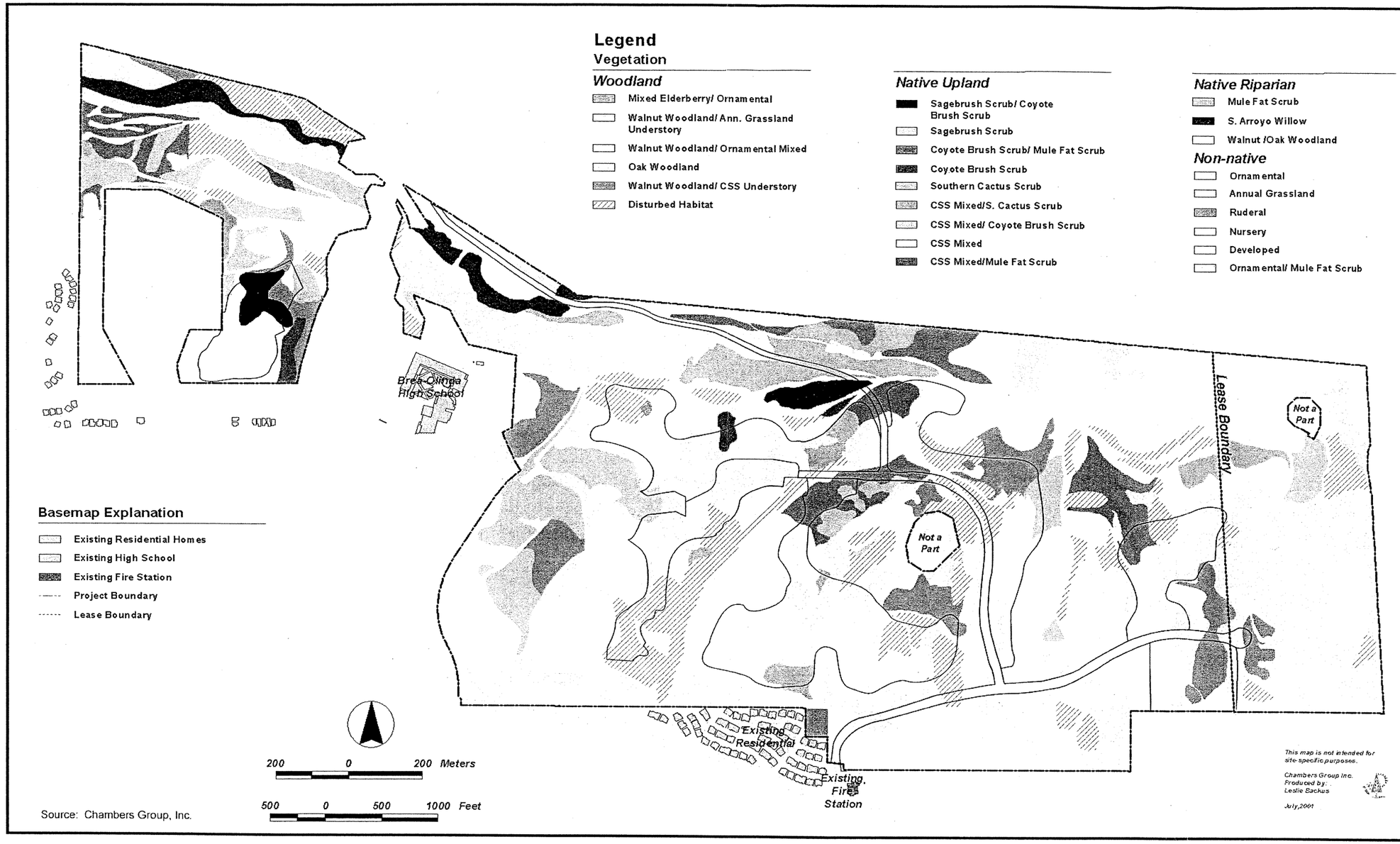

Exhibit 4.10-2
Plant Communities

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Species noted in this understory include laurel sumac, toyon, California sagebrush, black sage, poison oak, and fuchsia-flowering gooseberry *(Ribes speciosum)*. Coast live oak and Mexican elderberry *(Sambucus mexicana)* were frequently present as sub-dominant species in all of the walnut woodlands. Because the understory component directly influences the type of wildlife species most likely to use each habitat, California walnut woodlands were mapped showing the dominant understory for each area. California walnut woodlands with an annual grass understory comprise 18.0 acres of the site, and walnut woodlands with a coastal sage scrub understory comprise 27.8 acres. Approximately 1.4 acres of the 27.8 acres are considered to be disturbed.

In some areas, southern California black walnuts were co-dominant with a second tree species. These areas were mapped as mixed woodland communities. The most frequently encountered mixed woodlands on the site were California walnut-ornamental woodlands where the proportion of walnuts to non-native ornamental trees was approximately equal. These areas comprise 31.2 acres of the site. An example of this association may be found along a riparian corridor in the south portion of the property. The community in this area is also highly disturbed with weedy non-native species including castor bean and giant reed.

California black walnuts were also frequently co-dominant with coast live oaks. These communities were mapped as mixed California walnut-coast live oak woodlands and comprise 11.7 acres of the site. Approximately 5.9 acres of the 11.7 acres are considered disturbed.

9. ***Coast Live Oak Woodland*** - Coast live oaks are the dominant tree species in this woodland which occurs on a steep, east-facing slope in the eastern portion of the property. The tree canopy is partially closed over a sparsely vegetated understory. Species found in the understory include poison oak, laurel sumac, and non-native grasses. Individuals of coast live oak also occur elsewhere throughout the Tonner Hills site, but they are not dense enough to constitute an oak woodland.

10. ***Southern Arroyo Willow Woodland*** - The southern arroyo willow woodland community covers approximately 12.3 acres along the banks of Tonner Creek, located along the northern property boundary. This community is dominated by mature arroyo willows *(Salix lasiolepis)*. East of SR 57, the community also contains younger saplings among the larger willow trees. Black willow *(Salix gooddingii)*, western sycamore *(Platanus racemosa)*, and coast live oak *(Quercus agrivolia)* are also present as subdominants. The understory consists of species such as mule fat, poison oak *(Toxicodendrom diversilobum)*, stinging nettle *(Urica dioca)*, and mugwort *(Artemisia douglasiana)*. Occasional non-native ornamental trees including Peruvian peppertree *(schinus molle)* and eucalyptus *(Eucalyptus* sp.) are also found scattered throughout this community.

Riparian plant communities such as the southern arroyo willow woodland usually have high vegetation density and diversity, and correspondingly high wildlife habitat values. Willow woodlands and scrubs were once extensive along the major rivers of southern California, but the plant community has been considerably reduced by urban expansion. Southern arroyo willow woodland is considered a sensitive plant community by the CDFG.

11. ***Annual Grassland*** - The annual grassland on the Tonner Hills site, approximately 145.0 acres, is dominated by non-native grasses that are primarily Mediterranean in origin. Dominant species include wild oats *(Avenua fatua)*, ripgut brome *(Brome diandrus)*, and red brome *(Bromus madritensis* ssp. *rubens)*. Many non-native broadleaf species also are present, including mustard *(Brassica* sp.), Italian thistle, castor-bean *(Ricinus communis)*, and yellow sweetclover *(Melilotus officinalis)*. This community occurs predominantly on south-aspect slopes on the southern portion of the project site; however, it can be found in smaller patches throughout the site.

Of the plant communities identified by Chambers Group, Inc. within the Planned Community, several (including coastal sage scrub and California walnut woodland with four subassociations) are considered "sensitive" by various resource agencies. Plant communities may be regarded as sensitive for one or more of the following reasons:

1. They may provide habitat for rare plants or animals (e. g., coastal sage scrub, which supports the California gnatcatcher and Coastal cactus wren),

2. There may have been extensive historic and ongoing losses of acreage throughout the region (e.g., riparian habitats and walnut woodlands), or

3. They may be considered important elements of local aesthetic value and natural heritage (e.g., oak woodlands and forests).

Four sensitive plant species (Braunton's milk-vetch, intermediate mariposa lily, many-stemmed dudleya, and Coulters goldfields) were evaluated for the probability of occurrence in the Planned Community. These sensitive plants are briefly described in Table 4.10-2. None of these species were found on the project site.

Braunton's milk-vetch, a federal-listed endangered species, is rare, occurring on limestone outcrops in chamise chaparral habitat. It has been recorded in Chino Hills State Park. The habitats associated with this species are not present in the Planned Community. This species is not expected to occur on the site.

The intermediate mariposa lily occurs on dry rocky open slopes and rock outcrops in chaparral, coastal sage scrub, or valley and foothill grassland habitats. It is distributed in a limited number of locations, endangered in only a portion of its range, and is endemic to California. This species was not observed during the focused surveys done by Chambers Group, Inc. in April and June, 2000, nor were they observed during the previous reconnaissance surveys conducted in 1997. This species is not expected to occur on-site.

Table 4.10-2 - Sensitive Plant Species Potentially Occurring within the Tonner Hills Property

Scientific Name/ Common Name	Status[1]	PFO[2]	Habitat/Species Information
Astragalus brauntonii Braunton's Milk-vetch Fabaceae	Federal: FE State: None CNPS: 1B	L	Occurs on limestone outcrops in chaparral, coastal sage scrub, closed-cone coniferous forest, valley and foothill grasslands, perennial shrub which blooms March-July.
Calochortus weedi var. *intermedius*/ Intermediate Mariposa Lily Liliaceae	Federal: FSOC State: None CNPS: 1B	H	Occurs in open slopes and rock outcrops in coastal sage scrub and grassland habitats, bulbous perennial which blooms May-June, previously observed on adjacent property in Tonner Canyon.
Dudleya multicaulis Many-stemmed Dudleya Crassulaceae	Federal: FSOC State: None CNPS: 1B	L	Occurs in a variety of habitats, typically associated with native grassland species, perennial which blooms May-July. The nearest known occurrences include the Peralta Hills and in the vicinity of Bonita Canyon Drive. Low potential due to lack of suitable habitat.
Lasthenia glabrata ssp. *coulteri* Coulters Goldfields Asteraceae	Federal: FSOC State: None CNPS: 1B	L	Occurs in vernal pools and native grasslands, herbaceous annual blooms February-June. Potentially occurs in the annual grassland communities on the site; however, the potential is considered to be very low because of the disturbed nature and dominance of exotic species in the grasslands and this species typically occurs in native grassland habitat.

[1]Status Codes: Federal: FE = Federal listed, endangered
FSOC = Federal species of concern
CNPS: 1B = Plants rare, threatened, or endangered in California and elsewhere

[2]Potential for Occurrence (PFO):
- L = Low Potential for Occurrence - no present or historical records cite the species' occurrence in or near the survey area, and the habitats strongly associated with the species do not occur in or near the vicinity.
- M = Moderate Potential for Occurrence - either a historical record exists of the species in or near the survey area, or the habitats associated with the species occur in or near the survey vicinity.
- H = High Potential for Occurrence - a historical record cites the species in or near the survey area, and the habitats strongly associated with the species occur in or near the survey vicinity.

Sources:
- California Native Plant Society Electronic Inventory (CNPSEI), Yorba Linda and La Habra quads, 1997
- California Natural Diversity Data Base (CNDDB), Yorba Linda and La Habra quads, 1997
- Skinner, M.W. and Bruce M. Pivlik, Editors, 1994). CNPC Inventory of Rare and Endangered Vascular Plants of California; California Plant Society, Sacramento, CA
- Nomenclature per Hickman, 1993

Many-stemmed dudleya occur on dry slopes and clay soils in southwestern California. Suitable habitat does not exist on-site. The closest known location of occurrence is in the Peralta Hills and in the vicinity of Bonita Canyon Drive. This species was not observed during the surveys, and is not expected to occur on site.

Coulters goldfields could occur in the annual grasslands on-site. However, due to the disturbed conditions, lack of vernal pools, and dominance of exotic species in these grasslands, the potential for occurrence is considered to be very low. This species was not observed during the surveys, and is not expected to occur on site.

Another sensitive species, Santa Ana River woollystar, occurs in alluvial fans associated with coastal sage scrub habitats. Since there are no alluvial coastal scrub habitats in the Planned Community, this species is not expected to occur.

c. Sensitive Animals

A number of animal species are considered sensitive because their population levels are declining due to a number of factors, including habitat destruction, occurrence in naturally low densities, or limited geographic range. These species may be of primarily local concern, or they may be threatened or endangered throughout their ranges.

The following is a discussion of the federal and state endangered species acts as they apply to this project.

- ***Federal Endangered Species Act*** - provides the following explanation of listings under the federal Endangered Species Act:

> Section 3 of the Endangered Species Act defines an "endangered species" as any species, including subspecies, "in danger of extinction throughout all or a significant portion of its range." The U.S. Fish & Wildlife Service considers "varieties" to be "subspecies" and, thus, "species" as any species "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range."
>
> "Proposed" endangered and threatened species are those species for which a proposed regulation has been published in the *Federal Register*, but not a final rule. "Candidate" species are taxa [classifications] the Service is considering for listing as endangered and threatened species. These species, however, have yet to be the subject of a proposed rule ...
>
> ... Candidate species (are divided) into two groups. Category 1 candidates are "taxa for which the Service currently has on file substantial information on biological vulnerability {relating to autecology and distribution} and threat(s) to support the appropriateness of proposing to list the taxa as endangered or threatened species." The development and publication of proposed rules for these plants will take several years. Category 2 candidates are "taxa for which information now in the possession of the Service indicates that proposing to list them as endangered or threatened species is possibly appropriate, but for which substantial data on biological vulnerability and threat(s) are not currently known or on file to support the immediate preparation of rules." Thus, the two

> categories delimit level of information and **not** degree of threat or biological vulnerability.

Category 3 consists of non-candidate species – i.e., species previously considered candidates and included on past lists. The former candidate species are grouped into three subcategories: "extinct (3A), taxonomically invalid or not meeting the Service's definition of a 'species' (3B), or too widespread or not threatened at this time (3C).".

U.S. Fish & Wildlife Service provides the following explanation of protection afforded federally listed threatened or endangered species:

> Section 9 of the Endangered Species Act prohibits the "taking" of any federally listed threatened or endangered species without first obtaining necessary authority from the Fish and Wildlife Service. "Take" includes "harming, harassing, pursuing, hunting, shooting, wounding, killing, capturing, collecting or attempting to engage in any such conduct" [§3(19), Endangered Species Act 1973, as amended]. "Harm" includes "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavior patterns, including breeding, feeding, or shelter" [50CFR 17.3(c)]. "Take" also includes modification of habitat that would result in harm ....

Though federal listing can "prevent or modify private developments which will result in the 'taking' or death of even a single individual of the listed species," the Act allows the federal government "to accept 'Habitat Conservation Plans' that permit such developments to proceed without further jeopardizing its survival."

> Proposed species are granted limited protection under the Endangered Species Act. These taxa must be addressed by federal agencies in biological assessments .... Also, federal agencies must confer with the Service regarding any action or project "likely to jeopardize the continued existence" of a proposed species .... This conference, like the technical assistance for candidates, is only an advisory process.

Candidate species are not protected under the Endangered Species Act. Some federal agencies may provide some level of protection; however, such policies are not mandatory. In recognition that some candidate species may be more threatened or endangered than some listed species, the U.S. Fish and Wildlife Service will provide technical assistance to resource agencies on the conservation and management of candidate species.

- ***California Endangered Species Act*** - The California Department of Fish and Game has given several different classifications to sensitive species. These classifications include: candidate, rare, threatened, and endangered. A "candidate" species is one that the Fish and Game Commission has formally noticed as being under review by the Department of Fish and Game to determine whether listing as threatened or endangered is warranted, or when it is the subject of a proposed rule-making by the Commission to list as threatened or endangered.

  A native California plant (species, subspecies or variety) is "rare" when it is in such small numbers throughout all or a significant portion of its range that it may become endangered if its present environment worsens[11].

  A native California bird, mammal, fish, amphibian, reptile, or plant (species or subspecies) is "threatened" when, although not currently threatened with extinction, it is likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts. Any animal listed as "rare" by the Commission on or before January 1, 1985 is a "threatened" species[12].

  A native California bird, mammal, fish, reptile, or plant (species or subspecies) is "endangered" when it is in serious danger of becoming extinct throughout all or a significant portion of its range due to one or more causes, including loss of habitat, change of habitat, over-exploitation, predation, competition or disease[13]. Furthermore, CEQA Guidelines §15380(d) states that, "a species not included in any listing identified in subsection (c) shall nevertheless be considered to be rare (threatened) or endangered if the species can be shown to meet the criteria in subsection (b)."[14].

  With regard to legal status, AB 3309 and AB 3270 (known as the California Endangered Species Act) directed the Department to preserve, protect, and enhance state-listed species. Included in the California Endangered Species Act is a policy that states "that State agencies should not approve projects as proposed which would jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species ....." The Act also requires consultation with reasonable and prudent alternatives consistent with preserving the species.

  Another designation with the California Department of Fish and Game is a California Special Concern (CSC) species. The Department has designated certain vertebrate species as "Species of Special Concern" because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction. The goal of

[11] §1901, *Fish and Game Code*
[12] §2067, *Fish and Game Code*
[13] §2062, *Fish and Game Code*
[14] CEQA Guidelines §15380(b)

designating species as "Species of Special Concern" is to halt or reverse their decline by calling attention to their plight and addressing the issues of concern early enough to secure their long term viability[15]

The status and listing of all sensitive species found on the site and those of possible occurrence are discussed below.

(1) Reptiles and Amphibians

The literature review, habitat assessment, and field surveys indicate that two reptiles and three amphibians considered sensitive by the United States Fish & Wildlife Service (USFWS) and/or the California Department of Fish and Game (CDFG) occur or potentially occur on the site.

The coast patch-nosed snake is found from southeastern San Luis Obispo County and southern Kern County through coastal counties south into Baja California in coastal scrub and mixed chaparral. The coast patch-nosed snake may occur on-site.

The northern red-diamond rattlesnake occurs in coastal sage scrub, chaparral, and woodlands from eastern Orange County and western Riverside County south into Baja California in coastal sage scrub, chaparral, and woodlands with dense cover with rocky outcrops. The northern red-diamond rattlesnake may occur on-site.

The southwestern pond turtle is found along the southern California coast inland to the Mojave Desert in woodlands, grasslands, open forests, and aquatic habitats such as ponds, marshes or streams with rocky or muddy bottoms. Tonner Creek provides suitable habitat for the southwestern pond turtle. During focused surveys for other species, Chambers Group Inc. biologists found several pond turtles in Tonner Creek on the site.

The western spadefoot toad is found in the Sierra Nevada foothills, the Central Valley, the Coast Ranges, and coastal counties in southern California. The western spadefoot toad prefers shallow streams with riffles and seasonal wetlands, such as vernal pools in annual grasslands, and oak woodlands. No suitable habitat for the western spadefoot toad is found on-site.

The California red-legged frog was listed by USFWS as threatened in 1996. It occurs in a variety of aquatic habitats, including marshes, streams, lakes, reservoirs, and ponds within forests, woodlands, and grasslands, and along streamsides. The Tonner Hills project site does not fall within any of the critical habitat units that have been designated for the California red-legged frog, and it does not fit the minimum requirements to be considered as critical habitat as defined in the proposed rule. The nearest critical habitat unit is the Santa Rosa Plateau/Santa Ana Mountain Unit in the southwest corner of Riverside County. A focused survey for the red-legged frog was conducted in 2001 in accordance with USFWS survey guidelines. The survey found no red-legged frogs on the project site. Additionally, the Chambers Group report concludes that the

[15] CDFG Natural Diversity Data Base, July 2001

potential occurrence of the California red-legged frog on the project site is low. This conclusion is based on several factors, including the history of disturbance on the site, the ongoing use of the site for oil and gas production, the lack of any historical records, the distance to the nearest known historical record, the presence of introduced predators, and the lack of sightings by qualified herpetologists who have intensively surveyed portions of the Chino Hills, including the Tonner Hills site.

(2) Birds

Despite its highly disturbed and modified nature, the Tonner Hills subarea supports a reasonably diverse avifauna. More than 44 bird species were observed on-site, and additional species have the potential to occur. A complete listing of the bird species appears in the table below.

Table 4.10-3 - Bird Species Observed at the Tonner Hills Property

Scientific Name	Common Name	O (Observed) V (Vocalization)
Accipitridae	Hawks	
Circus cyaneus	Northern harrier	O, V
Accipiter cooperii	Cooper's hawk	O
Buteo lineatus	Red-shouldered hawk	O, V
Buteo jamiacensis	Red-tailed hawk	O, V
Aegithalidae	Bushtits	
Psaltriparus minimus	Bushtit	O, V
Anatidae	Waterfowl	
Anas platyrhynchos	Mallard	O
Apodidae	Swifts	
Aeronautes saxatalis	White-throated swift	O, V
Ardeidae	Herons	
Ardea herodias	Great blue heron	O
Ardea alba	Great egret	O
Bombycillidae	Waxwings	
Bombycilla cedrorum	Cedar waxwing	O, V
Caprimulgidae	Goatsuckers	
Phalaenoptilus nuttallii	Common poorwill	V
Cathartidae	New World Vultures	
Cathartes aura	Turkey vulture	O
Charadriidae	Plovers	
Charadrius vociferous	Kildeer	V
Columbidae	Pigeons and Doves	
Columbia livia	Rock dove	O
Zenaida macroura	Mourning dove	O, V
Corvidae	Jays and Crows	
Aphelocoma coerulescens	Scrub jay	O, V
Corvus brachyrhynchos	American crow	O, V
Corvus corax	Common raven	O, V
Cuculidae	Cuckoos and Roadrunners	
Geococcyx californianus	Greater roadrunner	O
Falconidae	Falcons	
Falco sparverius	American kestrel	O

Scientific Name	Common Name	O (Observed) V (Vocalization)
Fringillidae	Finches	
Carpodacus mexicanus	House finch	O, V
Carduelis psaltria	Lesser goldfinch	V
Carduelis tristis	American goldfinch	O
Hirundinidae	Swallows	
Stelgidopteryx serripennis	Northern rough-winged swallow	O, V
Emberizidae	Wood Warblers, Tanagers, Blackbirds	
Vermivora celata	Orange-crowned warbler	O
Vermivora ruficapilla	Nashville warbler	O
Dendroica nigrescens	Black-throated gray warbler	O
Dendroica townsendi	Townsend's warbler	O
Oporornis tolmiei	MacGillivray's warbler	O
Wilsonia pusillia	Wilson's warbler	O, V
Icteria virens	Yellow-breasted chat	O, V
Dendroica petechia	Yellow warbler	O
Dendroica coronata	Yellow-rumped warbler	O
Geothlypis trichas	Common yellowthroat	O
Pheucticus melanocephalus	Black-headed grosbeak	O, V
Piranga ludoviciana	Western tanager	O
Guiraca caerulea	Blue grosbeak	O, V
Pipilo maculatus	Spotted towhee	V
Piplio crissalis	California towhee	O, V
Melospiza melodia	Song sparrow	O, V
Zonotrichia leucophrys	White-crowned sparrow	O
Agelaius phoeniceus	Red-winged blackbird	O
Molothrus ater	Brown-headed cowbird	O, V
Icterus cucullatus	Hooded oriole	O, V
Icterus bullocki	Bullock's oriole	O, V
Mimidae	Thashers	
Mimus polyglottos	Northern mockingbird	O, V
Toxostoma redivivum	California thrasher	V
Muscicapidae	Kinglets, Gnatcatchers and Babblers	
Regulus calendula	Ruby-crowned kinglet	O
Polioptila caerulea	Blue-gray gnatcatcher	O
Polioptila californica	California gnatcatcher	O, V
Catharus ustulatus	Swainson's thrush	O
Turdus migratorius	American robin	O
Chamaea fasciata	Wrentit	O
Odontophoridae	New World Quail	
Callipepla californica	California quail	O
Phalacrocoracidae	Cormorants	
Phalacrocorax auritus	Double-crested cormorant	O
Picidae	Woodpeckers	
Melanerpes formicivorus	Acorn woodpecker	O, V
Picoides muttallii	Nuttail's woodpecker	O, V
Picoides pubescens	Downey woodpecker	O, V
Colaptes auratus	Northern flicker	O, V
Ptilogonatidae	Silky-Flycatchers	
Pepla nitens	Phainopepla	O, V
Rallidae	Rails and Gallinules	
Fulica americana	American coot	O
Sturnidae	Starlings	
Sturnus vulgaris	European starling	O, V

Scientific Name	Common Name	O (Observed) V (Vocalization)
Trochilidae	Hummingbirds	
Archilochus alexandri	Black-chinned hummingbird	O
Calypte anna	Anna's hummingbird	O, V
Calypte costae	Costa's hummingbird	O
Selasphorus rufus	Rufous hummingbird	O
Troglodytidae	Wrens	
Campylorhynchus brunneicapillus	Cactus wren	O, V
Thryomanes bewickii	Bewick's wren	O, V
Troglodytes aedon	House wren	O, V
Tyrannidae	Tyrant Flycatchers	
Empidonax hammondii	Hammond's flycatcher	O
Empidonax difficilis	Pacific-slope flycatcher	O
Sayornis nigricans	Black phoebe	O
Mylarchus cinerascens	Ash-throated flycatcher	O
Tyrannus vociferans	Cassin's kingbird	O, V
Tyrannus verticalis	Western kingbird	O
Vireonidae	Vireos	
Vireo bellii pusillus	Least Bell's vireo	O, V
Vireo gilvus	Warbling vireo	O
Vireo huttoni	Hutton's vireo	V

One threatened species, the California gnatcatcher, was found on the site in the May 1997 survey at three locations in the southwestern portion of the site. The gnatcatcher is a federally listed threatened species and is a species of concern in California. California buckwheat, California sagebrush, and sage typically dominate gnatcatcher habitat. The project site is within the previously designated critical habitat for the California gnatcatcher as designated by U.S. Fish & Wildlife Service (Exhibit 4.10-3).

The Chambers Group's 1999 focused surveys for the California gnatcatcher found up to 18 breeding pairs of gnatcatchers on-site. The 2001 focused survey for the gnatcatcher found at least 14 pairs of coastal California gnatcatchers occupying the Planned Community area. Additionally, four individuals (two males, one female and one unknown) were observed or detected, although not repeatedly. All pairs were associated with coastal sage scrub or mixed sage scrub, although many were found at the edges of these vegetation communities and in close proximity to disturbed or ruderal vegetation. Two additional gnatcatcher pairs were observed or detected in the survey area, west of the Orange (SR 57) Freeway, just south of the boundary of the project area. Exhibit 4.10-4 shows the areas within the Planned Community area where the pairs and the individuals were found.

Also observed on-site were two species of special concern – Cooper's hawk and coastal cactus wren (Exhibit 4.10-5). The cactus wrens were observed in mature stands of cactus, in isolated small patches of cactus, and in coastal sage scrub. Cactus patches are very abundant on the site and generally occur in most of the coastal sage scrub areas. Five other species of concern have the potential to occur on the project site. The potential of occurrence for each of these species is presented in Table 4.10-4.

The least Bell's vireo was listed as an endangered species by state and federal agencies in 1980 and 1986, respectively. They are a small migratory songbird that is present in southern California only during late spring and early summer for breeding and nesting. Chambers Group, Inc. conducted surveys on the project

site during April through July, 2001 according to USFWS 2001 guidelines. They observed that habitat on the project site was of moderate quality at best. One male was observed and heard in riparian habitat east of the Orange (SR 57) Freeway on one occasion only. Since the male was seen and heard only once, Chambers Group concluded that this vireo was not nesting on-site and was considered a vagrant (Exhibit 4.10-6).

Chambers Group also surveyed the project for the presence of southwestern willow flycatcher. The survey concluded that the southwestern willow flycatcher can be considered absent from the project site due to negative survey results, the level of disturbance associated with historic and ongoing oil and gas production, lack of documented sightings, and professional judgment.

Table 4.10-4 - Sensitive Bird Species

Scientific Name	Common Name	Listing[1]	PFO[2]	Comments
Vireonidae Vireo bellii pusillus	Vireos Least Bell's Vireo	FE, SE	P	Marginally suitable habitat exists within Tonner Creek.
Muscicapidae *Polioptila californica*	Thrushes California gnatcatcher	FT, CSC	P	Suitable coastal sage scrub habitat exists on-site, particularly in southwestern portion of site.
Class Aves Accipitridae	Birds, kites, eagles, buteos, accipiters			
Circus cyaneus	Northern harrier	CSC	M	Suitable foraging habitat exists on-site.
Accipiter cooperi	Cooper's hawk	CSC	P	Suitable nesting and roosting sites available in eucalyptus trees located throughout the site
Tytonidae *Asio otus*	Owls Long-eared owl	CSC	L	Some suitable riparian habitat exists but species has not been observed in area since 1920s. This species occurs primarily in riparian grooves consisting of willow and cottonwood trees.
Troglodytidae *Campylorhynchus brunneicapillus sandiegoense*	Wrens Coastal cactus wren	FSOC, CSC	P	Suitable coastal sage scrub habitat exists on-site, and several wrens were observed in opuntia cactus.
Emberizidae	Wood Warblers, Tanagers, Blackbirds			
Dendroica petechia	Yellow warbler	CSC	P	Marginally suitable habitat exists adjacent to Tonner Creek. This species requires mature riparian growth for nesting.
Icteria virens	Yellow-breasted chat	CSC	P	Tonner Creek provides suitable nesting habitat. Observed in 1997 (Cooper).
Aimophila ruficeps	Rufous-crowned sparrow	CSC	M	Suitable habitat on-site within the coastal sage scrub.

Scientific Name	Common Name	Listing[1]	PFO[2]	Comments

[1]Status Codes: Federal: FE = Federal listed, endangered; FT = Federal listed, threatened; FSOC = Federal species of concern
State: SE = State listed, endangered; CSC = California species of special concern

[2]Potential for Occurrence (PFO):

L = Low Potential for Occurrence - no recent or historical records exist of the species occurring in the project area or its immediate vicinity (within approximately 5 miles) and the diagnostic habitat requirements strongly associated with the species do not occur in the project area or its immediate vicinity.

M = Moderate Potential for Occurrence - either a historical record exists of the species in the project area or its immediate vicinity, or the diagnostic habitat requirements associated with the species do occur in the project area or its immediate vicinity.

H = High Potential for Occurrence - a historical record exists of the species in the project area or its immediate vicinity, and the diagnostic habitat requirements strongly associated with the species do occur in the project area or its immediate vicinity.

P = Species present - the species was observed in the project area at the time of the survey.

Source: California Natural Diversity Data Base (CNDDB), Yorba Linda and La Habra quads, 1997

(3) Insects

A habitat assessment of the Tonner Hills project was conducted in February 1999 for Quino checkerspot butterfly. The results of this assessment, conducted by Chambers Group, Inc., found the larval host plants, plantago (Plantago erecta), present on the site in one small area. The site is not, however, considered to be suitable habitat for the Quino checkerspot butterfly. The plantago that is present is too sparse to meet the USFWS requirement of 100 plants per 100 square meters[16]. The report further states that the plantago is most likely not naturally found in this location, but is present as a result of revegetation that utilized a seed mix containing plantago. The report concludes that the site is not likely to support the life cycle of the Quino checkerspot and adult butterfly surveys are not recommended.

In 2000, the U.S. Fish and Wildlife Service revised their survey protocol and created specific survey areas in Southern California. The Tonner Hills site is not within the survey areas designated by the Service. This same protocol was used for 2001 as well. These survey areas are not expected to change in 2002.

During the 2001 surveys conducted by Chambers Group, Inc., 13 butterflies were observed. The common white (*pontia protodice*), cabbage white (*Artogeia rapae*), Sara orangetip (*Anthocharis sara*), and acmon blue (*Icaricia acmon*) were the most numerous butterfly species on the Tonner Hills site.

[16]1999 USFWS Quino checkerspot protocol survey

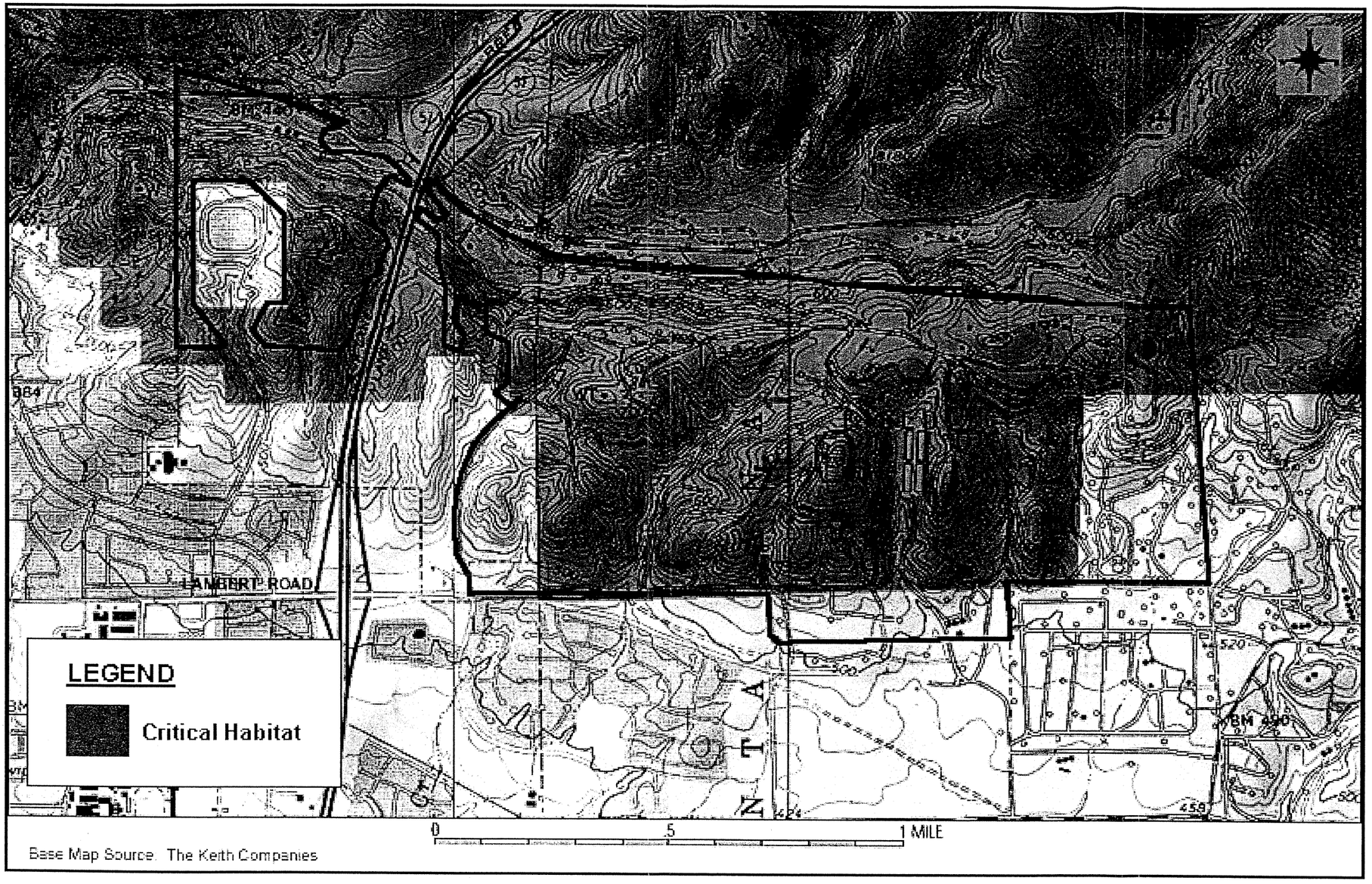

Exhibit 4.10-3
Critical Habitat - California Gnatcatchers

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*** Each Gnatcatcher location is only a representative location of a larger area (see text for details).

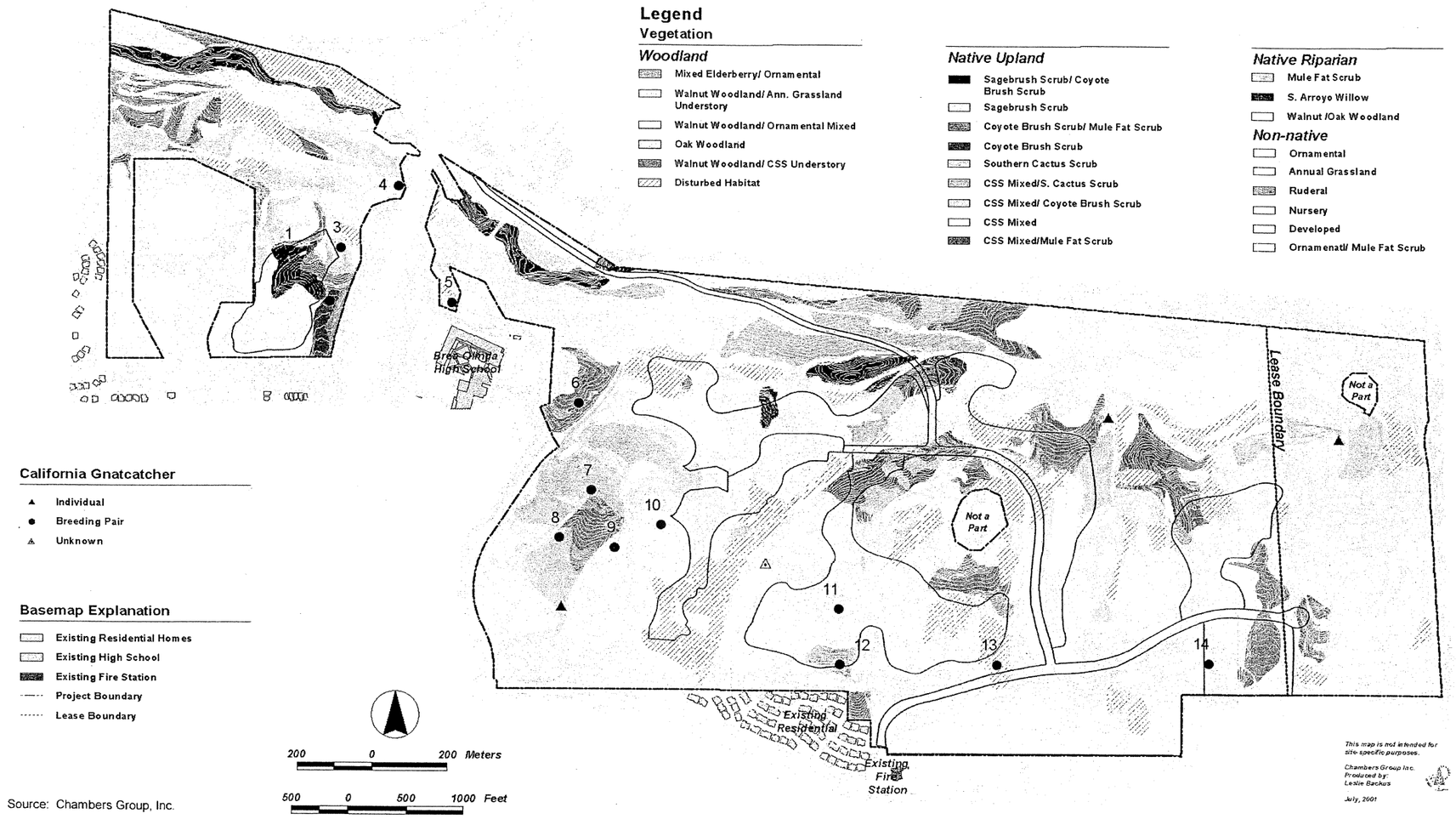

Exhibit 4.10-4
Vegetation Communities with California Gnatcatchers

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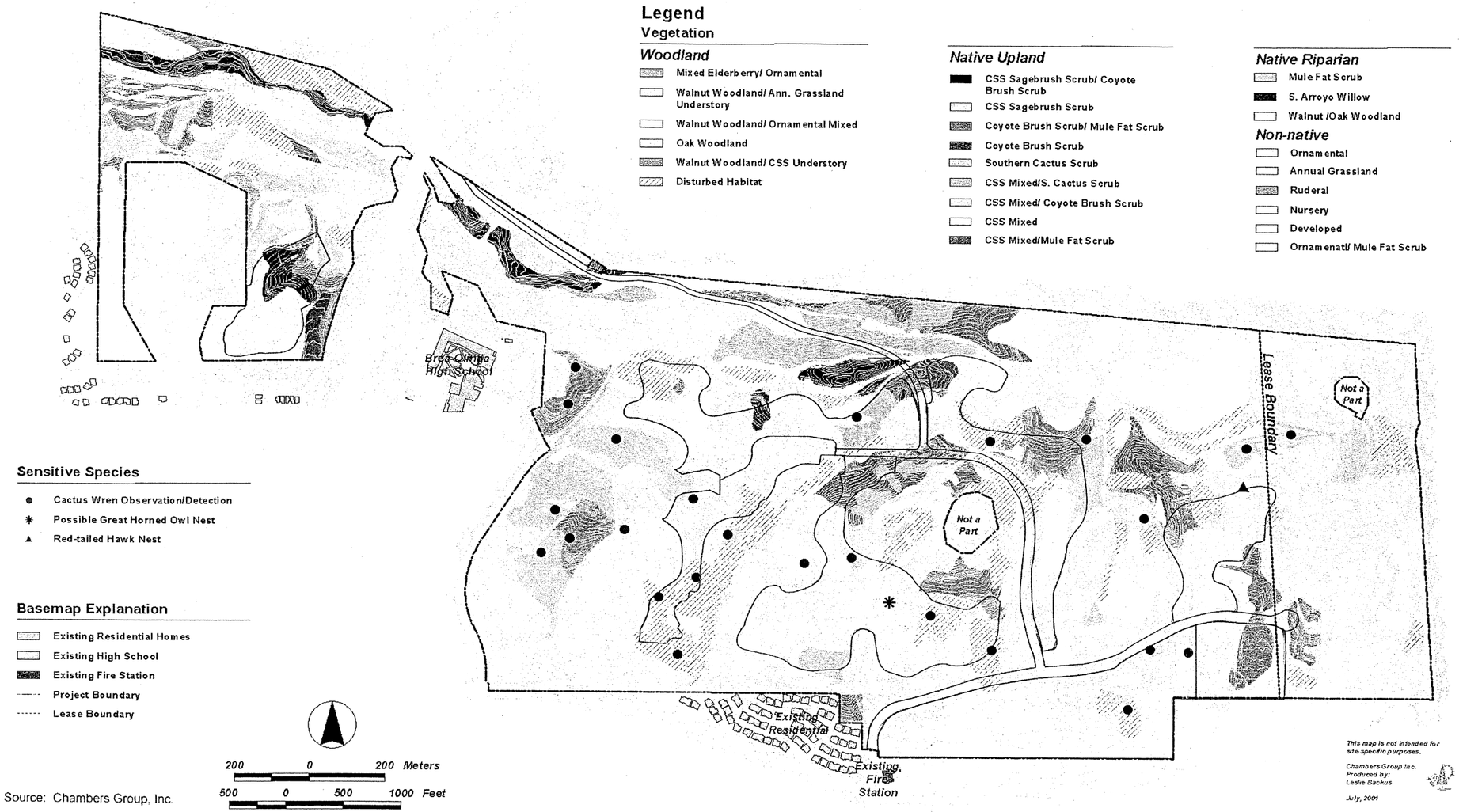
*** Each species location is only a representative location of a larger area.



Source: Chambers Group, Inc.

Exhibit 4.10-5
Vegetation Communities with Sensitive Species

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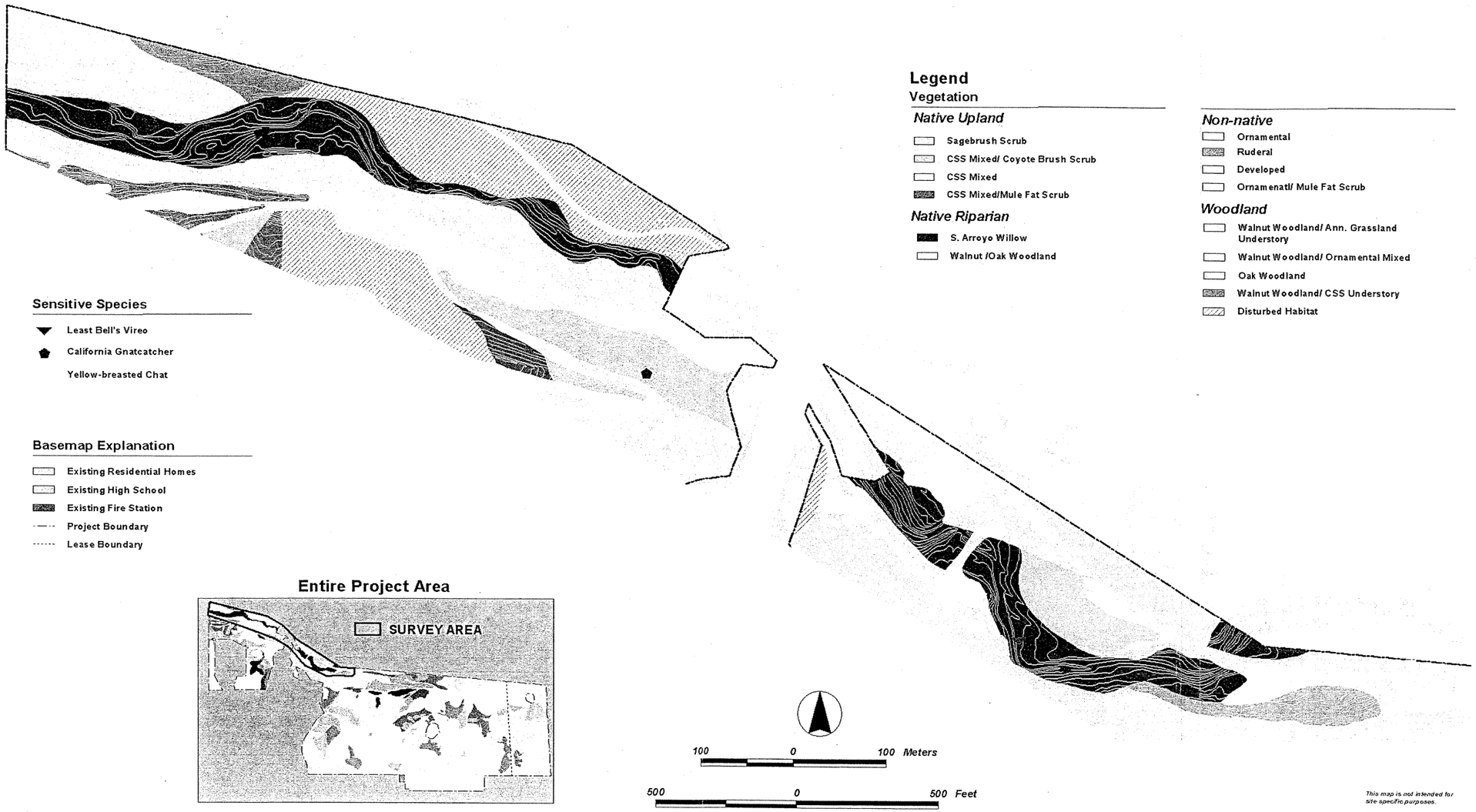

Source: Chambers Group, Inc.

Exhibit 4.10-6
Vegetation Communities with Least Bell's Vireo

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(4) Mammals

Seven mammals were observed on-site during field surveys, and additional species have the potential to occur. None of these species are listed as threatened or endangered by either the USFWS or the CDFG. Table 4.10-5 summarizes these species.

Table 4.10-5 - Mammal Species Observed at the Tonner Hills Property

Scientific Name	Common Name	O (Observed), V (Vocalized) S (Scat) T (Tracks)
Leporidae	Hares and Rabbits	
Sylvilagus audubonii	Desert cottontail	O
Sciuridae	Squirrels	
Spermaphilus beecheyi	California ground squirrel	O,V
Sciurus griseus	Western gray squirrel	O
Muridae	Mice, Rats and Voles	
Peromyscus sp.	Mouse	O
Canidae	Wolves and Foxes	
Canis latrans	Coyote	O
Felidae	Cats	
Lynx rufus	Bobcat	O
Cervidae	Deer	
Odocoileus hemionus	Mule deer	O,T,S

d. Wildlife Movement Corridors

(1) Off-Site Corridors

The Tonner Hills Planned Community site is located along the present wildlands-urban boundary. It is immediately west of the Olinda Heights development, which serves as a north-south connection corridor for animals moving from Carbon, Sonome, Soquel and Telegraph canyons to the south to Tonner Canyon to the north. This connection corridor is the shortest route between the lower section of Tonner Canyon and the lower section of Carbon and Telegraph Canyons. The importance of this route should not be minimized. There are reports of large mammals crossing the site and this route is now considered to be very important[17].

[17] Environmental Impact Report for Olinda Heights Specific Plan, City of Brea, 1995

(2) Wildlife Corridors in Planned Community

Tonner Canyon is a primary wildlife corridor linking animal movement in the Puente-Chino Hills from one side of the Orange (SR 57) Freeway to the other. It provides year-round water and cover for small and large mammals. Tonner Canyon spans three counties and is in a natural state from its origins near Chino Hills Parkway in San Bernardino County, as it passes into Los Angeles County and the Firestone Boy Scout reservation, and then enters Orange County. Tonner Canyon enters the Planned Community site along the northern boundary of the western portion of the site prior to passing under the 57 (Orange) Freeway. It continues along Brea Boulevard, where it enters the City of Brea and developed urban areas. Tonner Canyon provides connectivity in the Puente-Chino Hills. This portion of this corridor is especially critical. If it were to become obstructed or made otherwise unsuitable for wildlife passage, significant movement of large wildlife across the span of the Puente-Chino Hills would be effectively ended[18]. The wildlife corridor is illustrated in Exhibit ?.?-9 on page ?.?-49.

While Tonner Canyon is a primary wildlife corridor, only a small portion of the canyon is within the boundaries of the Planned Community. During the biological survey, animal signs such as tracks and scat were observed along Tonner Creek. Several species were observed on-site by Chambers Group, Inc. biologists while conducting field surveys, including mule deer, coyote, gray fox, raccoon, rabbit, and bobcat. Oil field personnel have observed other species utilizing the site, including mountain lion and skunk.

Mountain lions appear to be utilizing the Tonner Hills site as a hunting ground. These lions are most probably entering the property from the Tonner Canyon wildlife corridor. This information is very important as it further illustrates the importance of maintaining the integrity of the wildlife corridor in Tonner Canyon where it crosses the project site.

Another smaller drainage on the site may be considered as wildlife habitat but is not considered a wildlife corridor. This drainage is Cable Canyon and is located in the central portion of the site, running north-northeast to south-southwest. Due to the dense cover of trees and other shrubs, it provides good cover for medium and large mammal species. Coyote and deer sign were observed within this area. Currently, the deer are accessing Cable Canyon from a variety of access points, primarily on the southern portion of this site.

This drainage connects to a ridge above Tonner Canyon and may facilitate wildlife movement from the center of the site to and from Tonner Canyon. Mountain lions are not expected to utilize this small habitat area as a main means for transportation. Due to the narrow drainage size and short run, the lions would probably be expected to primarily utilize this canyon for loafing and hunting. However, this canyon provides some connectivity to Tonner Canyon for deer and other smaller mammals, which should be maintained through project design.

[18] Puente-Chino Hills Wildlife Research Group

e. Wetlands and Waters of the United States

Chambers Group's wetlands specialists have conducted numerous delineations on the Tonner Hills site. Repeated delineations were conducted to reflect pre- and post-El Niño conditions. The initial jurisdictional delineation was conducted on July 16, 1997 to determine wetland and streambed areas subject to the Corps and/or CDFG jurisdiction, including riparian plant communities within the project boundaries. Supplemental delineations were conducted in 1999 and 2000. All drainages on the site were inspected for the presence of wetlands and ordinary high water marks.

A total of 6.05 acres on the site fall under the jurisdiction of the Corps, including 3.11 acres that meet the Corps criteria for wetlands. A total of 16.93 acres on the site fall under CDFG jurisdiction.

Table 4.10-6 summarizes the acreage of drainages and waters of the United States on the property.

Table 4.10-6 - Waters of the United States and CDFG Jurisdiction at Tonner Hills (Acres)

	Corps Jurisdiction			CDFG Jurisdiction		
Drainage	Jurisdictional Wetlands (Acres)	Other Jurisdictional Waters (Acres)	Total Waters of the U.S. (Acres)	Riparian Habitat	Unvegetated Channel	Total CDFG Jurisdiction (Acres)
Drainage 1 (Tonner Creek)	2.85	0.0	2.85	7.07	0.0	7.07
Drainage 2	0	0.55	0.55	0	0.55	0.55
Drainage 3	0	1.31	1.31	6.52	1.31	7.83
Drainage 4	0	0.17	0.17	0	0.17	0.17
Drainage 5	0	0.29	0.29	–	–	–
Drainage 6	0.16	0	0.16	0.16	0	0.16
Drainage 7	0.10	0.32	0.42	0.42	0.28	0.70
Drainage 8	0	0.19	0.19	0.15	0.19	0.34
Drainage 9	0	0.07	0.07	0	0.07	0.07
Drainage 10	0	0.04	0.04	0	0.04	0.04
Totals	3.11	2.94	6.05	14.32	2.61	16.93

4.10.2 Thresholds of Significance

For the purposes of this EIR, the thresholds of significance for evaluating project impacts on biological resources are based upon the CEQA checklist of the County of Orange. The project would result in a significant impact if it would:

- Have a substantial adverse effect on endangered, threatened, or rare species or their habitats, including but not limited to plants, fish, insects, animals, and birds.
- Have a substantial adverse effect on locally designated species, such as heritage trees.
- Have a substantial adverse effect on locally designated natural communities such as walnut forest.
- Have a substantial adverse effect on wetland habitat such as riparian habitat.
- Have a substantial adverse effect on wildlife dispersal or migration corridors such as Tonner Canyon.
- Conflict with adopted or proposed conservation plans and policies.

4.10.3 Project Impacts Prior to Mitigation

a. Introduction

For the purposes of this section, a "disturbance" is defined as a condition that adversely affects wildlife and wildlife habitats. In general, wildlife habitats in southern California are affected adversely (disturbed) by degradation, fragmentation, and conversion which implies the partial or complete loss of habitat.

Quantification of disturbances and a comparative analysis is inexact because different disturbances affect wildlife in different ways and at different intensities. Conditions like fire that disturb or destroy habitat for one species may actually improve the habitat for another. Further, baseline information concerning wildlife and habitats in southern California prior to agriculture and urbanization is largely lacking, so disturbances to any area may very well be second or third "generation" disturbances to the "original" ecosystem.

The intensities of existing disturbances can range from permanent conversion (Carbon Canyon Dam) to transitory disturbances such as noise. Other conversions (nurseries, landfill) approach permanence, but could possibly be restored to wildlife habitat. Other disturbances are more difficult to arrange on a continuum, and the relative intensities of impacts to wildlife and habitats caused by them involves speculation. These include oil production, weed abatement and removal of vegetation, roads and human intrusion, the invasion and proliferation of non-native vegetation, the presence of surficial tar, bio-remediation activities, and the presence of domestic and pest animals. Most of these are difficult to quantify and are found to some degree throughout the site.

Disturbances to wildlife and wildlife habitats noted on the site include:

- Oil production activities (direct loss of habitat to wells, buildings, pipelines; reduces habitat values by human presence);
- Roads (loss of habitat; increases human intrusion);
- Pest species (domestic cats prey on a variety of native reptile, bird, and mammal species; European starlings and house sparrows usurp nest sites and resources from native bird species);
- Non-native vegetation (degrades and/or supplants native plant communities);
- Weed abatement and vegetation removal (destroys native and non-native plants and, therefore, wildlife resources; also may cause disruption and/or destruction of fossorial reptiles and mammals);
- Bio-remediation (loss of habitat);
- Surficial tar (degrades habitat); and
- Complete conversion (loss of habitat).

Other disturbances such as fire and noise, were noted but not included in the analysis. Fire, a natural part of plant community succession, may be a temporary disturbance but may precede an increase in diversity. Noise can be a disturbance, especially to birds relying on vocalizations for much of their intra-species interactions. Noise on the site is produced by traffic mostly, followed by oil production activities. Those areas closest to Lambert Road, Wild Cat Way, and the Orange (SR 57) Freeway would be the areas most disturbed by noise.

b. Impacts by Project Area and Use

The Planned Community was divided into five land use areas based on the dominant land use in each area (see Exhibit 4.10-7). The five land use areas are: oil field, residential, commercial, parks, open space and trails, and public use areas. In addition to identifying disturbances and impacts prevalent in each area, each area has been evaluated in terms of its sensitive biological resources and its contiguity with habitats in other areas, both on-site and off-site.

1. **Land Use Area 1, oil fields,** will be consolidated through the selective abandonment of certain existing oil field facilities and the accommodation and/or relocation of other facilities to areas within the project site. The phased consolidation of oil field facilities will coincide with the development of Tonner Hills and will be planned to accommodate the area requirements of non-oil-field land uses.

   Coastal sage scrub (a sensitive habitat) and annual grasslands, both disturbed and undisturbed, are identified in this area. The impact is not considered significant.

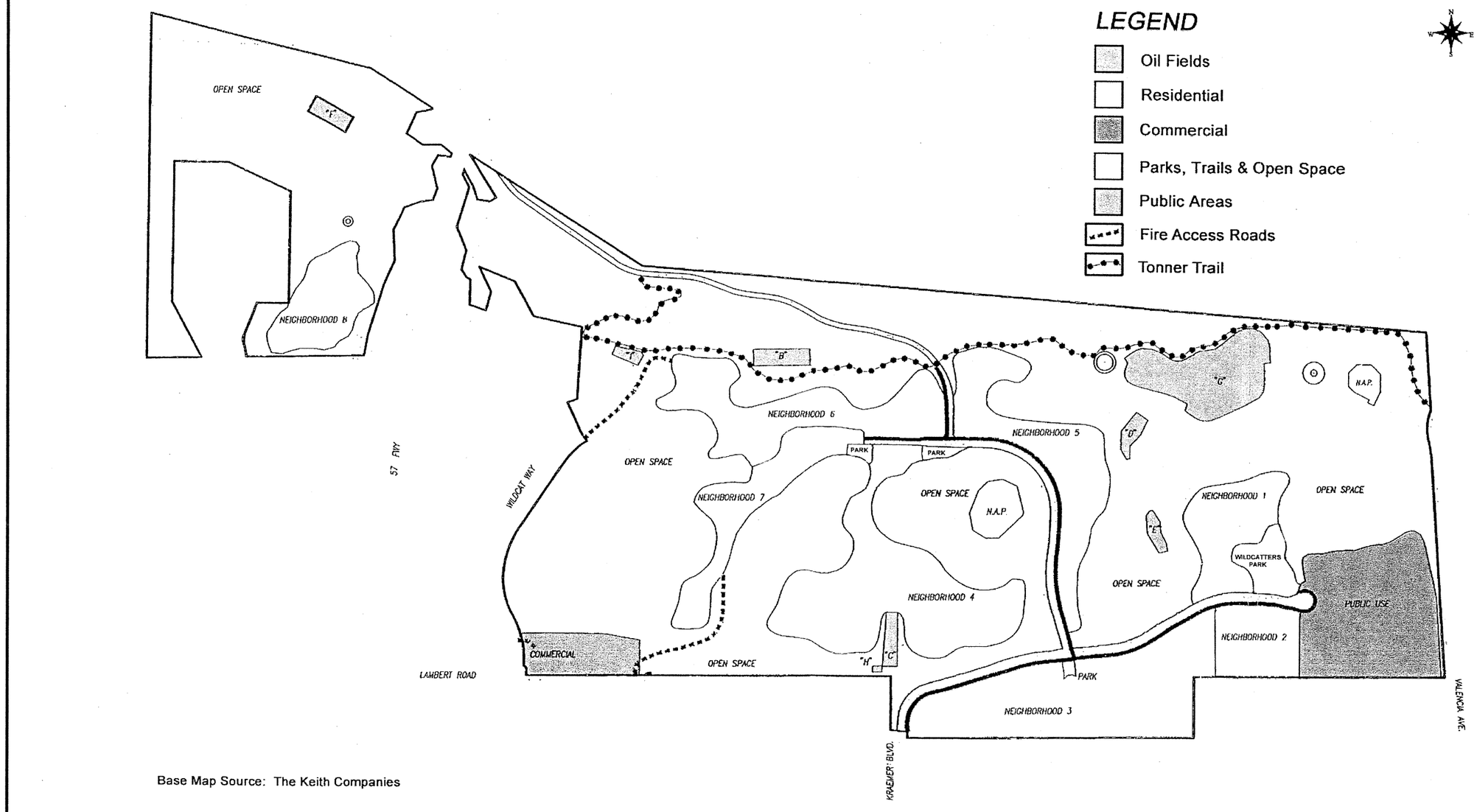
   No sensitive species were observed utilizing this area of the site. Therefore, impacts in this area are not considered significant.

2. **Land Use Area 2, residential,** designates 193.9 acres for development of a guard-gated community distributed among eight residential neighborhoods. Sensitive habitats identified in this area include coastal sage scrub, walnut woodland, oak woodland, and southern cactus scrub.

   Sensitive species impacted in this area include 7 of the 14 pairs of California gnatcatchers found on the project site and 13 of the 25 cactus wrens found on the project site. An additional pair of gnatcatchers will be impacted off the project site near Neighborhood 8 due to road improvements. These species are impacted due to the conversion of their habitat, namely coastal sage scrub and southern cactus scrub species. Impacts to the California gnatcatcher are considered to be significant. Mitigation measures and a habitat enhancement plan have been developed to reduce and/or eliminate the impacts.

   A total of 98.8 acres of coastal sage scrub are being affected over the entire project. The most important aspect of the mitigation measure as it relates to the California gnatcatcher and cactus wren is the phasing aspect. The phasing program is set to begin concurrently with the removal of habitat, and calls for a reduction of temporal loss of coastal sage scrub habitat on the site by creating new areas of mixed coastal sage scrub along with the initiation of any grading activities.

   In the first phase, one pair of gnatcatchers will be displaced. Pair 14 is located in the southeast portion of the property. There will be a direct loss of 19.5 acres of coastal sage scrub, which includes this pair's breeding territory and home range. This pair will be displaced into surrounding habitat areas where they may not establish a new home range. The remaining coastal sage scrub areas on the Tonner Hills site could potentially support this pair because there is abundant unoccupied habitat still available. For the purposes of this analysis, the assumption is made that this pair will be taken as a result of the Phase 1 construction.



Base Map Source: The Keith Companies

Exhibit 4.10-7
Dominant Land Use Areas

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The first phase of revegetation will create and/or restore 101 acres of coastal sage scrub prior to the start of the second phase of development to minimize the overall impacts.

The second phase causes impacts to pairs 11, 12 and 13, located in the south central portion of the site. These birds are expected to relocate to the newly created coastal sage scrub immediately west of their current location. A fourth pair (#10) may lose a small portion of its home range as a result of Phase 2 construction. The pair should be able to continue to reside in its current location, even with the development, because the areas adjacent to their home range will have been revegetated in Phase 1.

The third phase will impact bird pairs 1,2,3, and 15 (located immediately off-site, but impacted due to road access construction). It is expected that these pairs will relocate themselves to the areas being revegetated west of the Orange (SR 57) Freeway.

A Section 7 consultation will be required with United States Fish and Wildlife Service (USFWS), who will issue a biological opinion detailing how this development affects the California gnatcatcher or its critical habitat. If USFWS issues a "No Jeopardy" biological opinion, incidental take will be allowed as long as the terms and conditions put forth by USFWS are complied with. Under the terms and conditions required by the USFWS, impacts to the California gnatcatcher will be reduced to less than significant. If the USFWS issues a biological opinion that requires no adverse modification of critical habitat, no incidental take of California gnatcatcher will be allowed, as the project, with its mitigation measures, is currently designed.

3. **Land Use Area 3, mixed use,** designates one 7.7-acre parcel for mixed use development. This parcel is located in the southwest corner of the site at the intersection of Lambert Road and Wild Cat Way. Annual grassland and ruderal vegetation currently occupy the site. No sensitive species were observed utilizing the site. Therefore, impacts in this area are not considered significant.

4. **Land Use Area 4, parks, trails, and open space**, designates 5.8 acres are to be set aside for Wildcatters Park in the southeastern portion of the site. This park will include recreational areas, restrooms, parking, and picnic areas. Ruderal vegetation currently occupies the expanded portion of the site. Sensitive species observed included one pair of California gnatcatchers and one pair of cactus wrens. There will be a loss of habitat for the pair of gnatcatchers and cactus wrens, due to the conversion of their habitat. This pair of gnatcatchers is Pair 14. They were also discussed in Area 2, as was the mitigation measures associated with them. As in Area 2, due to the mitigation plan that calls for the phasing of the revegetation to precede the loss of habitat, the affected birds should relocate themselves to the newly created coastal sage scrub habitat when their currently occupied habitat is disturbed by development activity. As a result of this mitigation measure, the impacts in this area will be reduced to less than significant.

The Planned Community provides for the development of Tonner Ridge Trail, which extends approximately 11,200 linear feet within the open space area in the northerly portion of the project site. The trail includes hiking, horseback riding, and mountain biking activities. This trail crosses through many different habitat types, including native upland, native riparian, woodland, and non-native vegetation. The trail would have no impact on the biological resources in the area.

The majority of acreage in the Tonner Hills Planned Community is designated as open space, with 514.1 acres set aside. This acreage primarily includes areas supporting native plant communities valuable for wildlife habitat and public recreation. The open space areas are primarily comprised of coastal sage scrub and woodland habitats. California walnut and coast live oak woodlands also provide food, cover, and nesting habitat for a variety of birds, amphibians, reptiles, and mammals. Riparian woodlands along Tonner Creek will be preserved. The natural open space areas will provide connectivity between open space areas in Tonner Creek west of the Orange (SR 57) Freeway and Chino Hills open space areas located east of Tonner Hills so wildlife species are free to move through the area. These open space areas will be enhanced to provide a diversity of plant communities that are valuable for public recreation and wildlife value. The existing terrain will be incorporated as part of the natural open space in order to preserve the wilderness value and character of the site. Within this open space area, productive oil wells and related facilities currently in operation, as well as the existing green waste recycling facility, will remain. Improvements within the open space areas may include enhancement of native habitat that will improve the habitat value and trail improvements designed to minimize human disturbance to native habitats.

All sensitive species previously noted occur in these areas and the impacts to them would be less than significant.

5. **Land Use Area 5, public areas**, designates 32.7 acres to be reserved within Tonner Hills for development of public uses by public entities. This area will be suitable for development of a variety of public uses such as parks, a school, a sports complex, a community center, or any other similar public uses. This parcel is in the southeast corner of the site and is bordered by Valencia Ave. Sensitive habitats found in this area include disturbed coastal sage scrub.

   No sensitive species were observed utilizing this area of the site. Therefore, impacts in this area are not considered significant.

The project will implement a phased revegetation and remediation plan to mitigate the impacts of development on the area's biological resources. A copy of the Habitat Mitigation and Monitoring Program is included in the Technical Appendices.

The Habitat Mitigation and Monitoring Program also includes five years of ongoing maintenance and annual wildlife surveys. For the duration of oil production, Nuevo Energy or the property owner/oil operator shall be responsible for implementing the five-year plan and subsequent open space maintenance. The open space shall be preserved through a scenic preservation easement to the County of Orange with an irrevocable offer of dedication. Upon cessation and abandonment of all oil production at some future date, the open space shall be dedicated to the County or other public trust entity.

The annual wildlife surveys shall be prepared and submitted to the USFWS, the California Department of Fish and Game, and the Army Corps of Engineers for the five years of the habitat monitoring Plan, in accordance with the terms and conditions of applicable resource agency permit approvals.

c. Impacts to Vegetation Communities

Table 4.10-1 on page 4.10-5 lists the acreages of each vegetation community that would be directly affected by the Tonner Hills project. Exhibit 4.10-8 depicts the footprint of project impacts on the vegetation communities. Direct impacts consist of ground-disturbing activities that remove vegetation or habitat (i.e., vegetation removal, grading, paving, or keeping access roads clear).

Implementation of the proposed development project with remedial grading and establishment of the fuel modification zone would result in direct impacts to approximately 407.7 acres of vegetation and disturbed areas. Approximately 209.2 of the total 407.7 acres are comprised of disturbed, developed, and ornamental areas. The remaining 198.5 acres that will be impacted are comprised of 67.7 acres of coastal sage scrub, 31.1 acres of disturbed coastal sage scrub, 10.4 acres of other native scrub, 69.9 acres of non-native grasslands, 9.8 acres of riparian woodlands, and 9.6 acres of disturbed woodlands.

(1) Coastal Sage Scrub

Approximately 198.8 acres of coastal sage scrub communities occur on the Tonner Hills site, of which 55.0 acres are disturbed. Implementation of the proposed development project and establishment of the fuel modification zone will affect approximately 104.3 acres of coastal sage scrub.

Recent monitoring of the revegetation project at Santiago Canyon Estates (SCE) in Mission Viejo has shown that the transplantation of coastal sage scrub plant species and use of mulched coastal sage scrub plants along with the native topsoil can establish a diverse coastal sage scrub community in a short period of time. The coastal sage scrub at the SCE site was installed in 1997 and it already has enough structure that it could support the nesting activities of California gnatcatchers.

As part of the project design features, a total of approximately 123.8 acres of coastal sage scrub will be planted in areas that are currently designated as developed or disturbed areas, and as non-native and ornamental vegetation communities. This revegetation will be implemented in a phased approach with the construction in order to take advantage of the opportunity to transplant coastal sage scrub. In addition, the phased revegetation is designed to establish new coastal sage scrub areas prior to the impacts to the coastal

sage scrub within Phases 2 and 3 of construction. The only temporal loss of coastal sage scrub will occur with the loss of 19.5 acres in the first phase. Based on the SCE monitoring of a coastal sage scrub revegetation site using the revegetation methodology proposed for the Tonner Hills project, the revegetation effort should produce habitat with sufficient structure and cover to provide breeding habitat for gnatcatchers. The coastal sage scrub revegetation plan is also included as Mitigation Measure BR-4.

At the completion of the habitat revegetation program, there will be an increase in the number of acres of coastal sage scrub on the Tonner Hills site. Table 4.10-7 shows the number of acres of coastal sage scrub that will be affected by each of the construction phases and the number of acres that will be created during the revegetation phases. The revegetation of coastal sage scrub in Phase 1 has been designed to compensate for the loss of coastal sage scrub during the implementation of construction Phases 1 and 2. This will result in the establishment of 101.0 acres of coastal sage scrub prior to implementation of Phase 2 construction. The current phasing proposed is planned for approximately 1 to 3 years between the grading of Phases 1 and 2 of the construction.

Table 4.10-7 - Impacts and Revegetation Phasing of Coastal Sage Scrub Vegetation on the Tonner Hills Site

Development Phase	CSS Impacted (acres)	CSS Revegetated (acres)
Phase 1	19.5	101.0
Phase 2	62.0	22.8
Phase 3	22.8	0.0
Total	104.3	123.8

Implementation of Phase 2 of the development is planned for 1 to 3 years following the start of Phase 1 development. Phase 2 of the development will remove approximately 62.0 acres of coastal sage scrub. Salvaged coastal sage scrub removed from these areas will be transplanted to the areas between Neighborhoods 4 and 5 and between Neighborhoods 1 and 5. Approximately 22.8 acres of coastal sage scrub will be planted in these areas. Planting of this 22.8 acres will compensate for the expected loss of coastal sage scrub in the Phase 3 construction areas. Planting this 22.8 acres during Phase 2 should eliminate any temporal loss associated with the impacts in Phase 3. Restoration of approximately 5.9 acres of woodland habitat in Cable Canyon will also be implemented during Phase 2. A detailed mitigation and monitoring plan has been developed that describes the revegetation and enhancement for riparian, woodland, and coastal sage scrub areas and is included in the Technical Appendices.

Phase 3 of the development is planned for approximately 1 to 3 years after the implementation of Phase 2. An additional 22.8 acres of coastal sage scrub will be removed by Phase 3 development. Because the loss of coastal sage scrub in Phase 3 will be compensated for by the revegetation effort in Phase 2, the impacts associated with the construction of the Phase 3 development areas will not result in any temporal loss of occupied gnatcatcher habitat. No additional coastal sage scrub will be revegetated in Phase 3.

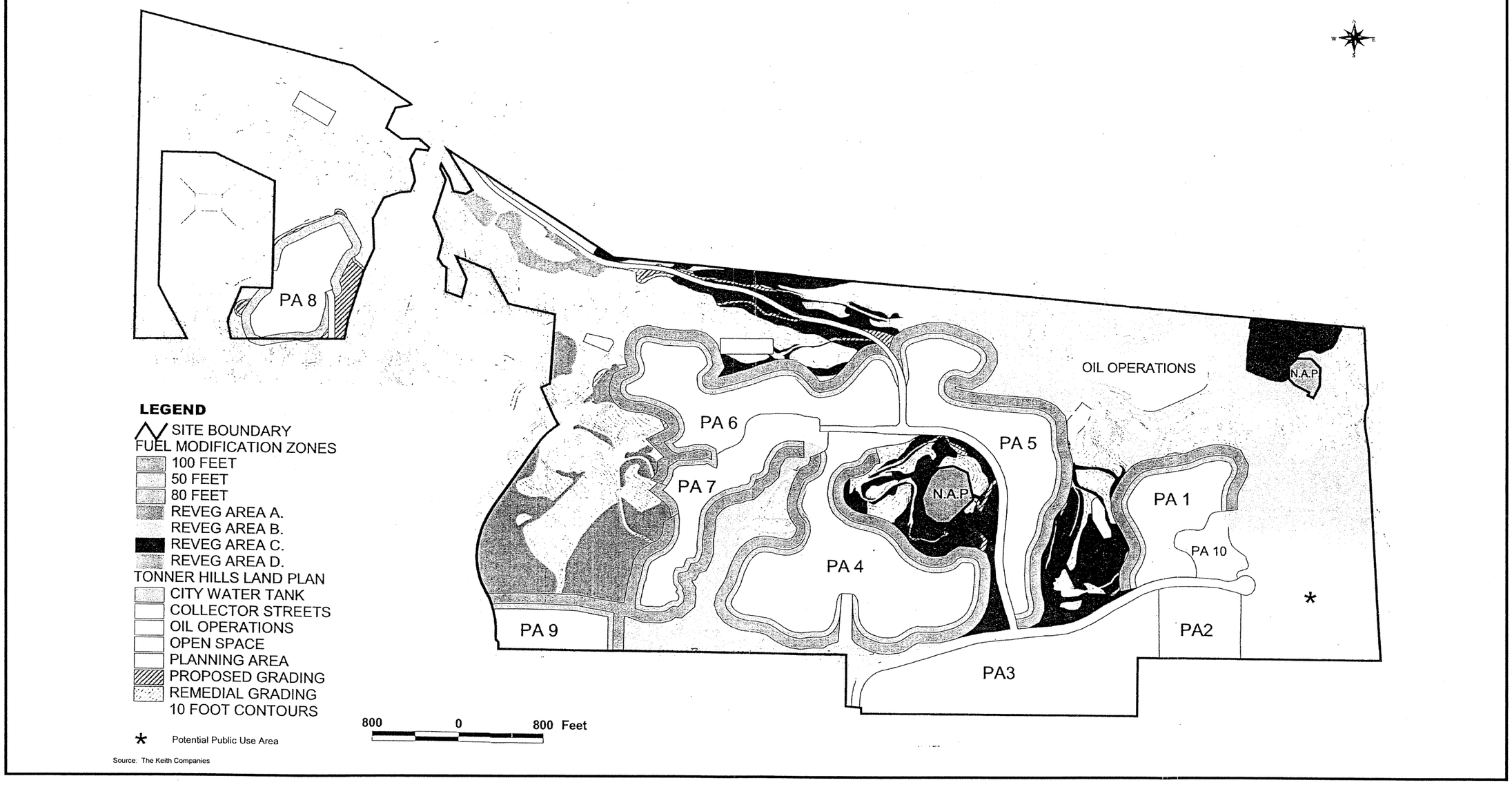

Exhibit 4.10-8
Revegetation Plan

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As a result of the development and revegetation phasing, the Tonner Hills site will ultimately support 227.7 acres of coastal sage scrub, including the 103.9 acres of preserved coastal sage scrub and the 123.8 acres of revegetated coastal sage scrub. The site currently supports 208.2 acres of disturbed and undisturbed coastal sage scrub and southern cactus scrub. Thus, the Tonner Hills project will result in a net increase in coastal sage scrub habitat on the site. In addition, the revegetation of the coastal sage scrub will serve to eliminate large blocks of non-native, ornamental, and disturbed areas that are of little biological value. The end result will be large contiguous blocks of coastal sage scrub that provide connectivity through portions of the Tonner Hills site and to the major wildlife movement corridor in Tonner Canyon.

The coastal sage scrub plant palette for restoration includes cactus. When the areas are replanted, cactus will be placed in large areas and intermixed with the coastal sage scrub plant species. This will result in a plant community similar to the existing site conditions.

(2) Southern Cactus Scrub

Approximately 9.4 acres of the southern cactus scrub community is present on the Tonner Hills site. Implementation of the proposed development project and the fuel modification zone will affect approximately 5.5 acres of southern cactus scrub. A substantial density of cactus will be included in the plant palette in the coastal sage scrub revegetation areas. Thus, the Tonner Hills project will result in an increase in the acreage and the connectivity of coastal sage scrub/cactus areas within the Tonner Hills site.

(3) Southern Arroyo Willow Woodland

The construction of Tonner Hills Road will impact 0.1 acre of the 12.3 acres of southern arroyo willow woodland by the construction and restoration associated with building the span bridges over Tonner Creek. The 0.1 acre of arroyo willow woodland will potentially be affected by bank stabilization activities in areas just downstream of the span bridges. Significant erosion has occurred downstream of one of the existing bridges, and will need to be repaired in order to avoid continued erosion. The mitigation plan includes the restoration of 2.49 acres of arroyo willow woodland as mitigation for impacts associated with the clean-out of Drainage 5. In addition, the plan proposes to enhance an additional 5.5 acres of southern arroyo willow woodland in Tonner Creek by removing the exotic plant species. This enhancement will occur in the areas where the least Bell's vireo was observed in 2001.

(4) Woodland Habitat

Approximately 88.8 acres of California walnut woodlands occur on the site, of which 38.5 acres are disturbed. Project implementation will affect 10.2 acres of California walnut woodlands/coastal sage scrub (of which 1.4 acres is disturbed), and 0.9 acre of California walnut woodlands/annual grasslands. Approximately 8.2 acres of mixed California walnut/ornamental woodlands will also be affected by project implementation.

The Chambers Group Conceptual Mitigation and Monitoring Plan for Biological Resources includes a Walnut and Oak Tree Protection, Revegetation and Riparian Enhancement Program (Mitigation Measure BR-2) to enhance the woodland habitat on the project site.

A summary of the impacts and proposed mitigation vegetation communities at the project site is included in Table 4.10-8.

Table 4.10-8 - Mitigation Acres for the Tonner Hills Project

Community	Total On-Site (acres)	Impacts (acres)	Preservation (acres)	Enhancement** (acres)	Revegetation (acres)	Total (acres)
Coastal Sage Scrub/Cactus Scrub	208.2	104.3*	103.9	*23.9*	123.8	227.7
California Walnut Woodland	77.0	19.3	57.7	*5.9*	0.0	57.7
Walnut/oak Woodlands	11.7	0.0	11.7	*0.0*	12.4	24.1
Coast Live Oak Woodland	3.5	0.0	3.5	*0.0*	0.0	3.5
Southern Arroyo Willow Woodland	12.3	0.1	12.2	*5.5*	2.49	14.69

* 31.1 acres of this total is comprised of disturbed coastal sage scrub.
** The areas that will be enhanced (shown in italics) are included in the total for the preserved areas.

d. Endangered, Threatened, or Proposed Plant Species

Focused sensitive plant surveys determined that no endangered, threatened, or proposed endangered plant species occur on the Tonner Hills site. Thus, the project will not have any impact on listed plant species.

e. Impacts to Sensitive Animal Species

Generally, development may potentially affect sensitive animal species in several ways. First, grading and earth-moving operations eliminate or substantially disturb vegetative communities utilized by these animals. Second, implementation of the Planned Community encourages urbanization and encroachment by people and domesticated animals. And third, new development covers large open areas previously used as forage for raptors and other predatory species. Animal species affected include Species of Special Concern and one species listed as threatened. It is the conclusion of Chambers Group, Inc. that development within the Planned Community will not impact sensitive animals significantly.

The loss of scrub vegetation will impact 7 of the 14 pairs of threatened California gnatcatchers found on-site. Pair 14 will be displaced into surrounding habitat area where they may not establish a new home range. While the remaining coastal sage scrub areas on the project site could potentially support this pair, for purposes of this evaluation, it is assumed that this pair is taken. Additionally, one pair located just off the project site near Neighborhood 8 will be impacted.

Impacts to southern cactus scrub will likely impact the coastal cactus wren, a "Species of Special Concern." Two reptile species that may occur on-site could be affected by the loss of grassland or scrub vegetation, the northern red-diamond rattlesnake and coast patch-nosed snake, both "Species of Special Concern" to the federal and state agencies. Development of the project site will restrict forage opportunities for the black-shoulder kite, northern harrier and Coopers hawk, all "Species of Special Concern."

Since the project is being completed in phases, the impacts to these species will be reduced to less than significant levels. As previously discussed, the birds will relocate themselves to adjacent open areas upon initiation of any disturbance to their habitat. If observed during the initial vegetation clearing, the red-diamond rattlesnake and coast patch-nosed snake could be trapped and relocated by the biological monitor to open areas. The restriction of foraging opportunities for the black-shoulder kite, northern harrier and Coopers hawk will have a less than significant impact due to the abundance of open space being set aside on the project site and the available open space immediately north of the project site.

The project has been specifically designed to protect and accommodate all sensitive animal species found on-site. Much of the open space being set aside will benefit the California gnatcatcher and the coastal cactus wren.

Chambers Group has developed a Conceptual Mitigation and Monitoring Plan for development of the site. The plan is based on all surveys completed by the Chambers Group. The Conceptual Mitigation and Monitoring Plan proposes to mitigate impacts to resources including coastal sage scrub habitat, coast live oak/California walnut woodlands, riparian habitat, and jurisdictional drainages associated with development of the Tonner Hills site. The Plan includes a mitigation section to compensate for the development of the residential community at the site.

Approximately 104.3 acres of coastal sage scrub communities would be affected as a result of the proposed development. The mitigation plan provides for the revegetation of 188.4 acres of coastal sage scrub and 12.4 (BR-4) acres of coast live oak/California walnut woodlands. The plan includes a phasing program to reduce temporal loss of coastal sage scrub habitat on the site by creating mixed coastal sage scrub prior to the initiation of grading activities in existing habitats associated with the development. The phasing aspect of the development of the project and implementation of the mitigation plan is very significant in reducing the impacts of this development to less than significant. Because the development is scheduled to occur in three phases, the animal species being impacted will have the opportunity to relocate themselves a short distance from their current location. The revegetation of the plant communities in phases will assist the animals in their relocation and ensure that animal density does not become too high.

f. Impacts to Wildlife Movement Corridors

As part of this project, Tonner Hills road will cross the wildlife corridor along Tonner Canyon at right angles in the northern part of the project. This is the only impact this project will have on this major wildlife corridor. Tonner Hills Planned Community proposes to combine two existing paved roads with culverts in Tonner Creek into one paved road that will span the creek with no structures within the creek itself. As a part of the installation of the span bridge over Tonner Creek, the riparian vegetation in the creek will be improved by removing non-native vegetation currently growing there and improving cover for wildlife

movement by revegetating the disturbed area with native riparian vegetation. Due to the design of the span bridges, and the revegetation and removal of non-native species from Tonner Creek, the road crossing the wildlife corridor is not considered a significant impact. The road was aligned intentionally to cross the corridor at right angles and then quickly rise up the hill from the valley floor in order to minimize any effect on the corridor. Construction of the Tonner Hills internal circulation road may introduce artificial light into the open space area. The standards for roadway and bridge lighting standards will be incorporated into the Area Plan. The roadway design will restrict lighting to safety-sensitive areas such as bridge spans and intersections. Mitigation measures to minimize light spillover will be implemented and reduce the impact of roadway lighting to less than significant.

Exhibit 4.10-9 shows the wildlife corridor at the extreme northern end of the project.

g. Impacts to Wetlands

Federally defined wetlands will not be affected by the proposed project. The following impact analysis refers only to CDFG jurisdiction streambed and riparian habitat because the acres of CDFG jurisdiction on the site exceeds and includes that under Corps jurisdiction. Therefore, mitigation for impacts to CDFG jurisdiction streambed and riparian habitat will more than adequately compensate for impacts to those areas under the joint jurisdiction of the Corps and CDFG.

The proposed project will result in impacts to 4.09 acres of streambed and riparian habitat (exclusive of 0.20 acres in Drainage 5). The impacts occur primarily in unvegetated, ephemeral drainages (1.01 acres). An ephemeral drainage is defined as one that carries water only during storm events. An additional 3.08 acres of riparian vegetation will be impacted, including 0.17 acre of giant reed *(Arundo donax)*, an aggressive noxious weed, located in Drainage 7.

Table 4.10-9 summarizes the effects of the proposed project to jurisdictional drainages.

The previously permitted Drainage 5 mitigation consisted of revegetation of 2.49 acres of willow/mulefat scrub along Tonner Creek. The revegetation plan for Drainage 3 (Cable Canyon) includes the removal of exotic non-native plant species and replanting of California walnut/coast live oak woodland. The final mitigation required for impacts to these drainages will be determined through consultation with the California Department of Fish and Game and the Army Corps of Engineers as described in Mitigation Measure BR-3, to ensure that project impacts are less than significant.

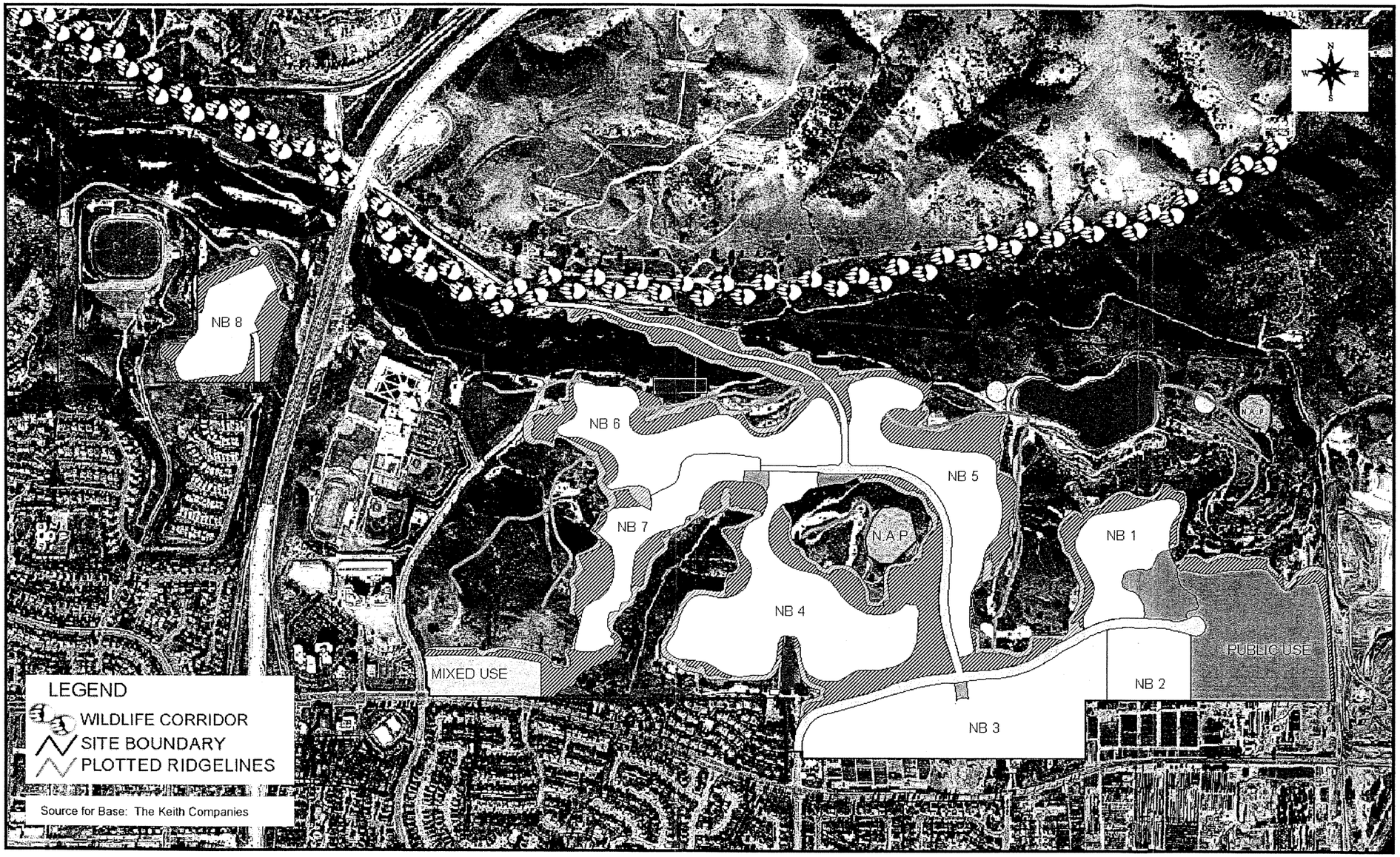

Exhibit 4.10-9
Wildlife Corridor

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Table 4.10-9 - Impacts of Project on CDFG Jurisdiction within the Tonner Hills Property (Acres)

Drainage	Total CDFG Jurisdiction On-Site (Acres)	Impacts to Riparian Habitat	Impacts to Unvegetated Channel	Total Impacts
Drainage 1	7.07	0.17	0.00	0.17
Drainage 2	0.55	0.00	0.25	0.25
Drainage 3	7.83	2.44	0.24	2.68
Drainage 4	0.17	0.00	0.04	0.04
Drainage 5	–	–	–	previously permitted
Drainage 6	0.16	0.00	0.00	0.00
Drainage 7	0.70	0.32*	0.19	0.51
Drainage 8	0.34	0.15	0.19	0.34
Drainage 9	0.07	0.00	0.06	0.06
Drainage 10	0.04	0.00	0.04	0.04
Total	16.93	3.08	1.01	4.09

4.10.4 Mitigation Measures

BR-1 Prior to the issuance of any grading, clearing, or other landform modification permit, the developer shall submit evidence to the Director or designee, Development Services Department, that appropriate federal, state, and county permits have been obtained for the biological resources on-site to be removed by development. Said permits shall specify the timing, nature, and review authority for the mitigation measures, if any, that are required in connection with these removals. No removals shall be authorized until all necessary resource agency permits have been obtained.

BR-2 Prior to the issuance of a grading permit, walnut trees within drainage channels shall be identified on the grading plan and retained to the greatest extent feasible. Said grading shall be subject to review and approval by the Manager, Current Planning Services.

BR-3 Prior to the issuance of a grading permit, the property owner/developer shall obtain a §1603 Streambed Alteration Agreement, if required by the *California Fish and Game Code*; and a permit under the guidelines of §404(b)(1) of the Clean Water Act, if required by the U.S. Army Corps of Engineers. Mitigation is intended to adhere to the "no net loss" policies of the CDFG and the U.S. Army Corps of Engineers. If a §404 Permit from the ACOE is required, a §401 Water Quality Certification will also be required from the California Regional Water Quality Control Board, Santa Ana Region. Evidence shall be provided to the Manager, Subdivision and Grading.

BR-4 Prior to initiation of grading, and upon approval from the Manager, Environmental Planning services, the property owner/developer shall implement the Tonner Hills Habitat Mitigation and Monitoring Program (which is included in the Technical Appendices). The Program incorporates measures to:

- Preserve and protect walnut and oak woodlands outside the project footprint.
- Preserve and protect coastal sage scrub habitat outside the project footprint.
- Preserve and protect riparian habitat outside the project footprint.
- Create additional coastal sage scrub habitat prior to and during project implementation.
- Create additional walnut-coast live oak woodland habitat.
- Enhance preserved habitat in Cable Canyon.

The mitigation plan provides for a phased-in creation of riparian, coastal sage scrub, and walnut-oak woodland habitat on-site. The Mitigation Monitoring Plan calls for a phased revegetation program and five years of maintenance. A summary of the plan elements is provided in the table below, and Exhibit 4.10-10 depicts the revegetation phasing plan.

Table 4.10-10 - Construction and Revegetation Phasing Areas and Activities

Construction Phase	Construction Areas and Activities	Revegetation Areas and Activities
Pre-construction	None	• Exotic tree removal and preplanting weed control in Revegetation Areas A and B
Phase 1	• Grade Neighborhoods 1, 2 and 3 • Grade public use areas	• Salvage and transplant coastal sage scrub to Revegetation Areas A and B • Complete restoration planting in Revegetation Areas A and B • Exotic tree removal and preplanting weed control in remaining coastal sage scrub revegetation areas
Phase 2	• Grade Neighborhoods 4, 5 and 7 • Grade commercial area • Grade and complete Tonner Hills Road	• Salvage and transplant coastal sage scrub to Revegetation Area C • Complete planting and seeding in Revegetation Area C • Walnut enhancement in Cable Canyon • Oak/walnut revegetation along Tonner Hills Road
Phase 3	• Grade Neighborhoods 6 and 8 • Build commercial area	• Salvage and transplant coastal sage scrub to previously planted coastal sage scrub revegetation areas where necessary • Complete exotics removal along Tonner Creek • Initiate and complete riparian enhancement along Tonner Creek (contingent upon bridge replacement)

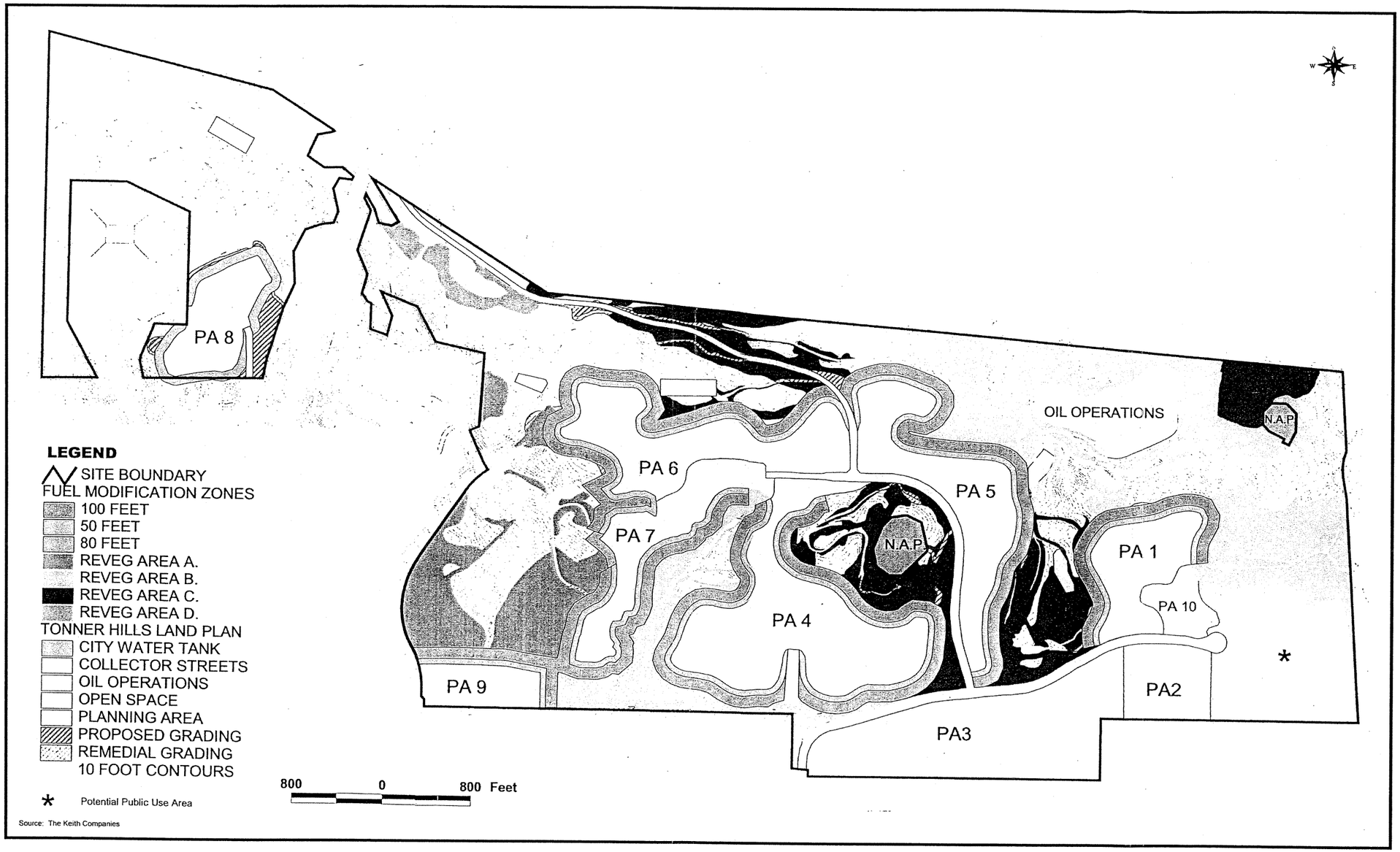

Exhibit 4.10-10
Revegetation Phasing Plan

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Additional features of this mitigation measure (implementation of the mitigation plan) include:

- A Resource Preservation Easement will be placed over the preserved portions of riparian habitat associated with Tonner Creek to preserve the habitat in perpetuity subject to approval of the Manager, PFRD/HBP Program Management & Coordination, consistent with County of Orange Standard Conditions of Approval Manual conditions for resource preservation easement dedications.

- Removal of non-native species will occur outside the nesting season (approximately August 30 to March 1). By avoiding the removal of non-native species from the riparian habitats in the breeding season, there will be no impacts to nesting bird species, and this will avoid violation of the Migratory Bird Treaty Act. This would also allow the salvaging/collection of native materials from the development site such as willow and mule fat cuttings.

- Any crushing of existing habitat during the breeding season of the gnatcatcher (February 15 through August 15) will be under the supervision of the biological monitor. The biological monitor will be empowered to restrict such activities to minimize the harm and harassment of breeding gnatcatchers or fledglings. During this time, the biological monitor will provide USFWS with weekly summaries, via facsimile transmission, of all gnatcatcher monitoring activities.

- Preserved and/or protected areas will be identified by the project biologist and isolated with construction fencing or similar materials prior to any clearing or grading activities. Protected areas include existing woodland and coastal sage scrub adjacent to revegetation areas and individual trees and patches of native habitat to be preserved within revegetation areas.

- Vehicles will not be allowed to operate within the drip line of any preserved trees.

- Erosion control measures, including silt fencing, will be installed at the discretion of the project biologist to contain sediments within graded or restoration areas. Silt fencing will be semi-permanently installed at the boundary between upland revegetation areas and existing riparian habitat until vegetation is sufficiently established in the revegetation zone to prevent erosion. Maintenance of the erosion control measures is included as part of the maintenance program.

- Construction equipment will be restricted to designated areas and roads approved by the project biologist. Only low dispersal weight vehicles (less than 20 pounds per square inch (psi) will be operated within the riparian areas. Crossing of Tonner Creek will not be permitted except where designated by the project biologist. Crossing will be limited to the minimum necessary to facilitate enhancement activities within the riparian zone.

- Maintenance and refueling of construction equipment will be limited to areas specified by the project biologist. Storage of potentially hazardous materials, including but not limited to fuel, paint, stains, pesticides, herbicides, solvents, oils, and solvents will not be permitted

within 50 feet of any riparian zone. During construction, disposal of such materials will occur in a controlled area that is physically separated from potential storm water runoff.

- A biological monitor will be present at all preconstruction and pregrading meetings and will be on-site during all vegetation clearing and subsequent removal. A monitor also will be on-site periodically during the grading. The biological monitor will be an individual familiar with the biology and ecology of southern California, especially sensitive breeding birds.

- Fencing will be placed along the back of lots and roads that are located adjacent to natural areas. The fencing will be designed to reduce encroachment of humans into the preserved areas.

- Lighting in the residential areas and along roadways will be designed to prevent artificial lighting from reflecting into adjacent natural areas. Specific lighting design/standards will be required in the development plans to achieve this result and shall be incorporated into the design standards in the Area Plan. The CC&Rs for the development will also require any subsequently installed and maintained lighting to meet this same standard. Additional lighting along roadways in the wildlife areas – in particular, Tonner Hills Road – shall use low wattage lighting that includes shielding to prevent light spillage into the wildlife corridor. Lighting along the bridge crossing Tonner Creek shall be designed such that roadway safety is achieved while avoiding glare and light spillover into the creek. The bridge lighting may include bollards or other in-structure fixtures.

- Owners manuals for the residences will provide a discussion of the impacts of domestic animals on sensitive species and the impacts of wildlife on domestic animals. Residents will be reminded that the development is adjacent to natural open space. Encounters with wildlife will be highly probable.

- Annual surveys will be conducted to document the use of the preserved and revegetated habitats by wildlife species. These surveys will be conducted by biologists who are familiar with the wildlife species typically found in coastal sage scrub and willow riparian woodland. The results of the surveys will be included in the annual monitoring and maintenance report submitted to the USFWS according to the requirements of the fish and wildlife permit.

- During the five-year maintenance and monitoring period for the revegetation of the various phases, focused surveys will be conducted to document the number of pairs of California gnatcatchers on the site. Any cactus wrens observed during these surveys will also be documented. These surveys will be conducted by qualified biologists who are permitted to conduct gnatcatchers surveys according to the USFWS protocol. The results of the surveys will be included in the annual monitoring report and will be submitted to the USFWS according to the requirements of the biologists' federal fish and wildlife permit.

4.10.5 Cumulative Impacts

Implementation of all of the avoidance, minimization, and off-setting measures that are included as part of the project design will result in a beneficial impact for the California gnatcatcher and the least Bell's vireo. Table 4.10-8 lists the acres of existing, impacted, preserved, enhanced, and revegetated coastal sage scrub and willow woodland for the Tonner Hills project.

Completion of the project will result in a net increase of 19.5 acres of coastal sage scrub over what currently exists on the site, and it will create large, contiguous blocks of suitable habitat for the California gnatcatcher. In addition, approximately 23.9 acres of disturbed coastal sage scrub will be enhanced to be more suitable for California gnatcatchers. The site will ultimately have the potential to support a larger number of breeding pairs of California gnatcatchers than currently occupy the site.

At project completion, there will be a net increase of 2.49 acres of southern arroyo willow woodland over what currently exists. In addition, 5.5 acres of the existing willow habitat will be enhanced to be more suitable for the breeding activities of the least Bell's vireo.

4.10.6 Unavoidable Adverse Impacts

Through the implementation of recommended mitigation measures, nearly all significant adverse impacts have been avoided. Implementation of the Tonner Hills project may result in a "may affect" on the coastal California gnatcatcher due to the temporal loss of 19.5 acres of coastal sage scrub (previously designated Critical Habitat) and the take of one pair of gnatcatchers due to being displaced prior to the revegetation program. The project will also harass eight pairs of gnatcatchers through displacement to other habitat areas. The revegetation program will create coastal sage scrub prior to the harassment of these eight pairs; thus, there will be no temporal loss of habitat for these pairs.

Through the Section 7 consultation process with U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service, the developer will be asking for a finding of "No Jeopardy" in the biological opinion. The "No Jeopardy" finding will allow for incidental take and specify how many pairs of gnatcatchers are allowed to be taken. The Habitat Mitigation and Monitoring Plan will create more coastal sage scrub habitat than is impacted. Over time, the current native population of gnatcatchers will reproduce and the offspring will move into the newly created coastal sage scrub, thus perpetuating the population numbers on the project site. This plan is further illustrated by reviewing the various gnatcatcher surveys done on the project site over the past few years. A California gnatcatcher survey done on the site in May 1997 found three birds on the site. In 2001 Chambers Group, Inc. found 14 pairs of birds on the site, along with the presence of juveniles during the latter part of the breeding season. These findings indicate that California gnatcatchers are actively breeding on the site. As their habitat expands with the revegetation, it is expected that their numbers will continue to expand.

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4.11 Aesthetics

The purpose of this section is to identify the existing aesthetics (visual quality) environment in the project vicinity, analyze potential significant impacts created by the project, and recommend mitigation measures to reduce the significance of such impacts. Information in this section is based on visual simulations prepared by Focus 360 and site visits conducted by Culbertson, Adams & Associates, Inc.

4.11.1 Existing Conditions

a. Existing Visual Characteristics

The project is located in northern Orange County, adjacent to the Puente-Chino Hills range in southern California. Over the past several decades, urbanizing in the greater Los Angeles basin has extended through much of Orange County, including the City of Brea. Much of incorporated Brea is developed with a mix of residential, commercial, and industrial land uses at a suburban scale.

The project site is located to the north of the existing incorporated city boundary and serves as a visual edge with its rolling hills and varying topography. Beyond the site to the north are Tonner Creek and natural hillsides of the Puente-Chino Hills range that continue over the Los Angeles County border. These hills and ridges beyond the site extend to greater elevations than the ridges on the project site and serve as the visual backdrop for this northerly portion of Orange County. To the northeast are the Olinda Alpha Landfill which are visible from areas in Brea and other communities in portions of north Orange County. Portions of the landfills are visible from the project site. The project site is not visible from any designated scenic highways. Carbon Canyon Road is the nearest viewscape corridor as designated by the County of Orange Scenic Highways Master Plan.

The Tonner Hills Planned Community is characterized by terrain that slopes upward from Lambert Road generally in a northerly direction, first gently and then more steeply toward the north. Elevations range from approximately 460 feet above mean sea level (msl) at Lambert Road to over 700 feet above msl in the western portion of the property and approximately 800 feet above msl in the northeasterly portion of the property. The site steeply slopes downward on the most northern portion of the property to Tonner Creek which is at approximately 460 feet above mean sea level. The site is well defined by rolling hills and ridgelines generally running east to west with some ridgeline and knoll features branching off to the south, and small but steeply sloping canyons and intermittent drainage courses. Exhibit 4.1-8 in Section 4.1, Land Use and Planning, shows the approximate locations of existing site ridgelines. Portions of the existing ridgelines have been impacted by industrial activities such as the old gas plant and existing gas plant (see Exhibit 4.1-9 in Section 4.1, Land Use and Planning). In addition, the ridgeline network has been impacted by the construction of two City reservoirs surrounded by the project site and the development of the existing Brea Olinda High School. The site is also bisected by the Orange (SR 57) Freeway. Portions of the site have slopes in excess of 30%. Overhead utility lines servicing the oil field traverse the site in many directions. Views of existing on-site conditions are also provided in Exhibits 3-6 and 3-7 in Section 3, Project Description, of this EIR.

The Planned Community area has been the site of extensive oil recovery operations since the late 1800s. Approximately 210 oil wells (including 14 water injection wells) and associated pumps are currently in production on the property, with approximately 82 idle wells and 87 previously abandoned wells. Tanks and pipelines are scattered throughout the site. An existing gas plant is located in the northeasterly area of the property at an elevation of approximately 765 feet above mean sea level. Other existing facilities include core sample storage buildings located in a central small canyon on the property and an Edison substation located along the southerly property line. Remediation efforts have been completed for the Old Gas Plant site, and remediation is underway for removal of the former cold batch asphalt plant, gun club range, Drainage 5 and Sump 36B. A large network of existing paved and upaved service roads on the site are used to service the oil and gas operations. As a result of ongoing oil recovery operations, large portions of the site have been extensively disturbed, paved and graded. Views from off-site properties onto the Planned Community site are primarily of oil production activities and mature vegetation.

Other existing facilities within the project boundaries, but not a part of the project, include two 10-million gallon steel reservoirs, the East Side Reservoir and the Valencia Reservoir. These reservoirs are owned and operated by the City of Brea. A third reservoir, Brea Reservoir, located west of the Orange (SR 57) Freeway is operated by the Metropolitan Water District of Southern California.

Because of the extensive geographic area covered by the proposed project site, areas of the site are visible from many different locations throughout the City of Brea and regional area. An area of the landscape that is visible from a particular location or series of points is defined as a viewshed. To identify the importance of views of a resource, a viewshed may be broken down into distance zones of foreground, middle ground, and background. Representative photographs are included to illustrate some of a range of typical views of the site. Exhibit 4.11-1 illustrates the locations from where the viewsheds were photographed. Each of the thirteen views photographed are itemized and described below. Thirteen photographs of existing conditions are matched with visual simulations of the proposed project conditions in the "Project Impacts" section in order to provide for a side-by-side comparison.

The project area is currently used for oil production activities. Existing light sources include those for the gas plant facility, as well as incidental lighting throughout the site for oil recovery and storage areas. Street lighting is provided along Valencia Avenue, Lambert Road and Wild Cat Way.

Surrounding the project site to the north is an undeveloped area which is designated for Suburban Residential (1B) uses by the County of Orange General Plan. To the east lies the Olinda Alpha landfill and the under-construction Olinda Ranch residential development. Southeast of the project site lies plant nurseries. Townhomes and single-family homes are located directly south of the property which produce minimal to moderate amounts of light and glare. Located to the west are an existing high school and office/commercial complex which produce fairly intensive light levels.

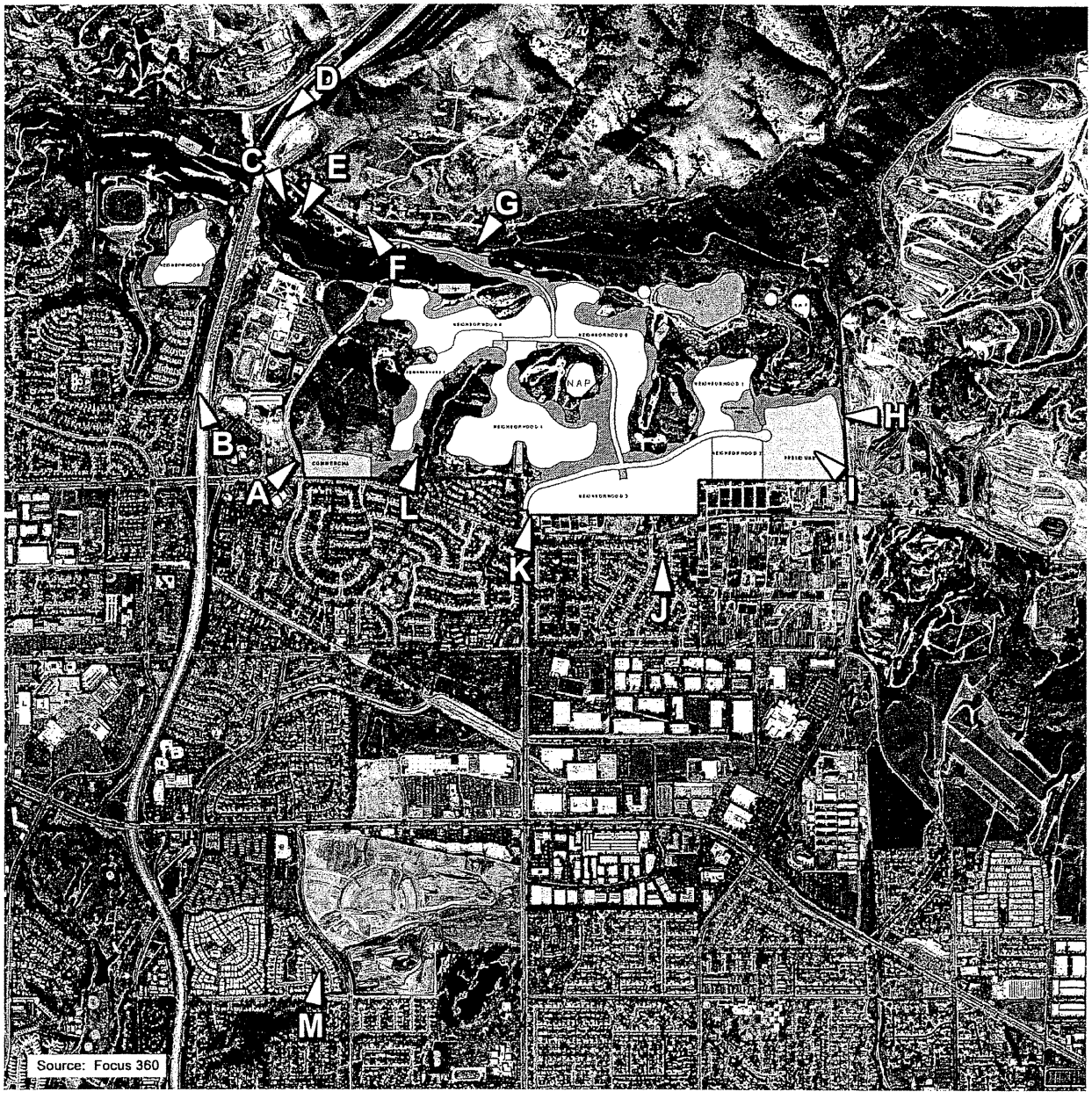

Exhibit 4.11-1
View Key Map

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b. Regulatory Setting

(1) County of Orange General Plan

The County of Orange General Plan Resources Element (Natural Resources Component) discusses the diverse combination of mountains, hills, flatlands and shorelines within the County with "major landforms, few in number, must be considered natural as well as aesthetic resources." The Natural Resources Component identifies the County's topographic resources and describes existing efforts to preserve these resources. Landforms in the project area are not specifically discussed within the Resources Element. The Scenic Highways Component of the Transportation Element also provides preservation measures to assure scenic views; however, the project is not located adjacent to any designated Scenic Highway.

Goal 3 contained within the Natural Resources Component is to "manage wisely the County's landform resources." Objective 3.1 states "to minimize to the extent feasible the disruption of significant natural landforms in Orange County. Policy 5 of the Natural Resource Component states "to protect the unique variety of significant landforms in Orange County through environmental review procedures and community and corridor planning activities." The General Plan does not provide specific guidance with regard to aesthetics or design in the project area.

Although no formal landform management program exists, the County's Grading Ordinance strictly regulates hillside grading with regard to soil stability. Cut and fill slopes are generally limited to a ratio of two horizontal to one vertical. The Ordinance also provides for erosion control measures at the time of development.

(2) City of Brea Hillside Management Ordinance

Although the project is located in the jurisdiction of the County of Orange, Section 4.1, Land Use and Planning, provides for project consistency analysis with the City of Brea General Plan and Hillside Management Ordinance. Discussion of the guidelines set forth in the advisory Vision documents is also provided. In this aesthetics analysis, a more detailed analysis will be provided for project consistency with the Hillside Management Ordinance with regard to provisions relating to visual quality.

The City of Brea hillside management regulations of the zoning ordinance is intended to further define and implement the goals and objectives of the General Plan and advisory Vision documents, primarily to preserve the natural terrain, quality of the environment, and rural aesthetic character of the City of Brea. The Hillside Management Ordinance is also intended to minimize the negative effects of grading and provide for the health, safety, and welfare of the citizens of the city while providing for the development of hillside areas. Some of the relevant goals, objectives, and policies include:

- Encourage sensitive development in the hillside areas through flexible design and innovative arrangement of building sites by utilizing flexible lot sizes, clustering, and setback variations.

- Encourage developments which use desirable existing features of land such as natural vegetation, viewsheds, geologic and archaeologic features.

- Provide for appropriate intensity (i.e., density, massing) of development on hillside properties through a variety of design techniques such as ensuring that development intensity decreases as the slope percentage increases (i.e., becomes steeper); that lot sizes are appropriate for the steeper topography; and that the separation of structures is sufficient to preserve the viewshed.

The Hillside Management Ordinance also provides development standards that help preserve aesthetic character. Detailed standards and guidelines are provided within the ordinance, and the relevant standards used in the project impact analysis are provided under "Project Impacts."

4.11.2 Thresholds of Significance

For the purposes of this EIR, the thresholds of significance for evaluating project impacts are based upon suggested criteria from the County of Orange Environmental Checklist and the CEQA Environmental Checklist found within Appendix G of the CEQA Guidelines. The project would result in a significant impact if it would:

- Affect a scenic vista or view open to the public;
- Affect a designated scenic highway;
- Substantially degrade the existing visual character or quality of site and its surroundings; or
- Create light or glare beyond the physical limits of the project site.

4.11.3 Project Impacts Prior to Mitigation

This section presents a discussion of the potential aesthetic impacts associated with the development of the proposed planned community. The impact analysis is based on qualitative assessments and computer generated photosimulations prepared for the project elements. Mitigation measures are provided where appropriate.

The project proposes development of 914 residential dwelling units, a mixed use center, open space and a public use area (assumed to be sports fields), as well as retention and upgrading of certain existing oil recovery and storage facilities. Implementation of the proposed project will change the aesthetic character of the area by permanently altering portions of the site through landform modification and building, as analyzed in this section. The project design has taken into consideration existing topography to nestle housing development within existing landforms which minimizes grading and impacts to viewsheds. The project applicant evaluated all ridgelines, open space wildlife corridors and existing oil operations to design a project that minimizes impacts to views of ridgelines and the perceived undeveloped nature of the site. The project design uses existing service roadways on the site and places development primarily on already disturbed areas (see Exhibit 4.1-2 on page 4.1-5, which shows existing oil operations facilities on the site and Exhibit 4.1-9, which identifies existing ridgeline impacts).

The proposed Area Plan for the project provides a description of the development plan components such as residential, mixed use, parks, pedestrian circulation, bicycle trails, open space and Tonner Ridge Trail. A conceptual grading plan is illustrated within the Area Plan and included herein as Exhibit 4.11-2 (Concept Grading Plan). The Area Plan also provides design guidelines addressing site planning and principles, the landscape design concept, parks, community public trails, oil fields operation screening, and walls and fences. The design guidelines stress respecting the natural topography and using primarily already disturbed areas from many years of oil operations. The Area Plan identifies development techniques such as the use of contour grading, varying building pad areas, blending retaining walls and reducing the visibility of drainage devices. Section 6.1.3 of the Area Plan describes important neighborhood design elements which include use of curvilinear streets, varying front yard setbacks, consideration of view and solar orientation, and varying lot sizes and configurations.

Section 6.2, Landscape Design Concept, of the Area Plan states the intention is to create a distinctive and diverse environment and to integrate the built environment with the natural features of the land. The Landscape Design Concept includes enhancement and restoration of native vegetation communities in a large portion of the open space areas. The Area Plan provides a Master Landscape Plan as well as schematic drawings for project streetscapes, entries, intersections and Wildcatters Park. A Conceptual Master Fence/Wall Plan shows fences and walls which will provide privacy and security, shape public spaces, and help define the character of the community.

a. Methodology

The potential visual impacts associated with the proposed project are evaluated through a comparison of the anticipated project effects with the existing baseline conditions. Computer-generated photo simulations have been prepared to accurately and realistically portray the visual impacts of the proposed project. The methodology in developing the computer-generated simulations is further detailed below:

(1) Field Work

A Fuji G617 Panoramic camera was used to photograph the project site from a number of significant viewpoints. This camera and lens combination replicates as closely as possible what a viewer will see if standing at a specific location. The photographs were taken at approximately 6 feet off the ground and leveled using an on-camera bubble level. The specific height and location of each photograph was recorded with a survey-quality Global Positioning System (GPS). In addition, significant site features were also surveyed for future accuracy verification.

(2) Data Creation

Photographic proof prints (16 inches wide) were made and scanned at a resolution of 300 dpi. The existing terrain and proposed grading were three-dimensionally modeled in the computer based on the project data supplied by The Keith Companies. Generic structures were placed on the site to represent general massing without specific architectural design.

(3) Model Alignment/Imaging

The computer model was then aligned to the photographs in the rendering software utilizing the GPS alignment data and the lens and focal length of the camera. Further alignment verification and fine-tuning were done by viewing the modeled information with the photograph in the background of the software window. The model was lighted according to the time of day and year and the views rendered.

The final stage involves superimposing the rendered image into the photograph and adding landscape (assuming three to five years of growth) and lifestyle elements where applicable. Additionally, all existing, off-site foreground elements are selected and placed to screen the model as appropriate.

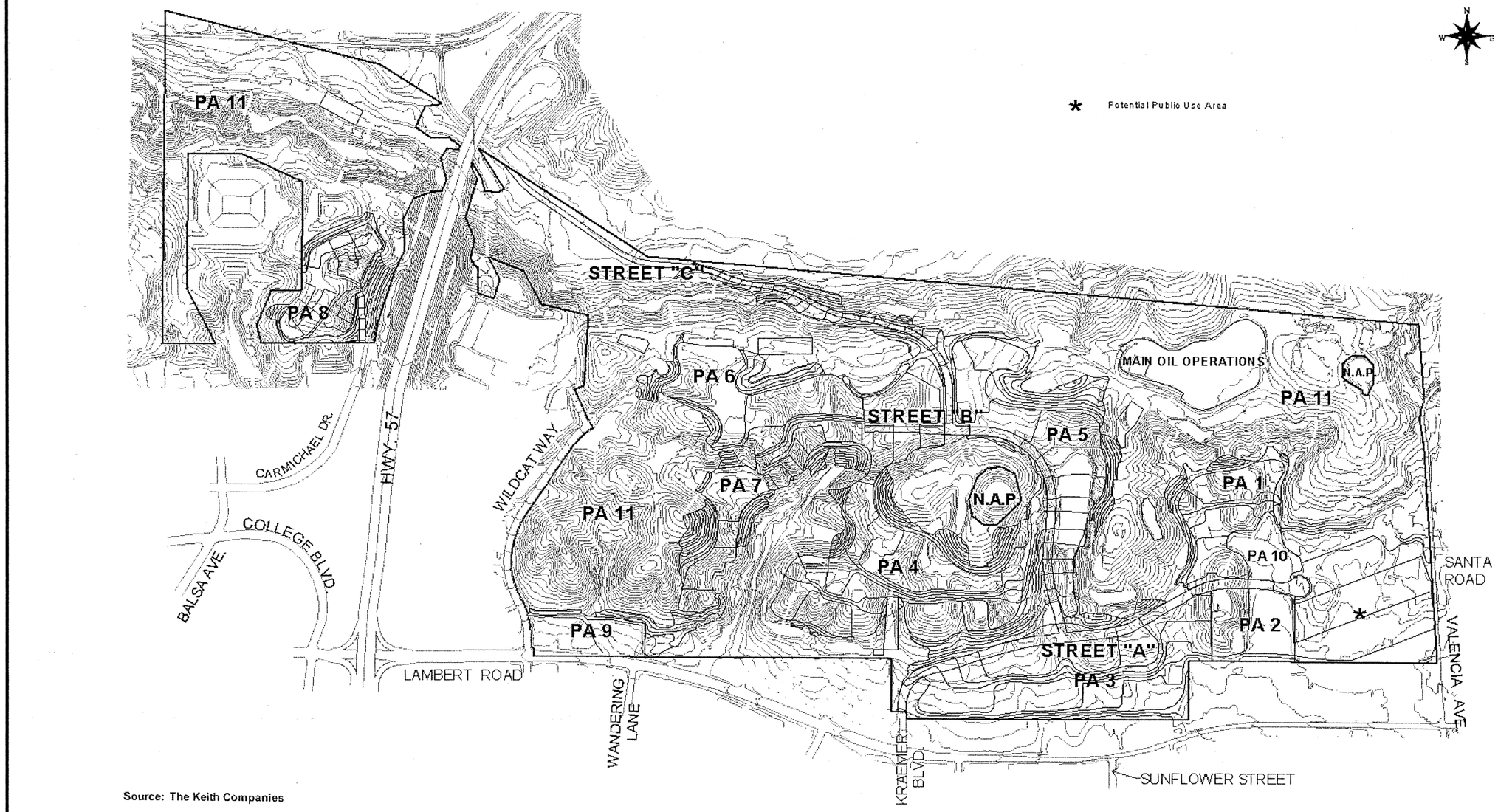
b. Short-Term Impacts

Implementation of the project is planned to be constructed in three phases. All grading operations are planned to be completed within approximately three to five years. From project commencement to occupancy, the project is planned to take approximately ten years to complete. Exposed grading surfaces, construction debris, the presence of construction equipment, truck traffic, and stockpiled materials may adversely impact views of the site. Dirt would be stockpiled and equipment for grading activities would be stored at various locations on the site. The project proponent is required to coordinate these locations with the grading contractor and County of Orange Subdivision and Grading Services during the various construction phases of the project.

Construction areas will be visible from surrounding land uses including construction vehicles, areas cleared of vegetation and graded areas. However, due to the short-term nature of construction and required coordination with the County of Orange, potential construction-related impacts are not anticipated to be significant.

c. Long-Term Impacts

Long-term aesthetic impacts are those associated with the project upon completion of all project construction phases. This construction will permanently alter some views of the site as discussed below. To help evaluate view impacts, current technology has been used to create existing and proposed condition visual simulations. Thirteen views of the site were selected which represent appearance of the project generally available from public view areas. Exhibit 4.11-1 on page 4.11-3 provides a key map identifying the location of the 13 view simulations. Exhibits 4.11-3 through 4.11-15 provide the view simulations for the project which are discussed in alphabetical order below.



Source: The Keith Companies

Exhibit 4.11-2
Concept Grading Plan

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View A - View of Mixed Use Site from Lambert Road

This viewshed is shown in Exhibit 4.11-3 and was taken near the intersection of Lambert Road and Wildcat Way, facing the southwest portion of the project site. The existing view includes natural hillsides, ridgelines, and lowlands north of Lambert Road. Directly west of this area is Olen Pointe commercial center (a small portion of which is shown) which includes offices and restaurant uses. This intersection accommodates a high level of commuter traffic along Lambert Road.

Motorists, pedestrians and bicyclists using Lambert Road view the site from its periphery. Foreground views of the site from Lambert Road, Olen Point, and residences south of Lambert with the project will focus on the proposed mixed use center. Pursuant to the proposed Planned Community regulations, the mixed use designation will provide the opportunity for conventional retail uses as well as for residential, business/professional, public administration/governmental offices, commercial recreation and community facilities. For the purposes of preparing visual simulations for this portion of the project, a commercial center totaling 77,000 square feet has been assumed. The building shown, including architectural projections, is depicted at 35 feet in height. The building pad is proposed to rise approximately 10 feet above the elevation of Lambert Road (similar to the adjacent Olen Point project). The modeled landscaping concept uses trees, shrubs and groundcover materials used in the surrounding areas. The maturity of the landscaping is shown at approximately three to five years of growth.

With the proposed project, 7.7 acres at the northeast corner of Lambert Road and Wild Cat Way will be converted from a vacant condition to a mixed use center. However, as seen in Exhibit 4.11-3, views of the surrounding natural hillsides and ridges will remain. In addition, the area just north of the proposed center along the east side of Wild Cat Way which is designated Suburban Residential by the County of Orange General Plan and Office/Commercial by the City of Brea General Plan and will remain undeveloped. The proposed project will not impact a scenic vista or designated scenic highway, or substantially degrade the existing visual character or quality of the site. In addition, with implementation of Mitigation Measure AE-6, all direct rays from exterior lighting are required to be confined to the project site.

Sections IV and V of the proposed Planned Community document provide regulations and development standards for the mixed use site. These sections set forth the permissible uses and requirements such as setbacks, building height, landscaping and screening. Although View A shows a view of the project open to the public, with the retention of the natural hillsides and ridges and adherence to the proposed development standards, potential project impacts related to aesthetics at View A will be reduced to a less than significant level.

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View B - View of Neighborhood 8 from SR 57

This viewshed is shown in Exhibit 4.11-4 and was taken from the northbound on-ramp at Lambert Road onto the Orange (SR 57) Freeway, facing the western portion of the site. The existing view includes residential development with associated landscaping to the west of the freeway with a plateau area and ridgeline farther to the north on the subject property. The freeway accommodates a very high level of commuter traffic along the SR 57 corridor.

Motorists using the Orange (SR 57) Freeway will view the site from its periphery. A maximum of 40 residential units are planned for Neighborhood 8. The proposed residential development is assumed to be two-stories in height and will be placed on lot sizes which are a minimum of 8,000 square feet in size. Landscaping is modeled to show approximately three to five years of growth.

The proposed residential building pads will be located on pads ranging from 640 to 670 mean sea level. The existing freeway in this area ranges from approximately 533 to 537 feet mean sea level. Because the proposed residences will be located on a plateau area, the visual simulations of the proposed project condition show limited visibility of the proposed residential development. The designated prominent ridgeline to the north of the residential neighborhood will remain unchanged. Approximately 300 feet will be provided between the project boundary and the single family residences to the south. With this distance and changes in elevation (approximately 50 feet), adequate buffering between the existing and proposed residences will be provided. Direct views of the project from residences located to the south of Neighborhood 8 are minimized due to the elevated topography.

Sections II and III of the proposed Planned Community document provide regulations and development standards for the project residential uses. These sections set forth the permissible uses and residential densities, as well as requirements such as setbacks, building height and site coverage, landscaping and screening. The proposed project will not impact a scenic vista or designated scenic highway, or substantially degrade the existing visual character or quality of the site. In addition, with implementation of Mitigation Measure AE-6, all direct rays from exterior lighting are required to be confined to the project site.

Although View B shows a view of the project open to the public, due to the limited visibility of the proposed residences within Neighborhood 8, retention of the existing ridgeline, and adherence to the proposed development regulations, aesthetic impacts related to this area of the project will be less than significant.

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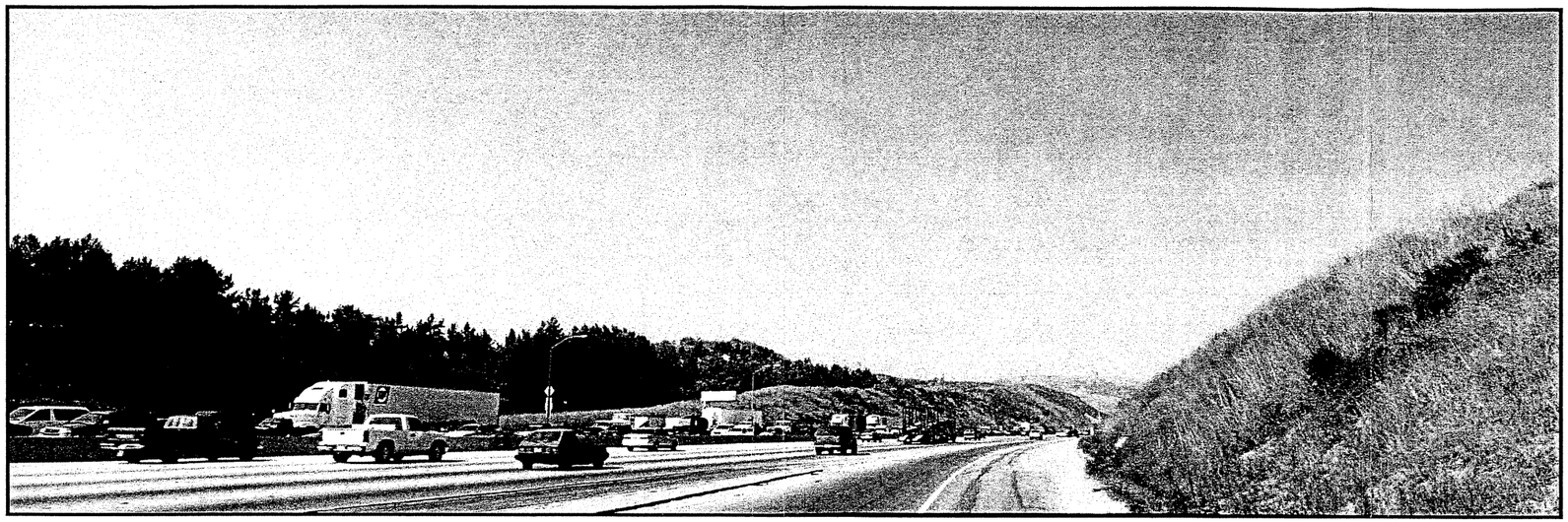
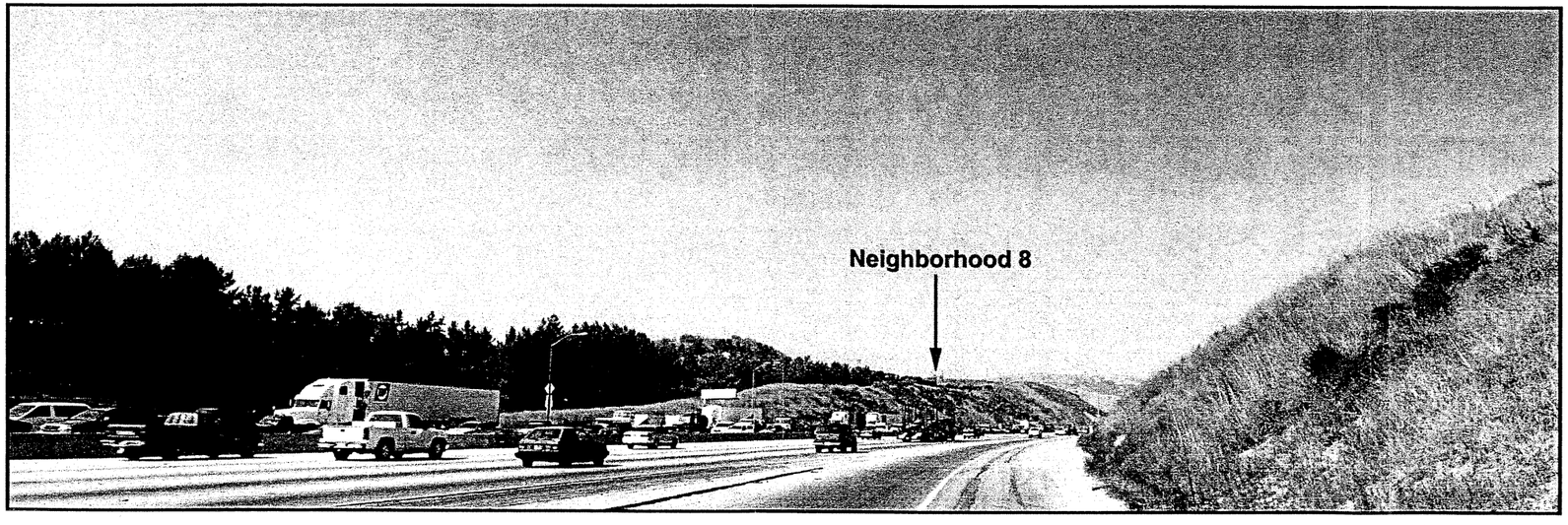


Existing Condition



Proposed Development

FOCUS360

Exhibit 4.11-4

View B - View of Neighborhood 8

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View C - View from Southbound SR 57

This viewshed is shown in Exhibit 4.11-5 and was taken from the Tonner Canyon Road southbound off-ramp looking generally southeast. This view captures Tonner Creek and the northern side of the project site ridges and hillsides located east of the Orange (SR 57) Freeway. The Orange Freeway bridge crossing Tonner Creek is shown along the western portion of the view. Foreground features such as overhead utility lines and pavement are visible. Although this off-ramp is not heavily used at this time, motorists on the Orange Freeway will view more elevated site features such as the hillsides and ridges.

With the proposed development, this view will include the northerly starting point of Tonner Hills Drive (the private drive serving the project from Tonner Hills Road). A conceptual parkway and intersection treatment is provided for illustrative purposes.

Although View C shows a view of the project open to public view, no changes to the ridgeline are proposed, and no residential development is visible for this viewshed. Very few changes are anticipated for this view under the proposed project condition. The proposed project will not impact a scenic vista or designated scenic highway, or substantially degrade the existing visual character or quality of the site. In addition, with implementation of Mitigation Measure AE-6, all direct rays from exterior lighting are required to be confined to the project site. No significant aesthetic impacts are raised.

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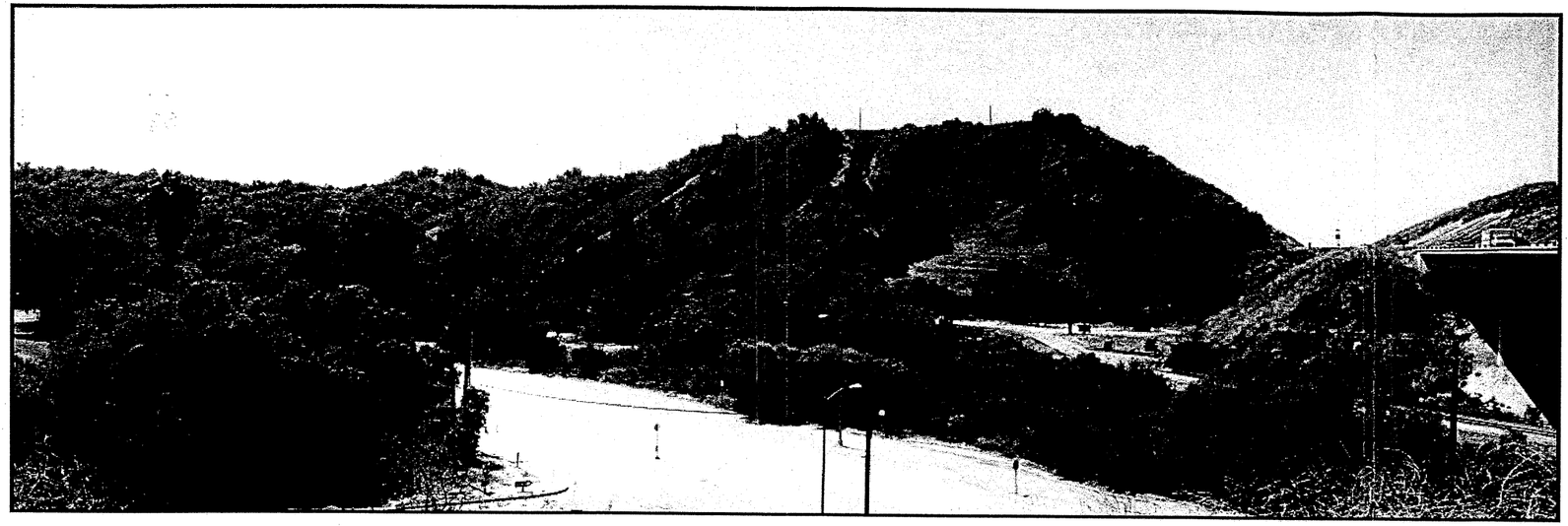

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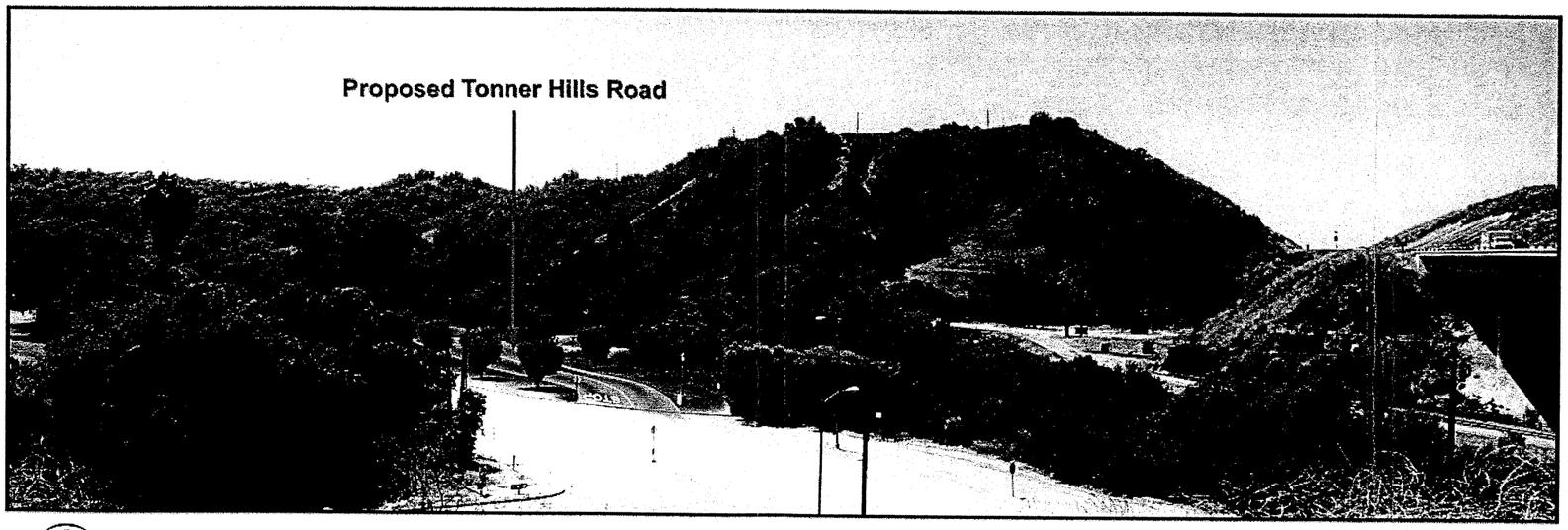

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Proposed Development

Exhibit 4.11-5
View C - View from Southbound SR 57

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View D - View of Tonner Canyon from SR 57

This viewshed is shown in Exhibit 4.11-6 and was taken from the southbound shoulder of the Orange (SR 57) Freeway. The view captures hillsides and ridges both east and west of the Orange Freeway and some of Tonner Creek west of the freeway. This view shows the on-site service roads along the north-facing slopes for existing oil operations on the portion of the project site west of the freeway. The freeway accommodates a very high level of commuter traffic along the freeway corridor.

For the proposed project condition, no changes will occur for this viewshed. Project ridgelines to the west and east of the freeway will remain unchanged. For the many freeway motorists viewing the project along this corridor, no changes in visual resources will be observed. No significant aesthetic impacts will result from the project for this viewshed.

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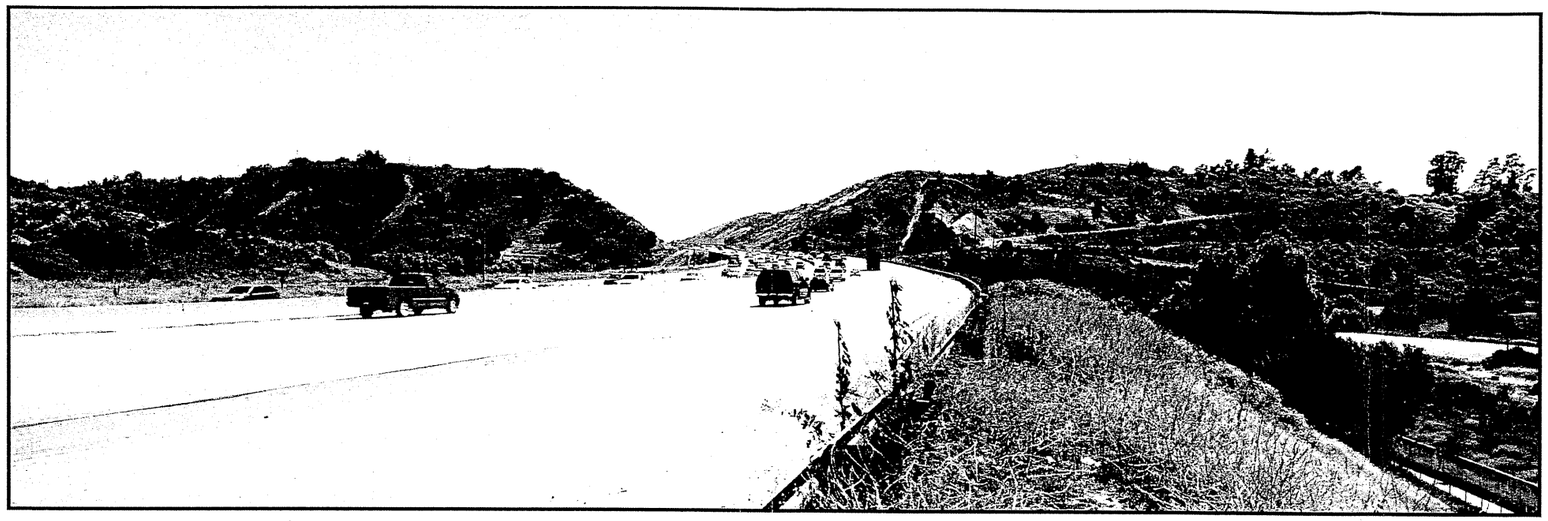

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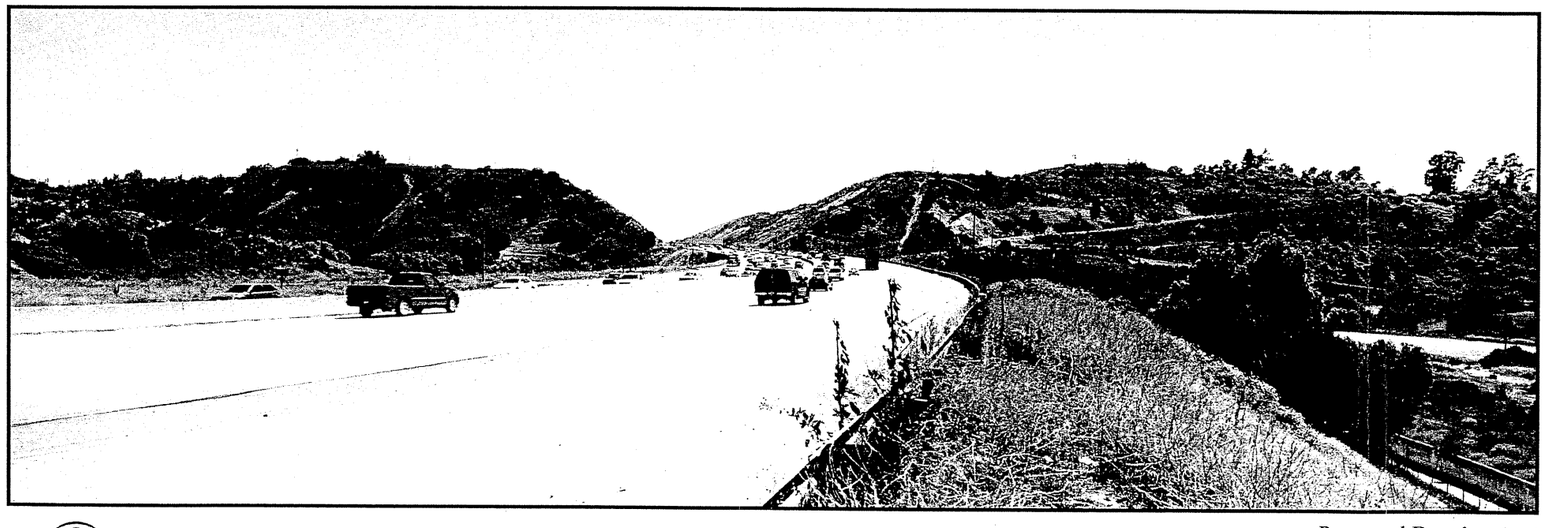

FOCUS360

Proposed Development

Exhibit 4.11-6

View D - View of Tonner Canyon from SR 57 (No Visual Impact)

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View E - View of First Tonner Creek Crossing

This view is shown in Exhibit 4.11-7 and was taken near the Tonner Canyon Road southbound off-ramp looking generally southeast. Although not a highly public view, this view captures the existing condition of the most westerly Tonner Creek crossing for the project. The existing Tonner Canyon Road is shown in the foreground with mature vegetation near Tonner Creek and predominately covering the north-facing slopes of the project.

For the proposed project condition, this view shows the extension of Tonner Hills Drive in the foreground and a service road bridge crossing Tonner Creek for access to oil operations. This simulation illustrates the improved creek crossing design to providing a wider span and higher clearance (14 feet) for enhanced wildlife passage movement. Some mature vegetation will need to be removed for placement of the road. With replacement of any removed mature trees as required by Mitigation Measure AE-1, no significant visual impacts are anticipated in this area.

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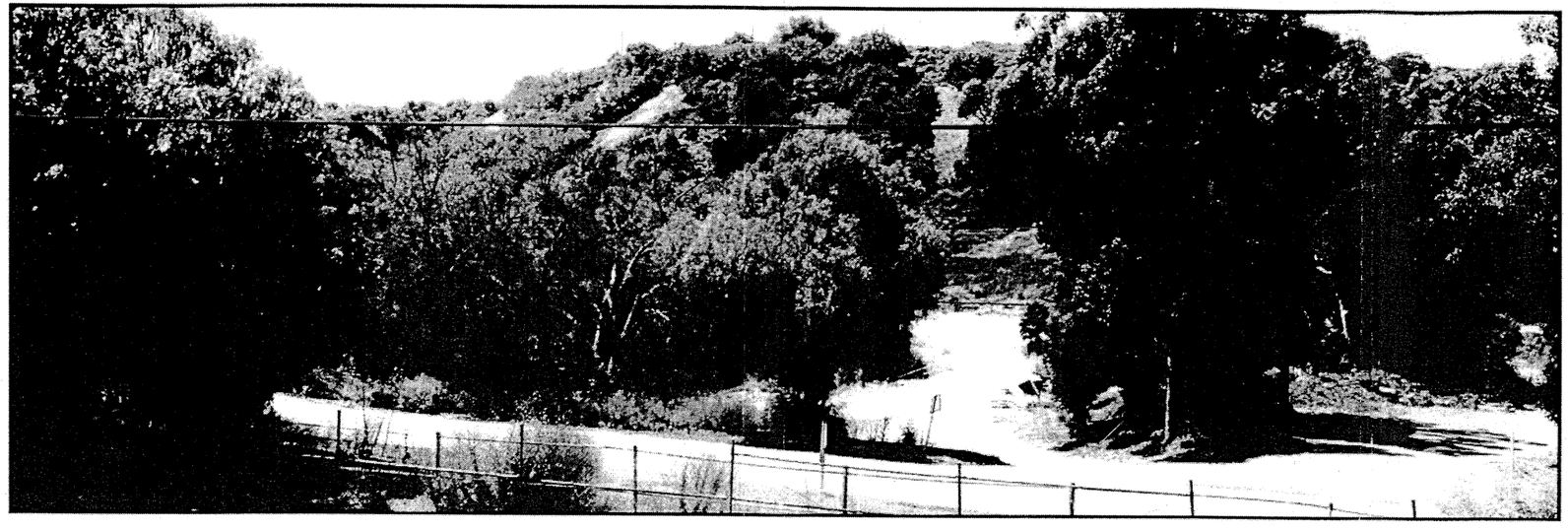

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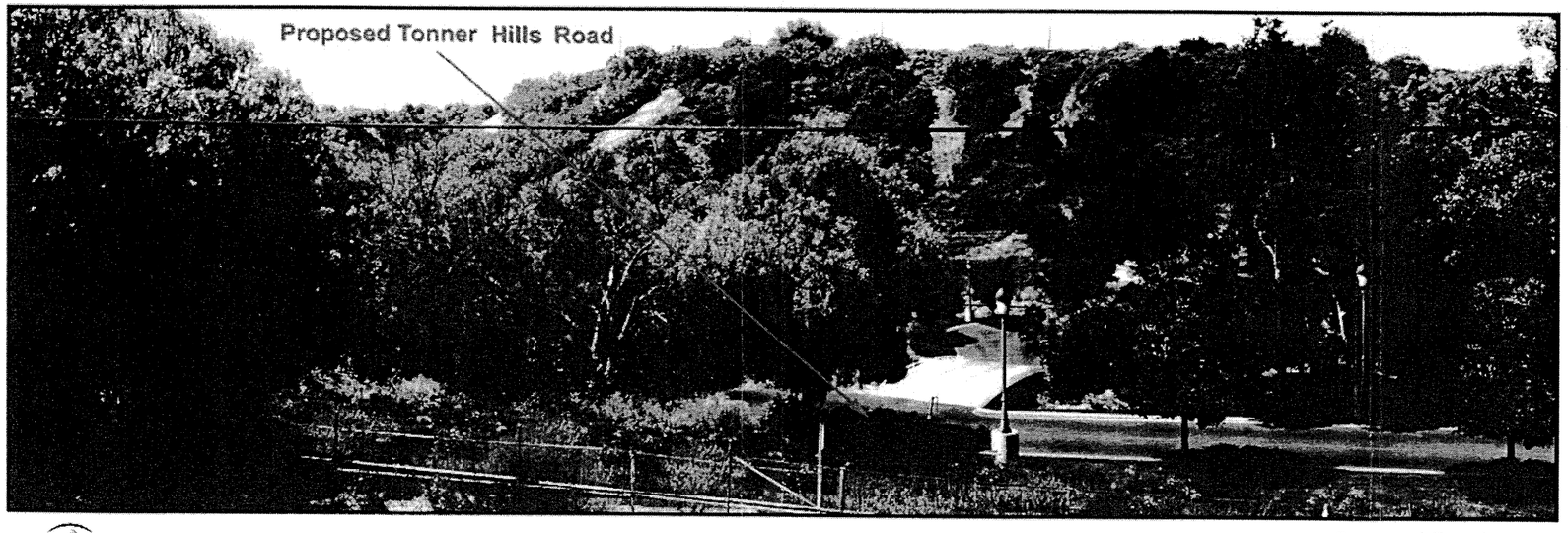

FOCUS 360

Proposed Development

Exhibit 4.11-7

View E - View of First Tonner Creek Crossing

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View F - View of Second Tonner Creek Crossing

This view is shown in Exhibit 4.11-8 and was taken from an interior service road looking generally northwest to show existing conditions relating to Tonner Creek. This view originates on the project site and is not generally a public view; however, the photograph helps illustrate existing Tonner Creek and the project context relating to the property and facilities immediately adjacent to the north and the Orange (SR 57) Freeway.

For the proposed project condition, this view shows the extension of Tonner Hills Drive in the foreground and a new design for the existing Tonner Creek bridge crossing. This simulation illustrates the improved creek crossing design to providing a wider span and higher clearance (14 feet) for enhanced wildlife passage movement. This viewshed also shows the views along Tonner Canyon will retain the same visual character. As depicted in the project photo simulation, the proposed design of Tonner Hills Drive will use the existing oil service road alignment which will minimize potential grading and biological impacts. Some mature vegetation will need to be removed for placement of the widened road. Replacement of any removed mature trees is required by Mitigation Measure AE-1. The proposed project will not impact a scenic vista or designated scenic highway, or substantially degrade the existing visual character or quality of the site. In addition, with implementation of Mitigation Measure AE-6, all direct rays from exterior lighting are required to be confined to the project site.

No unmitigatable significant visual impacts are anticipated in this area.

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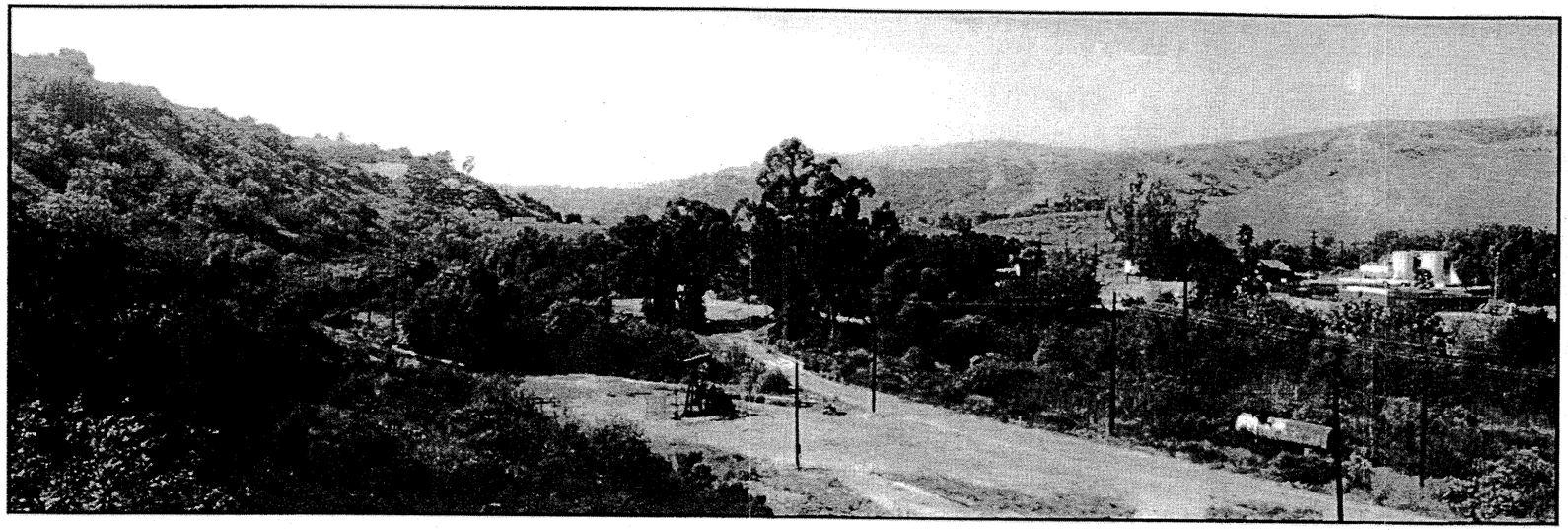
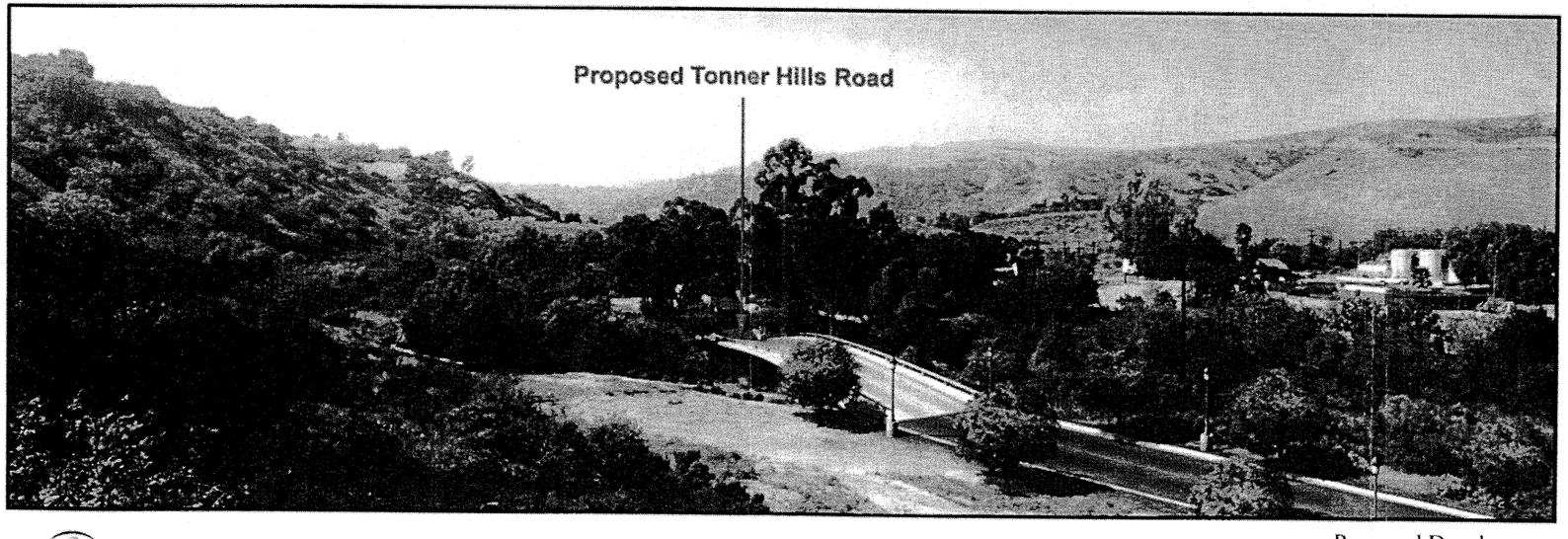


Existing Condition



FOCUS360

Proposed Development

Exhibit 4.11-8

View F - View of Second Tonner Creek Crossing

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View G - View from Tonner Creek Trail

This view is shown in Exhibit 4.11-9 and was taken from the planned alignment for the Tonner Creek Trail looking to the southwest. This view illustrates the existing site conditions for Tonner Creek and project north-facing slopes as would be viewed by hikers and bicyclists using the planned Tonner Creek Trail. Mature vegetation obscures views of Tonner Creek and also covers the north-facing project slopes.

For the proposed project condition, this view shows the placement of Tonner Hills Drive following the same alignment as the existing oil operations service road. Using the existing road alignment will minimize potential grading and biological impacts. The proposed project will not impact a scenic vista or designated scenic highway, or substantially degrade the existing visual character or quality of the site. In addition, with implementation of Mitigation Measure AE-6, all direct rays from exterior lighting are required to be confined to the project site.

As shown in the project photo simulations, project ridgelines will remain unchanged. No residential development will be visible in this viewshed. No significant impacts will result.

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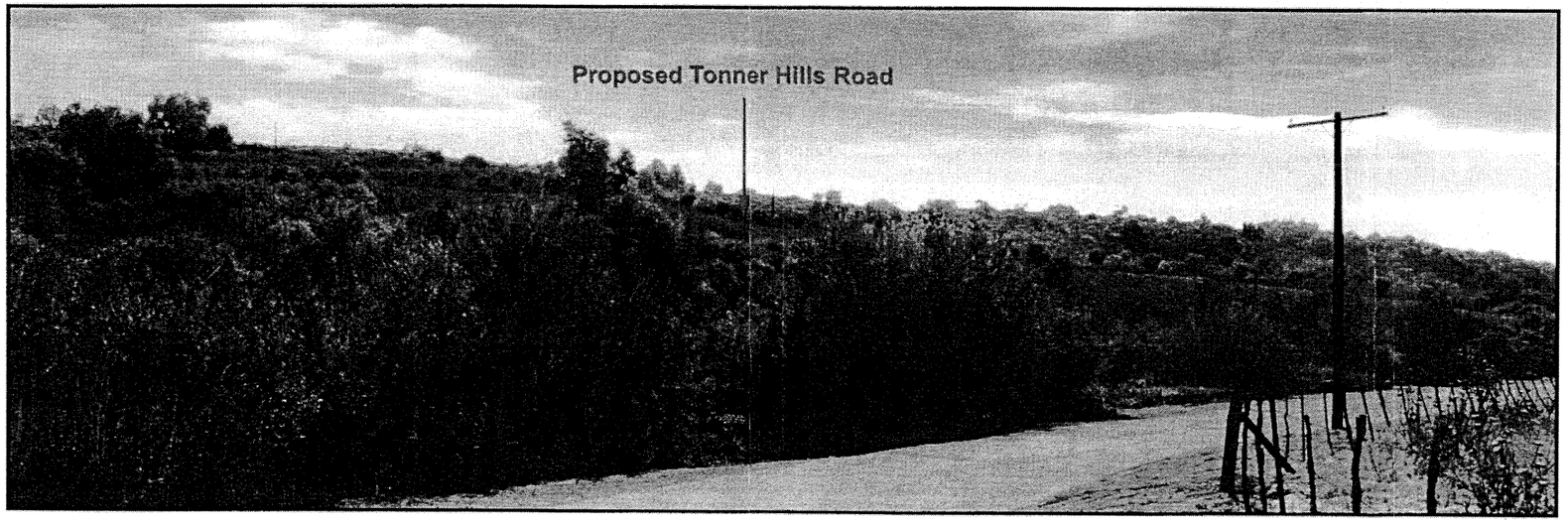
Existing Condition



Proposed Development

FOCUS360

Exhibit 4.11-9
View G - View from Tonner Creek Trail

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View H - View from Olinda Ranch Project

This view is shown in Exhibit 4.11-10 and was taken from the interior of the under-construction Olinda Ranch residential development. The view looks west with Valencia Avenue in the foreground and then onto the project property. Trees, consisting primarily of eucalyptus, and a moderate earthen berm along this eastern boundary of the project preclude direct views into the project site. This view will be very visible from future residents of the Olinda Ranch development and will also help represent a typical view of motorists using Valencia Avenue.

Improvements along Valencia Avenue will be implemented as part of the proposed project. The needed improvements will require widening the roadway which will reduce the existing earthen berm and impact a number of existing eucalyptus trees. New landscaping has been modeled using species in surrounding areas with a maturity of three to five years. Distant views of the Neighborhoods 1 and 2 will be observed. Two-story residences on lot sizes a ranging from a minimum of 2,600 square feet if clustered to 4,000 square feet for single-family homes have been assumed. Pad heights for these residential neighborhoods range from 540 to 580 feet mean sea level. The elevation of Valencia Avenue at this viewshed location is approximately 550 feet mean sea level.

The landform known as Park Ridge is proposed to be graded to accommodate Neighborhood 1. As previously discussed in Section 4.1 and provided later in this section, although illustrated as designated ridgeline, this landform feature does not meet the definition or intent of a "prominent ridgeline." The photo simulation of the proposed project condition illustrates how the project hillsides and ridges will remain to frame the proposed development and provide a visual backdrop for the City of Brea. As a recommended mitigation measure, building materials and color schemes that complement the project aesthetic and surrounding areas will help residences blend with the surrounding hillsides will be used.

The proposed open space site with the potential for public use will be located in the foreground generally at a slightly lower elevation than the roadway and is assumed to be sports fields for this analysis. As no specific uses, plans or buildings are proposed, no structures or lighting have been evaluated. Development for the public use portion of the site will require further CEQA review at the time development plans are identified.

Sections II and III of the proposed Planned Community document provide regulations and development standards for the project residential uses. These sections set forth the permissible uses and residential densities, as well as requirements such as setbacks, building height and site coverage, landscaping and screening. The proposed Area Plan also provides Design Guidelines (Section 6) for the proposed project which ensure contour grading will be used for final grading plans. The proposed project will not impact a scenic vista or designated scenic highway, or substantially degrade the existing visual character or quality of the site. In addition, with implementation of Mitigation Measure AE-6, all direct rays from exterior lighting are required to be confined to the project site.

Although View H shows a view of the project open to the public, with the implementation of Mitigation Measures AE-1 (tree replacement) and AE-2 (residential building colors) and due to the distance of project views, no significant aesthetic impacts will result for this viewshed.

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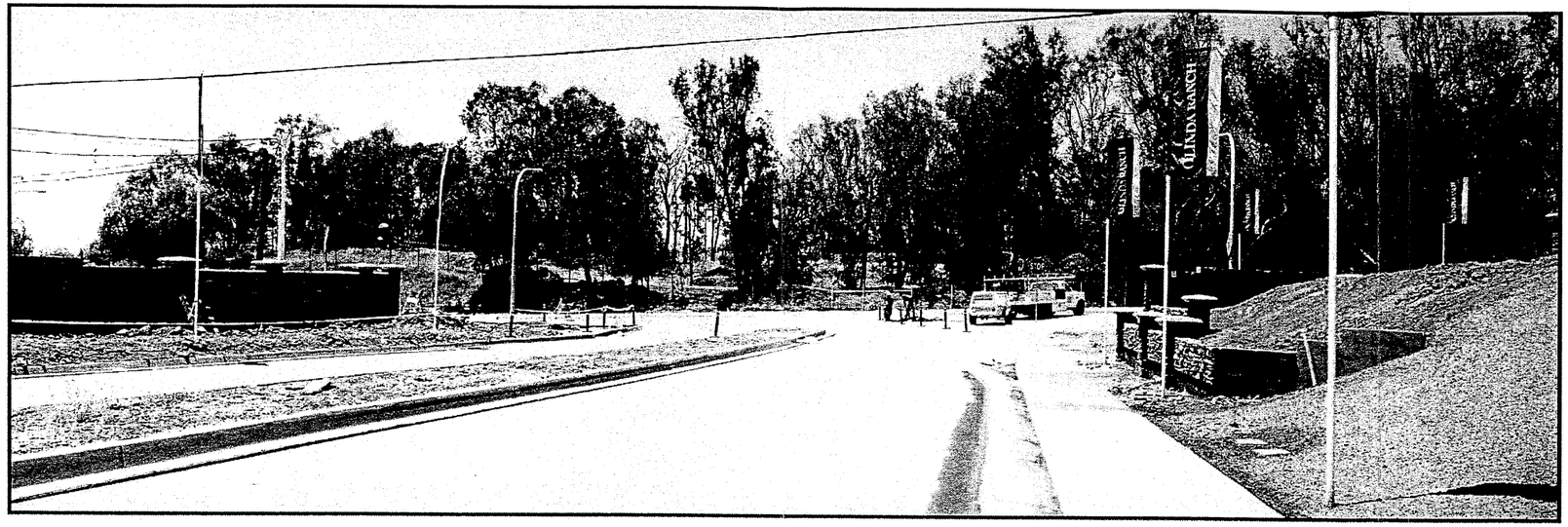

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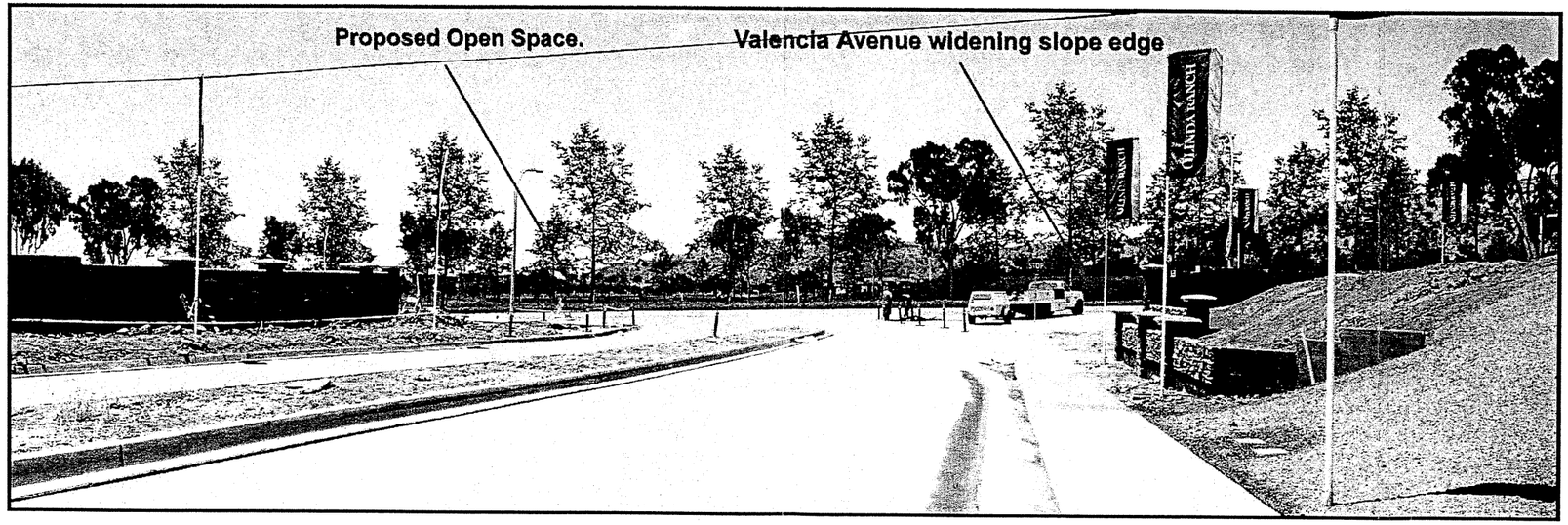

Proposed Development

FOCUS360

Exhibit 4.11-10
View H - View from Olinda Ranch Project

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View I - View from Valencia Avenue / Lambert Road

This view is shown in Exhibit 4.11-11 and was taken near the intersection of Valencia Avenue and Lambert Road. The viewshed is broader than that of previous views and shows existing nursery and oil well operations in the foreground which are not part of the project site. One of the prominent ridgelines designated by the City of Brea Hillside Management Ordinance is located directly west of Wildcatters Park. This landform feature is commonly known as Park Ridge and is visible in the distance as well as other project knoll and ridgeline features. Wildcatters Park is obscured from view by mature landscaping.

With the proposed project, distant views of the Neighborhoods 1, 2 and 3 will be observed. Two-story residences on lot sizes a ranging from a minimum of 2,600 square feet if clustered to 4,000 square feet for single-family homes have been assumed. Pad heights for residential Neighborhoods 1 and 2 range from 540 to 580 feet mean sea level. Pad heights for Neighborhood 3 will range from 510 to 560 feet mean sea level. The elevation of Valencia Avenue at this viewshed location is approximately 525 feet mean sea level. The nursery and oil operations in the foreground are not part of the proposed project are assumed to remain in the same condition.

The landform known as Park Ridge is proposed to be graded to accommodate Neighborhood 1. As previously discussed in Section 4.1 and provided later in this section, although illustrated as designated ridgeline, this landform feature does not meet the definition or intent of a "prominent ridgeline." The photo simulation of the proposed project condition illustrates how the project hillsides and ridges will remain to frame the proposed development and provide a visual backdrop for the City of Brea. As a recommended mitigation measure, building materials and color schemes that complement the project aesthetic and surrounding areas will help residences blend with the surrounding hillsides will be used.

The proposed open space site with the potential for public use will be located north of the existing foreground nursery and is not directly visible in this viewshed. The public use site is assumed to be sports fields for this analysis. As no specific plans or buildings are proposed, no structures or lighting have been evaluated. Development for the public use portion of the site will require further CEQA review at the time development plans are identified.

Sections II and III of the proposed Planned Community document provide regulations and development standards for the project residential uses. These sections set forth the permissible uses and residential densities, as well as requirements such as setbacks, building height and site coverage, landscaping and screening. The proposed Area Plan also provides Design Guidelines (Section 6) for the proposed project which ensure contour grading will be used for final grading plans.

The proposed project will not impact a scenic vista or designated scenic highway, or substantially degrade the existing visual character or quality of the site. In addition, with implementation of Mitigation Measure AE-6, all direct rays from exterior lighting are required to be confined to the project site.

Although View H shows a view of the project open to the public, with the implementation of Mitigation Measure AE-2 (residential building colors) and provisions of the Planned Community and Area Plan, no significant aesthetic impacts will result for this viewshed.

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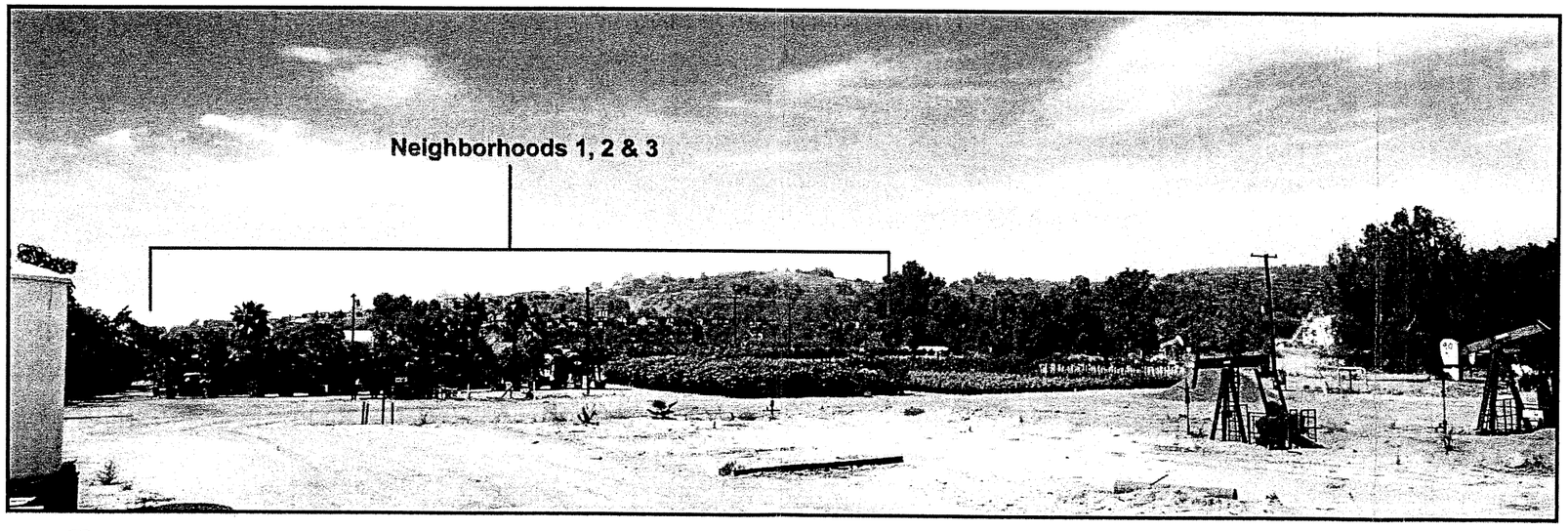
Existing Condition



FOCUS360

Proposed Development

Exhibit 4.11-11
View I - View from Valencia Avenue and Lambert Road

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View J - View from Flower Hill Street

This view is shown in Exhibit 4.11-12 and was taken from Flower Hill Street near Bluegrass looking northward. This view is relatively limited to existing residents along Flower Hill Street and other nearby residents. A small portion of a project knoll is visible above nearby rooftops.

With the proposed project, limited views of Neighborhood 4 will be visible from this existing residential neighborhood. Neighborhood 4 is proposed to consist of lots a minimum of 4,000 square feet in size with a target of 5,000 square feet in size. Residences are assumed to be 2 stories in height. Residential building pad height for the proposed residences will range from approximately 610 to 670 feet mean sea level. As a recommended mitigation measure, building materials and color schemes that complement the project aesthetic and surrounding areas will help residences blend with the surrounding hillsides will be used.

Sections II and III of the proposed Planned Community document provide regulations and development standards for the project residential uses. These sections set forth the permissible uses and residential densities, as well as requirements such as setbacks, building height and site coverage, landscaping and screening. The proposed Area Plan also provides Design Guidelines (Section 6) for the proposed project which ensure contour grading will be used for final grading plans. The proposed project will not impact a scenic vista or designated scenic highway, or substantially degrade the existing visual character or quality of the site. In addition, with implementation of Mitigation Measure AE-6, all direct rays from exterior lighting are required to be confined to the project site.

With the implementation of Mitigation Measure AE-2 (residential building colors) and provisions of the Planned Community and Area Plan, no significant aesthetic impacts will result for this viewshed.

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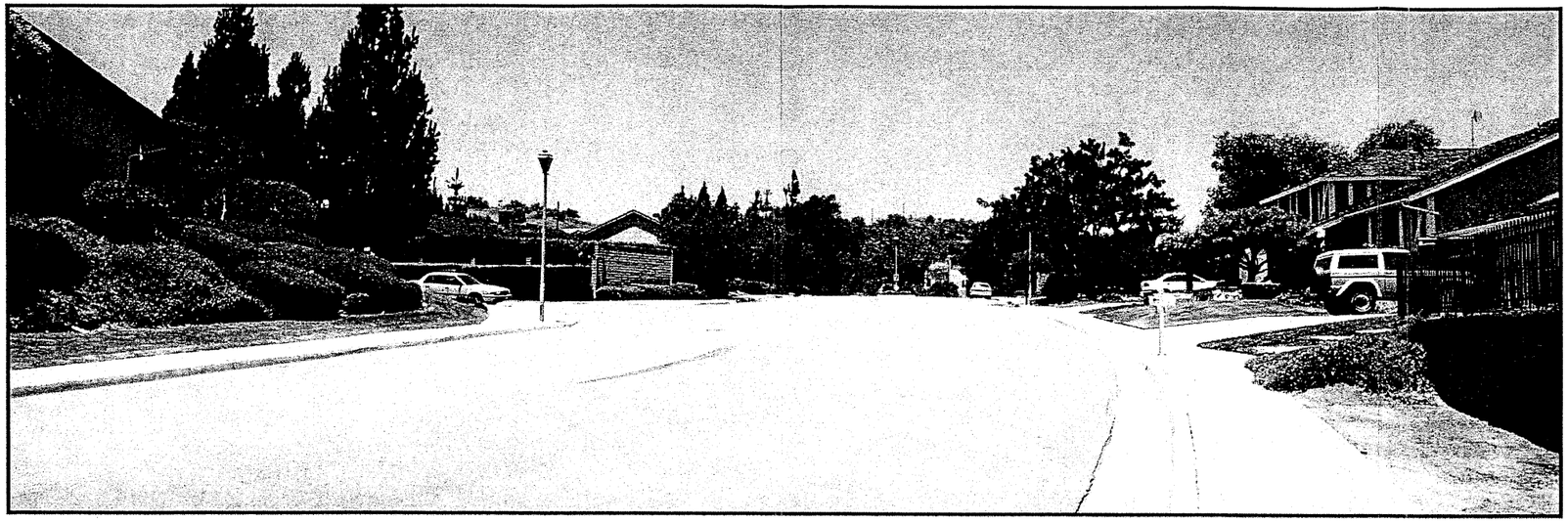

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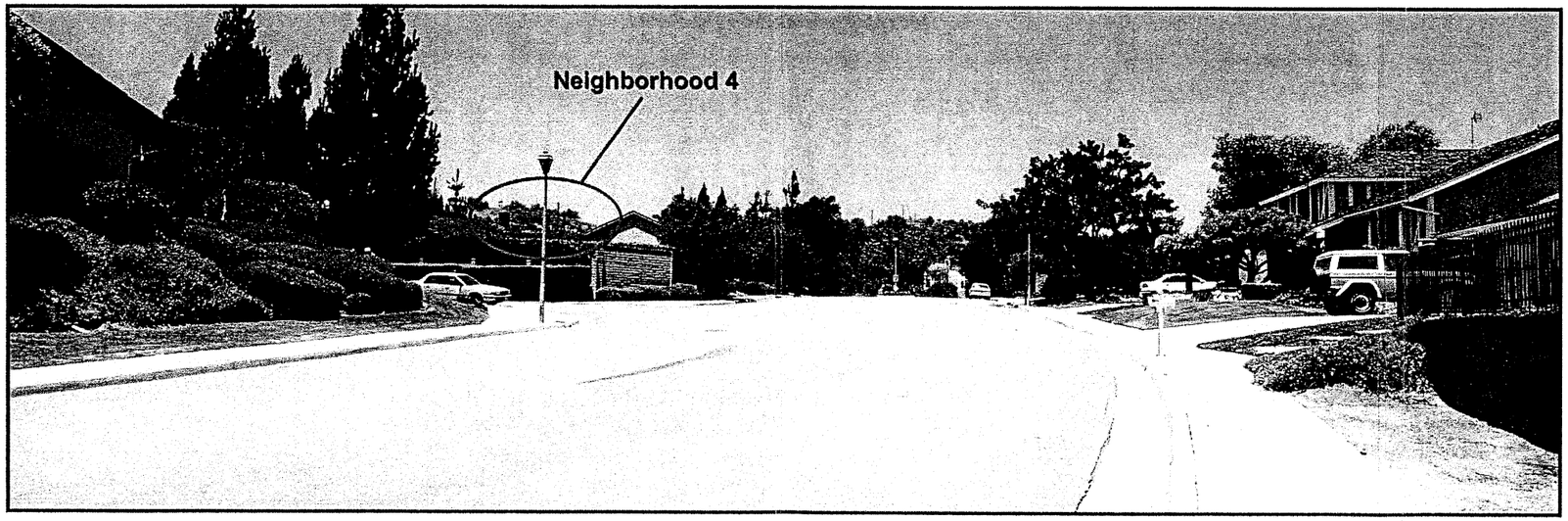

Proposed Development

FOCUS360

Exhibit 4.11-12
View J - View from Flower Hill Street

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View K - View from Kraemer Boulevard

This view is shown in Exhibit 4.11-13 and was taken near the intersection of Kraemer Boulevard and Lambert Road. The view is looking northward and shows the existing project site entrance. In the foreground is City of Brea Fire Station No. 3 and residential uses. The existing view includes natural hillsides and lowlands with moderate amounts of vegetation north of Lambert Road. Directly south of this area (outside the viewshed) are existing residential neighborhoods. This intersection accommodates a high level of commuter traffic along Lambert Road and Kraemer Boulevard.

With the proposed project, motorists, bicyclists and pedestrians will have intermediate views of Neighborhoods 3 and 4 as observed from the Kraemer Boulevard and Lambert Road. Neighborhood 3 is proposed to consist of residential lots with a minimum size of 4,000 square feet for single-family residences and 2,600 square feet for clustered single-family residences. Residential pads will range in height from 510 to 560 feet mean sea level. Neighborhood 4 is proposed to consist of residential lots with a minimum size of 4,000 square feet and a target lot size of 5,000 square feet. The elevation at the Kraemer Boulevard/Lambert Road intersection is approximately 497 feet mean sea level. The existing fire station and landscaping in the foreground will remain.

The photo simulation of the proposed project condition illustrates how the project hillsides and ridges will remain visible above the proposed residences to frame the proposed development and provide a visual backdrop for the City of Brea. As a recommended mitigation measure, building materials and color schemes that complement the project aesthetic and surrounding areas will help residences blend with the surrounding hillsides will be used.

Sections II and III of the proposed Planned Community document provide regulations and development standards for the project residential uses. These sections set forth the permissible uses and residential densities, as well as requirements such as setbacks, building height and site coverage, landscaping and screening. The proposed Area Plan also provides Design Guidelines (Section 6) for the proposed project which ensure contour grading will be used for final grading plans. The proposed project will not impact a scenic vista or designated scenic highway, or substantially degrade the existing visual character or quality of the site. In addition, with implementation of Mitigation Measure AE-6, all direct rays from exterior lighting are required to be confined to the project site.

With the implementation of Mitigation Measure AE-2 (residential building colors) and provisions of the Planned Community and Area Plan, no significant aesthetic impacts will result for this viewshed.

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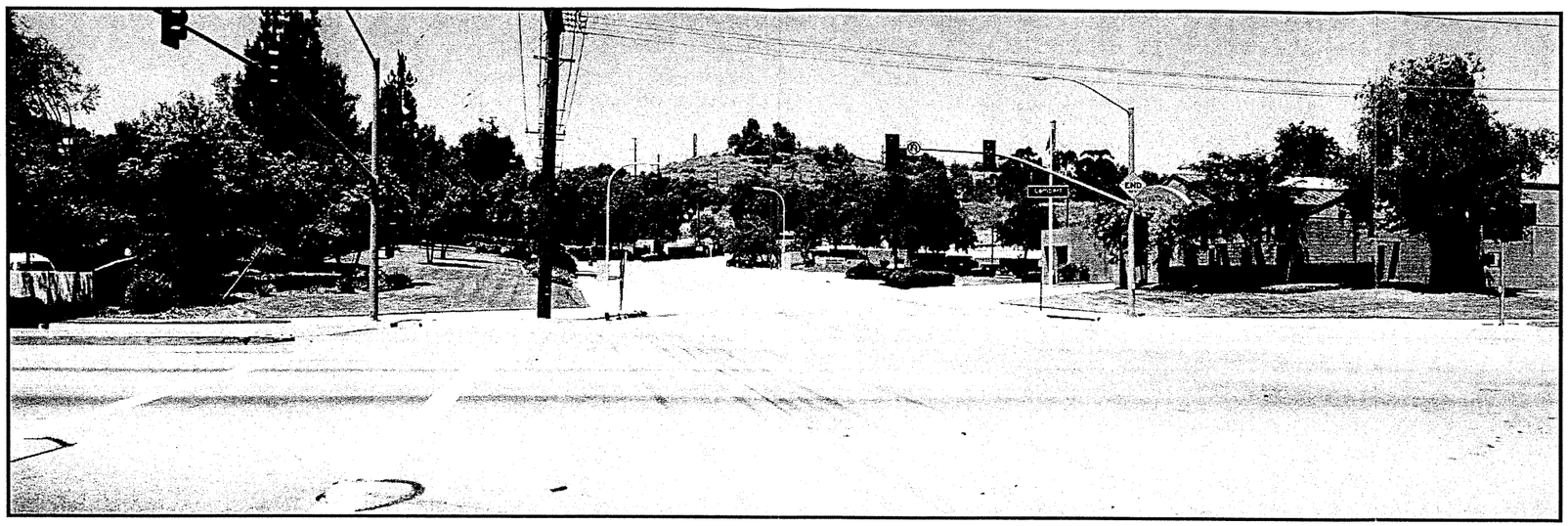

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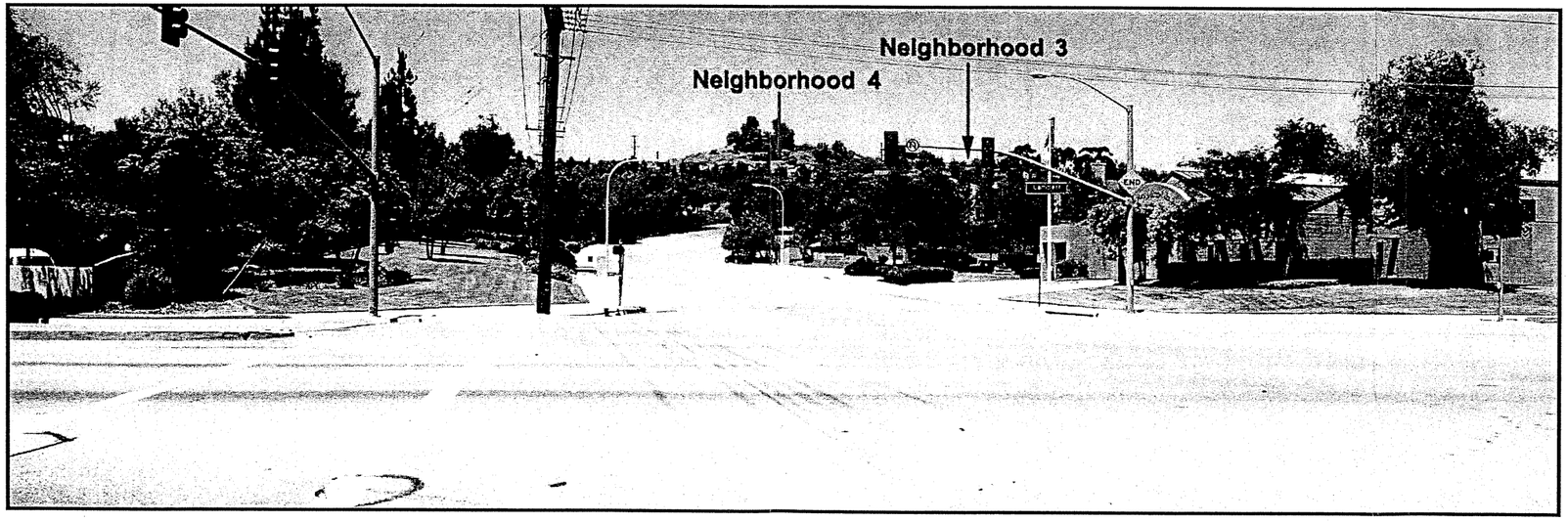

Proposed Development

FOCUS360

Exhibit 4.11-13
View K - View from Kraemer Boulevard

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View L - View up Cable Canyon from Somerset

This view is shown in Exhibit 4.11-14 and was taken from the Sommerset townhome residential development. The view looks northerly and shows the existing condition of Cable Canyon and illustrates a typical view experienced by a limited number of residents within the Sommerset residential project. Foreground views focus on heavy vegetation located on the valley of the canyon with shrubs and low-lying vegetation along the slopes lining either side of the canyon.

Although not a public view, this viewshed illustrates how the proposed development relates to Cable Canyon and the existing townhome residences to the south of the project. Views from this location will show portions of Neighborhoods 6 and 7. Neighborhoods 6 and 7 are proposed to consist of residential lots a minimum of 4,000 square feet in size with a target lot size of 6,000 square feet. Pad heights would range from 660 to 670 feet mean sea level for Neighborhood 6. Pad heights for Neighborhood 7 would range from 550 to 640 feet mean sea level. Two-story residences are assumed with landscaping modeled with a maturity of three to five years.

The proposed residential development avoids Cable Canyon which will result in a swath of open space from between approximately 500 to 950 feet between Neighborhoods 4 and 7. Although it is difficult to portray in the visual simulation, Cable Canyon will be enhanced through revegetation with native species and removal of non-native species. In addition, approximately 400 feet will be provided between proposed Neighborhood 7 and the project's southern property boundary where this photograph was taken. Over 200 feet will be provided between Neighborhood 4 and the existing townhome development to the south. Due to the distance and changes in elevation between the existing and proposed residences, adequate buffering between the proposed project and existing residences will be provided.

The photo simulation of the proposed project condition illustrates how the project canyon condition in this area will remain. Outside of this viewshed, the designated prominent ridgeline to the west of Neighborhood 7 will remain intact. Distant views of Neighborhoods 6 and 7 will be accessible from this location. As a recommended mitigation measure, building materials and color schemes that complement the project aesthetic and surrounding areas will help residences blend with the surrounding hillsides will be used.

Sections II and III of the proposed Planned Community document provide regulations and development standards for the project residential uses. These sections set forth the permissible uses and residential densities, as well as requirements such as setbacks, building height and site coverage, landscaping and screening. The proposed Area Plan also provides Design Guidelines (Section 6) for the proposed project which ensure contour grading will be used for final grading plans. The proposed project will not impact a scenic vista or designated scenic highway, or substantially degrade the existing visual character or quality of the site. In addition, with implementation of Mitigation Measure AE-6, all direct rays from exterior lighting are required to be confined to the project site.

With the implementation of Mitigation Measure AE-2 (residential building colors) and provisions of the Planned Community and Area Plan, no significant aesthetic impacts will result for this viewshed.

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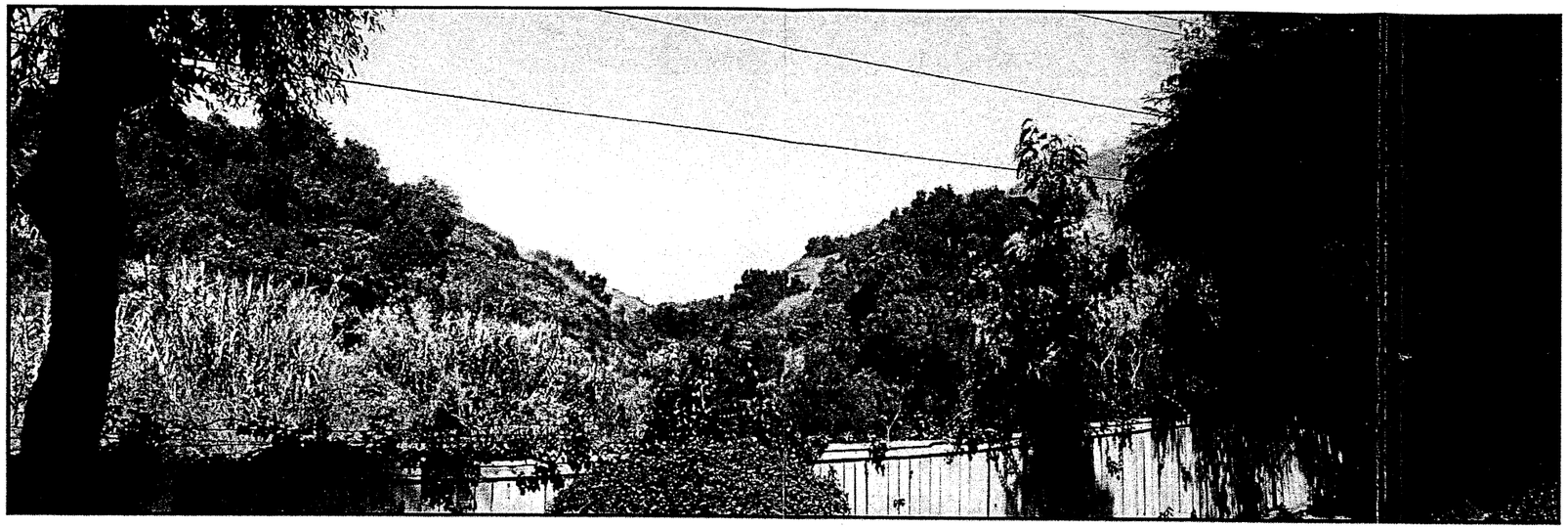

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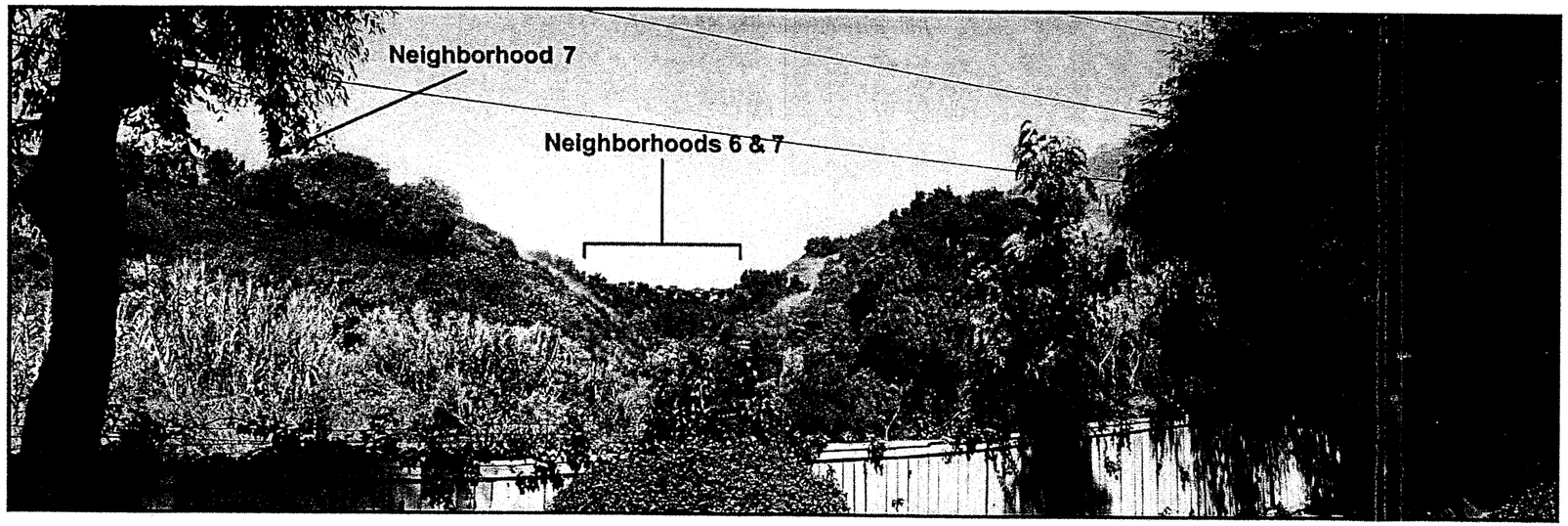

FOCUS 3GO

Proposed Development

Exhibit 4.11-14
View L - View of Cable Canyon

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View M - Distant View from Rolling Hills Drive

This view is shown in Exhibit 4.11-15 and was taken looking northward from Rolling Hills Drive in the City of Fullerton. This view provides a distant perspective allowing the whole of the project to be viewed and represents a view seen more from a regional basis. Due to distance, details and topography of the project site are difficult to discern; however, the viewshed illustrates how the hills and ridges beyond the site to the north extend to greater elevations than the ridges on the project site and serve as the visual backdrop for this northerly portion of Orange County. The Olinda Alpha Landfill is located to the northeast of the project.

This viewshed shows the entire project site and the visual context of the greater setting from a relatively high elevation. The prominent ridgelines on the project site are visible with the higher ridgelines in Los Angeles County to the north.

The proposed project would include grading of some hillside areas and development of a mix of housing densities across the site. The mixed use site is not visible from this vantage point. This view shows the proposed areas to remain in open space, as well as areas proposed for landscaping and slope restoration. The view simulation illustrates how the project largely conforms to the existing topography and preserves the prominent ridgelines. The photo simulation of the proposed project condition demonstrates how the project hillsides and ridges will remain visible above the proposed residences to frame the proposed development and provide a visual backdrop for the City of Brea. As a recommended mitigation measure, building materials and color schemes that complement the project aesthetic and surrounding areas will help residences blend with the surrounding hillsides will be used. The proposed project will not impact a scenic vista or designated scenic highway, or substantially degrade the existing visual character or quality of the site. In addition, with implementation of Mitigation Measure AE-6, all direct rays from exterior lighting are required to be confined to the project site.

No significant visual impacts have been identified for this viewshed.

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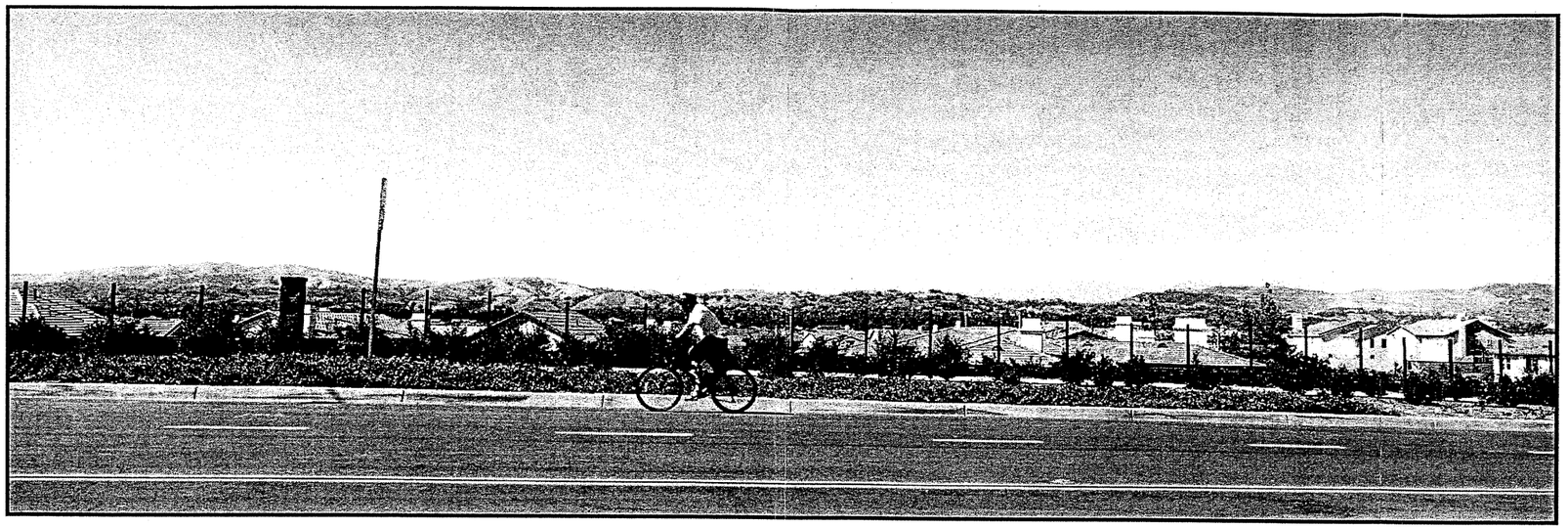

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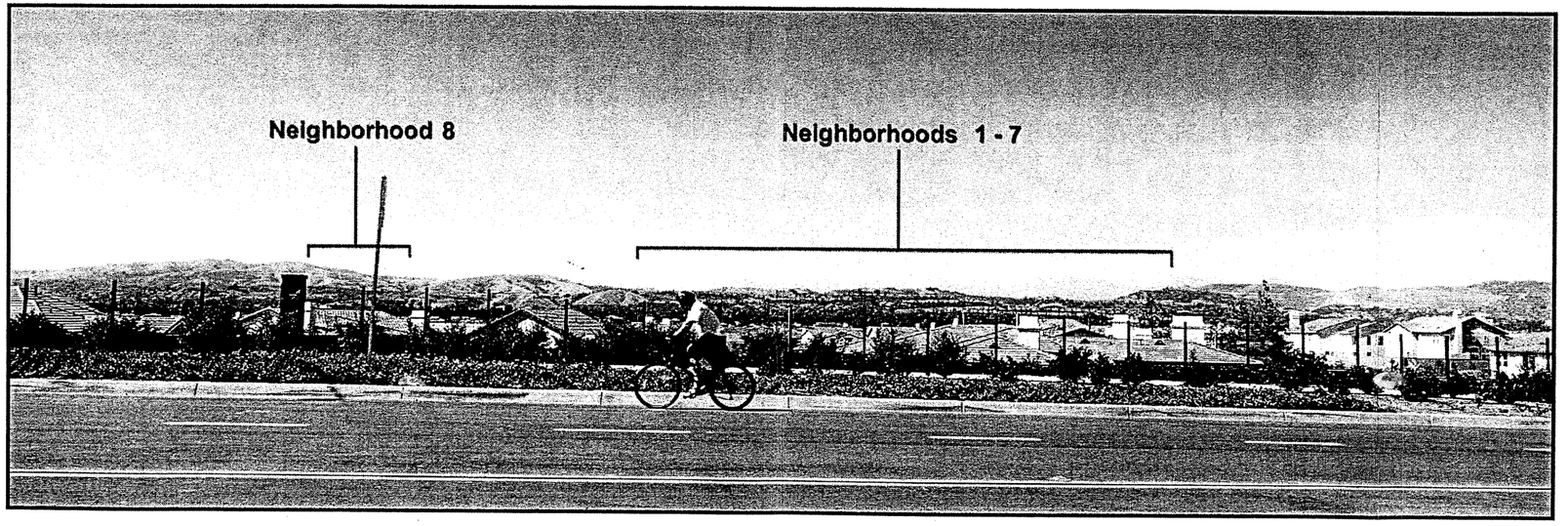

Proposed Development

FOCUS360

Exhibit 4.11-15

View M - Distant View from Rolling Hills Drive in the City of Fullerton

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(1) Scenic Corridors

The proposed project, as designed, is not anticipated to have significant impacts on the County's Scenic Highways Plan or the City of Brea designated scenic corridor since the project is not adjacent to a roadway with a scenic highways designation.

(2) Continuing Oil Operations

The project area has been the site of continuous oil recovery operations for over 100 years. The project area is populated with access roads, graded pads, oil wells, tanks, pipes, storage sheds, a gas plant, and other equipment and facilities related to these operations. At the time of this writing, approximately 210 oil wells (including 14 water injection wells) and associated pumps are currently in production on the property, with approximately 82 idle wells and 87 previously abandoned wells.

To enhance the recovery of crude oil, a number of new oil wells may be drilled. In the future, certain existing oil wells will be converted to water injection wells. As development phases are constructed, certain wells will be abandoned and others will be accommodated to remain in place. A few wells will be accommodated in residential areas; the majority of wells will remain in open space areas. Some of the wells that remain in operation within the proposed residential planning areas may pose potential aesthetics impacts to adjacent residences if left unscreened. Proposed Mitigation Measure AE-4 provides for screening and other view improvements for homes in proximity to oil operations. No oil well facilities are located within or adjacent to the proposed mixed use area.

As provided for in the project Area Plan, any oil well or water injector well to be abandoned will be buried a minimum of 10 feet below the finish grade in areas to be developed, or existing grade in open space areas. No residential or commercial structure will be built over an abandoned well. Building setbacks will follow current Orange County Fire Authority (OCFA) standards. No new wells will be drilled or existing wells re-drilled within any residential planning area after the County issues the first certificate of occupancy within that neighborhood.

Oil wells retained in residential planning areas will be accommodated by replacing the existing pumping unit and well cellar with a subsurface pumping unit enclosed within a concrete vault. The vault size may vary; however, a typical vault in a residential neighborhood will be 6-feet by 8-feet. These wells will not be located within any private residential lot, and no habitable structure will be allowed to be constructed within 50 feet of the retained subsurface wellhead. In-ground oil well screening is illustrated in Exhibit 4.11-16 (Oil Well Screening).

Oil wells retained in open space areas may be above ground electrical pumping units. If these retained wells are distinctly visible to residential planning areas, they will be screened with an enclosure meeting California Department of Conservation, Division of Oil, Gas and Geothermal Resources (CDOGGR) requirements standards which is planned to consist of a fenced enclosure approximately 20 feet by 40 feet in size. Other wells and facilities within open space areas will remain as above surface electrical pumping units and will be fenced. For oil pumps which will remain above ground and are within visual proximity

of residential or recreation areas, Section 6.5 of the Area Plan, Oil Field Screening, identifies the use of vine covered fences, block walls, and/or landscape plantings to ensure oil facilities are screened from view.

The existing gas plant facility located in the northeasterly portion of the project will remain and is proposed to be screened by the existing 6-foot high fence with added landscaping. Tree planting will be done in informal groves around the facility as illustrated in Exhibit 4.11-17 (Gas Plant Facility Screening).

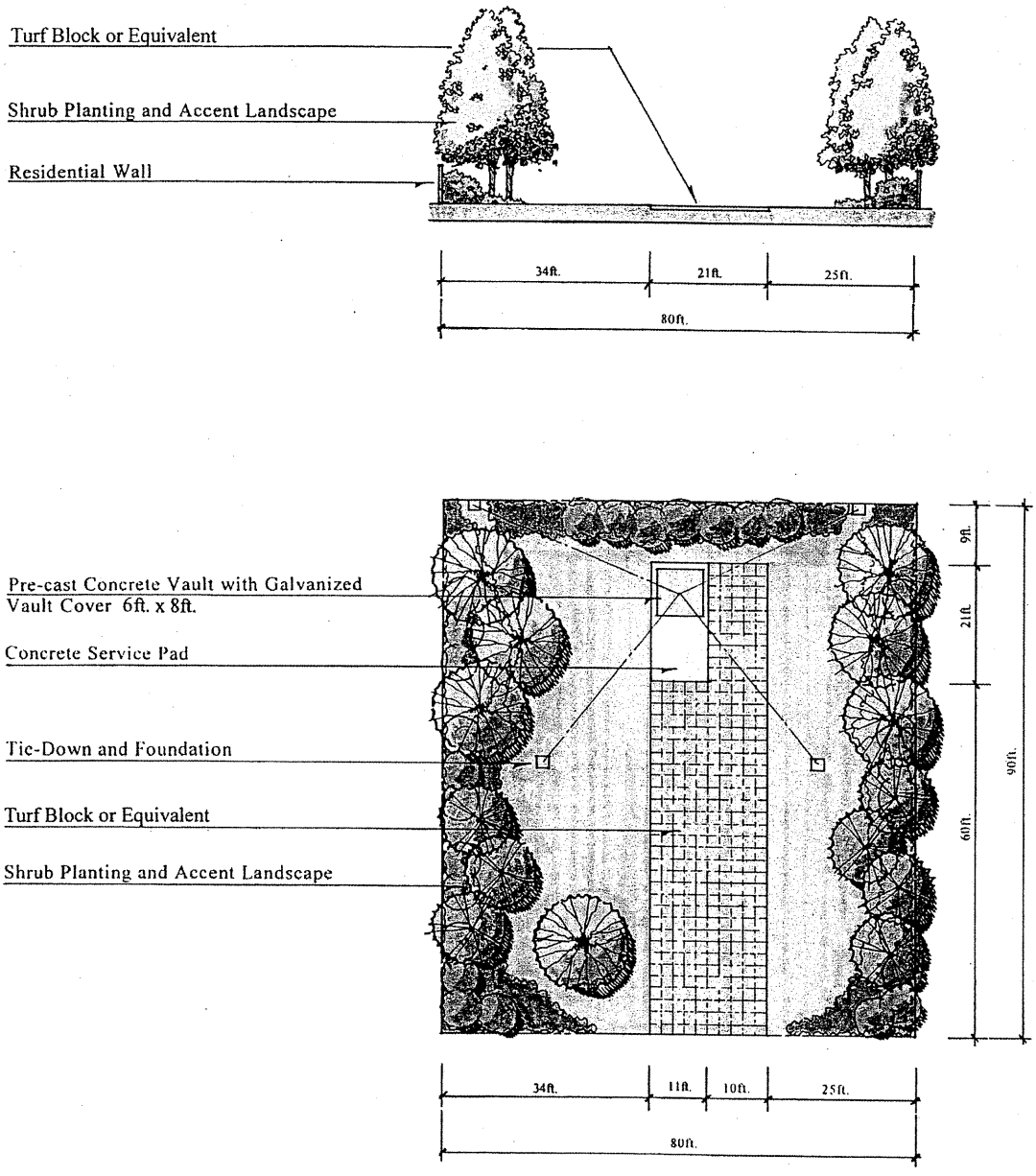
Walls with landscaping as well as undergrounding oil well production facilities can be considered an effective method to reduce aesthetics impacts. Examples of similar screening treatments are shown in Exhibit 4.11-18 (Examples of Residential Development Adjacent to Oil Well Sites). As required by Mitigation Measure AE-4, screening shall be provided for oil operating equipment within visual proximity of residential or recreation areas through the use of vine covered fences, block walls and/or landscaping. With implementation of the proposed project design and recommended Mitigation Measure AE-4, project impacts associated with continued oil operations on-site are anticipated to be reduced to a less than significant level.

(3) Remediation Activities

Portions of the site, such as the oil wells throughout the site, may need to be substantially excavated and refilled to remove contaminated soils. These activities may include contaminated areas that lie beyond the proposed development footprint. These adverse project effects may be visible from surrounding residential and commercial areas, as well as from passing motorists in the vicinity of the project area. These effects could be considered significant depending on the magnitude of cut and fill that may be required. However, compliance with California Department of Conservation, Division of Oil, Gas and Geothermal Resources (CDOGGR) requirements, including restoration of the site, will reduce potential effects to a less than significant level. Discussion of site remediation activities is provided in Section 4.15, Hazards.

(4) Light and Glare

The project will introduce new sources of light and glare to the area. Potential impacts from light and glare are directly related to the level of urbanization within the project site and the design of individual residential units, a new commercial center, and sports field complex. New light sources will include safety and security lighting, ornamental lighting for individual dwellings, and potential sports field lighting. By design, virtually all sources of light will illuminate a surrounding area to some degree. The degree of illumination varies widely, depending on the candlepower of the light source, height of the light, presence of barriers or obstructions, and type and design of light source.



Source: Tonner Hills Area Plan

This is a graphic representation of a Planning concept. All graphics in this document are examples only and should not be interpreted literally. Other solutions and concepts may be proposed and reviewed during the Area Plan Amendment/Site Plan process.

Exhibit 4.11-16

Oil Well Screening Within Residential Areas

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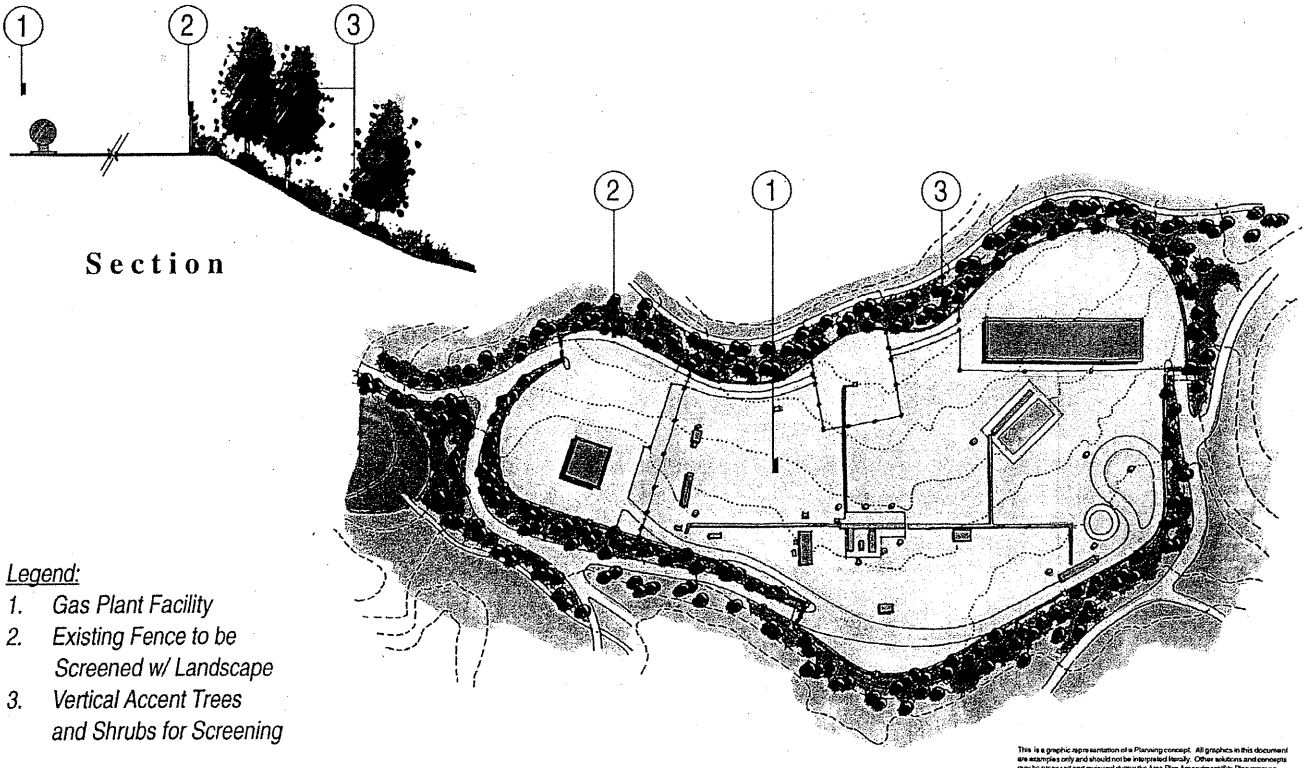

Legend:

1. *Gas Plant Facility*
2. *Existing Fence to be Screened w/ Landscape*
3. *Vertical Accent Trees and Shrubs for Screening*

Source: Tonner Hills Area Plan

Exhibit 4.11-17

Gas Plant Facility Screening

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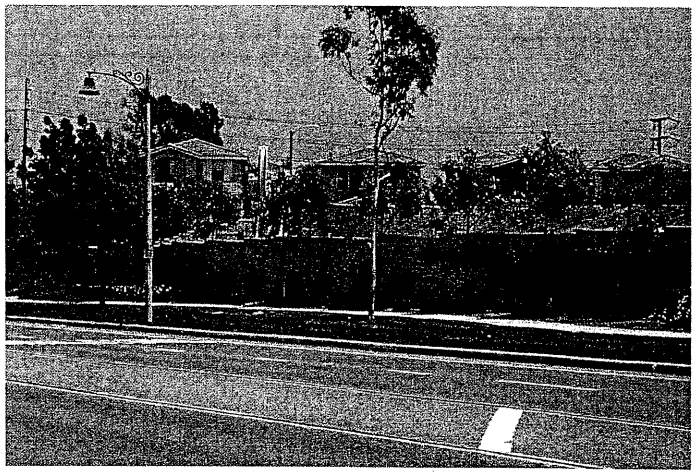
View of above-ground oil pumps adjacent to single-family residences (looking southeast on Alta Vista Street west of Van Buren Street in the City of Placentia).



View of vaulted oil pump adjacent to single-family residences (looking north from the terminus of Sims Avenue at the Alta Vista Golf Course in the City of Placentia).

View of above-ground oil pumps near an apartment complex (located at the southeast corner of Van Buren and Orchard Drive in the City of Placentia).

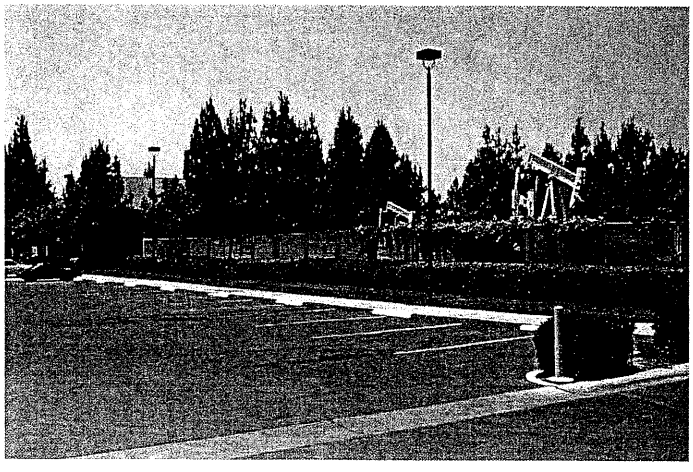


Exhibit 4.11-18

Examples of Residential Development Adjacent to Oil Well Sites

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As the site is currently partially developed with oil operations with limited amounts of nighttime lighting, new light sources for the project have the potential to significantly increase light and glare in the immediate vicinity. Residential, commercial and public use development on the subject property will also incrementally increase the amount of light shed into the night sky. Street lights will be provided along Tonner Hills Road which will light the roadway and design features such as the proposed bridges to provide roadway safety with minimal spillover into the surrounding area.

The project allows the potential for 32.7 acres of public use in the southeastern corner of the site. As no specific use or project design is proposed for this area, no structures or lighting have been evaluated. Development of the public use portion of the site will require further CEQA review at the time public use development plans are proposed.

The proposed lighting would be an extension of the existing lighting in surrounding neighborhoods and would be consistent with surrounding developed areas. Although the proposed lighting could be considered adverse to existing residents that do not currently experience lighting on the hillsides, the proposed lighting would not create any spill lighting to nearby residential areas with the implementation of Mitigation Measure AE-6. This mitigation measure will prevent unnecessary light on surrounding properties and to ensure on-site lighting is directed toward the appropriate use. Landscaping is also proposed to mitigate potential headlight glare from automobiles traveling along the local street network.

(5) City of Brea Hillside Management Ordinance

The City of Brea Hillside Management Ordinance is intended to further define and implement the goals and objectives of the City's General Plan and advisory Vision documents, primarily to preserve natural terrain, quality environment, and rural aesthetic character, and also to minimize the negative effects of grading, and to provide for the health, safety and welfare of the citizens of the city while providing for the development of hillside areas. The following analysis of the project's consistency with the Hillside Management Ordinance is provided below using relevant criteria and policies for the level of information provided for the proposed Planned Community and Area Plan.

- *Prominent ridgelines are identified by the Prominent Ridgline Map contained in Exhibit "A" of Ordinance 948. No point on any structure shall be closer to a prominent ridge than 50 feet measured vertically on a cross section or 100 feet horizontally on a topographic map, whichever is more restrictive. Exceptions to this requirement for public facilities, utilities, and infrastructure deemed necessary to serve the public health, safety, and welfare may be considered by the Planning Commission. Other exceptions to this standards consistent with the provisions of paragraph H of this section may also be considered by the Planning Commission.*

Within the proposed project area, the Hillside Management Ordinance, in Exhibit A, designates seven prominent ridgelines. As discussed in Section 4.1, Land Use and Planning, the project grading plan avoids six of the of the prominent ridgelines by greater than 50 vertical feet or 100 horizontal feet except where graded pads for oil operations have previously modified the ridgelines. One prominent ridge designated by the Ordinance which is located directly west of Wildcatters Park will be modified with the proposed plan.

This ridge is commonly known as Park Ridge. However, as previously evaluated in Section 4.1, this landform feature does not meet the definition criteria and intent for a prominent ridgeline due to its lower and flatter topographical characteristics. This is illustrated in Exhibit 4.11-11 on page 4.11-45, which shows Park Ridge as a reduced elevation land form in the context of the surrounding ridges. This landform does not serve as a visual backdrop to the City of Brea. Therefore, the project is consistent with the intent of this policy as it relates to prominent ridegelines that form the visual backdrop for the city.

- *Natural drainage courses shall be protected from grading activity.*

The proposed project contains several natural drainage courses on the site. The primary drainage courses include Tonner Creek along the northern edge of the site and Cable Canyon in the central area of the site. The proposed grading plan will impact most of the minor drainage courses which will be graded and converted to storm drains and detention basins (as further described in Section 4.5, Hydrology and Drainage). Drainages 5, 7 and 10 will be completely or nearly completely filled by the project. Drainages 2 and 8 will be partially graded and filled. However, Tonner Creek and drainage within Cable Canyon will be preserved and enhanced as part of the proposed project. The project is consistent with this policy for the predominant natural drainage courses on-site.

- *Any significant public vista or view corridor as seen from a secondary, collector, or major arterial should be protected.*

Thirteen visual simulations have been prepared to evaluate potential project visual impacts including views from surrounding streets. The simulations illustrate views from Lambert Road, Valencia Avenue, the Orange (SR 57) Freeway, Kraemer Boulevard, and existing and planned Tonner Canyon Road. A more detailed discussion is provided above which corresponds to each viewshed. No significant view impacts have been identified for views from public rights-of-way. The project is consistent with this policy.

- *Roadways should conform to the natural landform. Significant alterations to the physical and visual character of the hillside should be avoided by eliminating large notches in ridgelines and wide straight alignments. Reduced road sections, split sections, and parking bays should be considered in the layout of hillside streets to reduce grading.*
- *Where road construction is proposed in hillside areas, the extent of vegetation and visual disruption should be minimized by the combined use of retaining structures and regrading to approximate the natural slope. The view along a street front should create a pleasant appearance with a sense of open space and landscaping. Some techniques which can be used include the use of terrace walls and landscaping to reduce grading impacts associated with retaining walls.*

The proposed roadway system for the project follows site topography and uses existing oil operations service roads to minimize alterations in topography. Section 6, Design Guidelines, in the proposed Area Plan emphasize this approach for circulation: "Wherever possible and practical, streets should be aligned to existing roads and shall respect natural terrain." The conceptual circulation system for the project uses a curvilinear designed to blend with the existing topography. The project is consistent with this policy.

The Design Guidelines provide that project streets should be oriented to parks, recreation areas, open space, views, or significant planting areas. The Design Guidelines also state, "street design within Tonner Hills should minimize walls, except where required for privacy and security." The Area Plan stresses minimizing landform impacts for streets and providing for a pleasant motorist and pedestrian experience.

- *Natural landform planting should be used to soften the impact of development provide erosion control. These landscape techniques shall serve to reintroduce landscape patterns that occur in nature including concentrating trees and shrubs in concave areas while convex portions are planted mainly with groundcovers.*

Section 6.2, Landscape Design Concept, of the Area Plan is intended to integrate the built environment with the natural features of the land. A master list of tree and plant materials is provided which emphasizes native species. For biological and aesthetic reasons, the Landscape Design Concept includes the enhancement and restoration of native vegetation communities in a larger portion of the open space areas. Restoration of the native vegetation communities will include planting coastal sage scrub plant species as well as native oak and walnut trees. Enhancement will also include the removal of exotic, invasive and weedy plant species from the open space areas.

Section 6.2.4 of the Landscape Design Concept also provides for slope treatments, buffer zones and open space. The community landscape concept calls for slope landscaping to complement the community streetscape character and to emulate the surrounding natural hillside character. Further, "transitional areas between residential and open space areas should be treated to provide a natural appearing landscape between the built environment and the native slopes." The Area Plan also states that "the transitions from the open space to the manufactured areas will consist of a gradual decrease in the native planting palette to a plant palette that is the theme of the community." All re-contoured slopes are proposed to be revegetated in this manner which will also reduce the potential erosion effects. The project is consistent with this policy.

- *Cuts. When convex shaped natural features, i.e., protruding minor landforms are cut, the residual landform should not be a flat slope face, but rather should be restored to resemble the original. This will require more than just rounding at the edges but, in effect, reconfiguring it so the final result will give the appearance of a protruding ridgeline.*

As discussed above, the conceptual grading plan provided within the Area Plan provides for landform grading that is intended to emulate natural horizontal and vertical contours for graded areas to appear more natural. Flat surfaces along slopes are discouraged, and cut slopes will be reconfigured to give a more natural contoured appearance. Ridgelines are proposed to be reserved as discussed above and slopes will be rounded and contoured. As required by Mitigation Measure AE-3, the use of contour and/or landform grading techniques will be used for final grading plans. The project is consistent with this regulation.

- *Fills. Fill slopes shall not be placed perpendicular across a canyon. Such straight line cut fill slopes shall not be made to appear like a dam. The terminus of the fill shall, instead, be concave in shape to restore the canyon appearance. This concave configuration shall be in combination with the use of substantially flatter slope ratios (4:1, 3.5:1, 3:1) at or*

near the center of this indentation. Symmetrical or unsymmetrical concave configurations shall be used depending upon the adjoining or underlying topographic characteristics.

Where canyon or drainage area fills are included within the proposed conceptual grading plan, fills would not be placed perpendicular to the canyon or drainage. Rather, concave landform grading is proposed to reduce the dam-like appearance of any straight-line cuts. The project is consistent with this regulation.

- *Transitioning slopes. Minimal radius rounding at the edges of cut and fill slopes is not acceptable. Proper transitioning from manufactured slopes to natural slopes shall be achieved gradually and naturally through the use of radii or irregular curvilinear shapes that will blend into the adjoining topography.*

The conceptual grading plan contained within the Area Plan provides for landform grading, which includes gradual transitions from manufactured, recontoured slopes to existing topographic conditions. Pursuant to Section 6.1.1 of the Area Plan, the project proposes slopes that blend with the natural terrain. Horizontal and vertical curve variations are proposed for slopes and banks, and grading will blend and transition with the natural areas to avoid harsh or abrupt changes in topography when appropriate and consistent with the natural setting. As required by Mitigation Measure AE-3, the use of contour and/or landform grading techniques will be used for final grading plans. The project is consistent with this regulation.

- *Use of variable slope ratios. Due to the fact that the landform grading designs require the use of variable slope ratios at greater than 2:1, create valleys, and concave indentations on building pad areas, they may result in loss of usable area. In addition, engineering and construction costs may increase. One (1) method will be permitted to offset this loss:*

  (1) Segments of a cut or fill slope will be permitted to be designed with variable slope ratios less than 2:1, but not less than 1.5:1 within the following guidelines:

  (a) The geotechnical engineer will certify that slopes so designed will meet standard stability requirements.
  (b) Overall ratio from toe to toe will be 2:1 or greater.
  (c) Ratios greater than 2:1 will also be used in the slope design.

The proposed conceptual grading plan includes the use of variable slope ratios such that the overall slope gradient is between 2.5:1 to1.5:1. A geotechnical engineering study will be required prior to the final grading design to ensure slopes meet stability requirements (for further discussion see Section 4.4, Geophysical). As required by Mitigation Measure AE-3, the use of contour and/or landform grading techniques will be used for final grading plans. The project is consistent with regulation.

- *Building materials and color schemes should blend with the natural landscape. Colors should be earth tones (i.e., browns, sienna, ochers, grays) and the value (lightness or darkness) of the specific hue should be as close to that of the immediately surrounding landscape as possible. Where exterior stucco is used, it should have a final coat of integrated color in a muted earth tone. Contrasting color accents should be kept to a minimum.*

Appropriately, for the current level of project design, the level of detail contained within Planned Community and Area Plan does not specify specific building styles, architecture or design. There is no proposal contradictory to this guideline; however, the use of building materials and color schemes complementary with surrounding hillside areas would further minimize the appearance of residences in the hillside areas, as required by Mitigation Measure AE-2.

In summary, the proposed Planned Community and Area Plan (including the Conceptual Grading Plan) are consistent with the intent of the City of Brea Hillside Management Ordinance, which provides a visual backdrop to the city. To ensure the use of contour grading methods for final grading plans, Mitigation Measure AE-3 is recommended. Mitigation Measure AE-2 is also recommended to minimize the appearance of new residences through the use of colors that complement the surrounding hillsides.

4.11.4 Mitigation Measures

AE-1 Prior to the issuance of any grading permit or recordation of a subdivision map that creates building sites, whichever occurs first, the applicant shall obtain approval of the Manager, PFRD/HBP Program Management and Coordination, of a landscape and tree preservation plan for the property. This plan shall be consistent with the revegetation plan required as set forth in Section 4.10, Biological Resources, of this EIR.

AE-2 Prior to the approval of a Site Development Plan, a proposed color palette for the residential building materials and color schemes shall be submitted for review and approval by the Manager, Current Planning. The color palette shall consist of colors that complement with the surrounding hillsides.

AE-3 Prior to issuance of grading permits for final grading plans, the applicant shall submit for review and approval by the Manager, Current Planning, grading plans that comply with the County of Orange Zoning Code §7-9-139 (Grading and Excavation) and use contour and/or landform grading techniques for slopes viewed from public rights-of-way as described below:

a. Contour grading results in landforms that exhibit many of the characteristics present with natural landforms as opposed to traditional terraced grading. Contour grading techniques include:

- The use of horizontal and vertical curve variations for slope banks creating a curvilinear pattern.
- Post-development landforms that exhibit natural terrain characteristics (without the heavily modeling effects of landform grading).

- A general rounding of slopes at slope intersections and transition zones with natural grade.

b. Landform graded slopes replicate the irregular shapes of natural slopes resulting in aesthetically pleasing elevations and profiles. Landform grading techniques should be used whenever slopes are being created which will be open to view from public rights-of-way.

AE-4 Prior to approval of a proposed Site Plan application, the Manager, Current Planning Services, shall review detailed development plans to ensure that adequate screening is provided around existing and proposed oil facilities as well as other utility structures. Such screening for all remaining oil well equipment within the residential neighborhoods and public use area shall be consistent with the specifications included in the approved Area Plan. For above-ground oil operations equipment within visual proximity of residential or recreation areas, screening shall be provided through the use of vine covered fences, walls and/or landscape plantings.

AE-5 Prior to approval of certificates of use and occupancy, existing electrical above ground utilities with a capacity of 12 kV or less shall be placed underground within the individual residential or mixed use planning areas.

AE-6 Prior to issuance of any building permit, the applicant shall demonstrate that all exterior lighting has been designed and located so that all direct rays are confined to the property in a manner meeting the approval of the Manager, Building Permit Services. Lighting shall be designed to minimize visibility of light sources by directing lighting toward the on-site structures and not illuminating areas outside property boundaries. Lighting along Tonner Hills Road shall be designed to protect the wildlife corridor crossing. The bridge spanning Tonner Creek shall be illuminated with bollards or other in-structure fixtures to prevent glare and light spillover into the creek.

4.11.5 Cumulative Impacts

The project, in combination with other future projects, would permanently alter the site from oil production uses to residential, commercial and public uses with some oil production uses. Conversion of this large oil production site to a more built-up condition may add to the urbanization in the County of Orange and adjacent to the City of Brea. Potential aesthetics impacts for the project site are mitigated to a less than significant level. Potential cumulative aesthetics impacts generated by projects in the vicinity will be substantially mitigated on a project-by-project basis through compliance with visual resource policies.

Construction of the project and other developments may have a significant effect on cumulative impacts of light and glare. However, these impacts will be substantially mitigated on a project-by-project basis through implementation of mitigation measures such as that listed above.

4.11.6 Unavoidable Adverse Impacts

(1) Short-Term

No significant impacts are anticipated to occur.

(2) Long-Term

Following implementation of proposed design features and recommended mitigation measures, long-term aesthetic impacts associated with on-site development and remaining oil production/storage activities will be reduced to less than significant levels.

With implementation of the recommended mitigation measure, potential significant light and glare impacts would be reduced to less than significant levels.

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4.12 Cultural/Scientific Resources

The cultural and paleontological resources of the proposed Planned Community site are identified in this section. The potential impacts to the cultural and paleontological resources are also identified, along with associated mitigation measures that are proposed as necessary. The discussion of the site's cultural resources is based on studies performed by The Chambers Group, Inc. in a 1997 study, which is attached in the Technical Appendices of this EIR. The discussion of the site's paleontological resources is based on a paleontological site assessment prepared by John Minch and Woolfolk (JMAW), attached in the Technical Appendices of this EIR.

4.12.1 Existing Conditions

a. Cultural Setting

The site is described as low rolling hills separating Tonner Canyon to the north from the alluvial plains to the south. Relatively steep-sided, small canyons drain these rolling hills and ridgelines. Elevations on the site range from 794 feet above sea level at the highest point to 420 feet above sea level at the bottom of Brea Canyon. It is located in the southwestern foothills of the Chino Hills. The 798-acre project area consists of three oil fields: the Stearns Fee, the East Naranjal Fee, and the Columbia Stearns Lease. The property is in the northeast corner of the San Juan Cajon de Santa Ana land grant. It is bounded to the east by two land grants: Rancho San Juan de Santa Ana and Rancho Cañon de Santa Ana. It is bounded on the north by Rancho San Juan Cajon de Santa Ana and Rancho Rincon de la Brea. The U.S. Geological Survey map locates the property as follows: the eastern part of the property lies partially within Section 7 and 8 of Township 3 South, Range 9 West. The western portion of the property is in Section 12, Township 3 South, Range 10 West. Both are in the San Bernardino Base Meridian.

Vegetation on the site is as varied as the site itself. The south-facing slopes are mainly coastal sage scrub and native and non-native grasslands. Oak and walnut woodlands occur on the north-facing slopes. Riparian associated vegetation is found in the canyon bottoms. The area is considered to be a part of Chino Hills, and consists of sandstones, siltstones, and conglomerates.

The majority of the site is located east of the Orange (SR 57) Freeway. It is bordered by Lambert Road to the south, Valencia Avenue to the east, Wild Cat Way to the west, and Tonner Canyon to the north. A small portion of the property is located west of SR 57 and surrounds Humble Reservoir, operated by the Metropolitan Water District.

The modern Stearns property contains three major oil leases. The larger portion of the property is part of the Stearns Lease, which is managed by Torch Operating Company. The eastern portion of the property is part of the Columbia Stearns Lease now operated by Aera Energy LLC.

(1) Prehistoric Context

The occupation of southern California by prehistoric man is divided into four temporal phases of horizons, chronologically. The first horizon, Horizon I or Early Man Horizon, began perhaps 11,000 years ago with the first appearance of man in the region, and continued until approximately 5000 BC. Little is known of the habits of man in this horizon, but it is assumed that they were semi-nomadic and subsisted primarily on game.

Horizon II, the Millingstone Horizon or Encinitas Tradition, began approximately 5000 BC and continued until approximately 1500 BC. The Millingstone Horizon is characterized by the widespread use of tools, including core tools, milling stones (metates and manos), and projectile points or shell and bone artifacts. This horizon represents a departure from Horizon I by a more sedentary settlement pattern and diversification of subsistence activities. Instead of subsistence on game, the Millingstone Horizon became more reliant on collecting shellfish and vegetal resources.

Horizon III, the Intermediate Horizon or Campbell Tradition, began approximately 1500 BC and continued until approximately AD 600 to 800. During Horizon III, projectile points became more abundant. Use of milling stones progressed to the more sophisticated mortar and pestle, possibly indicating a greater reliance on acorns as a food source. These factors, together with other findings, indicate increased use of land and sea mammals as a food source.

Horizon IV, the Late Horizon, began around AD 600 to 800 and terminated with the arrival of Europeans. It is characterized by diversified hunting and gathering strategies, including extensive fishing and sea mammal hunting and use of bow and arrow. This period is also characterized by dense collections of populations, trading networks, and a general cultural elaboration.

(2) Ethnographic Context

When Spanish explorers and missionaries first visited the area now called Southern California, they gave the name "Gabrielino" to the indigenous inhabitants of the area. Gabrielino territory extended from Topanga Creek to Aliso Creek. It included the watersheds of San Gabriel, Los Angeles, and Santa Ana Rivers; the current Los Angeles Basin, portions of the Santa Monica and Santa Ana Mountains, and San Clemente, Santa Catalina and San Nicholas Islands. The Gabrielino language is from Uto-Aztecan stock, and classified as belonging to the Takic family. The language is subdivided into four or more separate dialects. The project area is in the region where the Gabrielino dialect of the Gabrielino language was spoken.

Europeans' first contact with the Gabrielinos occurred in 1542, when Cabrillo entered the area. Cabrillo's exploration lead to more visits to the region by the Spanish, and colonization began in 1769. This colonization resulted in the formation of the Missions San Fernando and San Gabriel. During this time, Gabrielino populations became greatly diminished due to Euroamerican-introduced diseases and the harsh effects of mission life. As mission life became a way of life for the Gabrielinos, most that survived became

paid laborers on the Ranchos of Mexican California. In the early 1860s, a smallpox epidemic nearly wiped out the remaining Gabrielinos.

Much of what is known about the Gabrielino culture comes from the letters of Hugo Reid, a Scottish settler who married a Gabrielino woman. He subsequently observed their way of life throughout the early 1800s. Unfortunately, the Gabrielino culture disintegrated soon after contact with Europeans was established, and little is known of their way of life.

The Gabrielino were a semi-sedentary group of hunters and gatherers. Inland groups relied heavily upon acorns gathered from oak groves in canyons, drainages, and foothills, and ground with a mortar and pestle. Seeds from various native plants, such as sage, goosefoot, and California buckwheat, were collected and ground with manos and metates. Deer, rabbits, and other small mammals were hunted with bows and arrows, traps, and snares.

The Gabrielino had an elaborately developed material culture, similar to their neighbors to the north, the Chumash. Artistic items included shells set in asphaltum, paintings, and carvings. Technological items include an extensive steatite industry, baskets, and a wide range of shell, bone, and stone objects that served both a decorative and utilitarian function.

The Gabrielino subsisted on a widely varied strategy of hunting and gathering. Large and small land mammals were hunted with bow and arrow, trapped, clubbed, or taken with the use of deadfalls. Deep sea fishing and hunting were accomplished from boats made of wooden planks tied together and sealed with asphaltum. Tools used for deep sea hunting of sea mammals included harpoons, spears and clubs. When river fishing, Gabrielinos used hook and line, nets, basket traps, spears, and poisons.

(3) Historical Context

Local inhabitants of the Brea Canyon area have always used the natural tar seeps to their benefit. Native Americans used the tar as a waterproofing agent and as glue. Local shepherds used it as an ointment for their sheep. Early settlers burned brea (tar mixed with soil) as fuel for heat. Timber rights were tightly held by property owners, who seemed to have no interest in holding on to their petroleum rights, as anyone was free to pick up brea anywhere they happened upon it.

Early attempts at oil refining were done on a small scale, often in family kitchens. Early attempts at oil recovery in any quantity were done by digging shallow pits at tar seeps and filling barrels with oil. These pits were only 8 to 10 feet deep, as any deeper digging often yielded a quicksand mixture of sticky oil and sand, too soft to stand in without sinking.

In the 1870s the harvested oil was used in gaslights in the Los Angeles area, but because it produced such a foul odor when burned, it could only be used as an insect repellent. As more uses were found for crude oil in the 1880s, machinery for oil extraction was invented and oil refinery methods were improved.

The Chandler Oil Mining Co. began productive oil drilling in the area where Brea Canyon joins Tonner Canyon in 1882. The company moved up Tonner Canyon shortly thereafter a short distance from the current Stearns Property. It was here that a settlement was established named Petrolia. In 1890, Wallace Hardison and Lyman Stewart, two gentlemen active in Petrolia, pooled their resources along with others and formed Union Oil Company. In January 1984, Union Oil Company purchased 1,200 acres from Stearns Ranch Co. This land purchase came to be known as the "Stearns Fee." This name endures to this day for this property. Shortly after the Stearns Fee purchase, Union Oil leased the eastern 100 acres to Columbia Oil Producing Company. In 1919, Columbia Oil Producing Company transferred this land to Shell Oil Company. This portion of the Stearns Fee is still known as the Columbia Stearns Lease. Some time later, Edward L. Doheny and Brea Cañon Oil Company acquired 200 acres on the west end of the Stearns Fee as a settlement in a land title dispute.

Around the turn of the century, the U.S. Navy began switching its entire fleet from coal oil to fuel oil for power. By around 1908, this switch over was complete. This had a profound effect on the development of southern California's oil fields. In 1897, production on the Stearns Lease was 12,700 barrels per year. Two years later, in 1898, the output was 60,000 barrels. 218,000 barrels were produced in 1899, and 510,000 barrels were produced in 1900.

Stearns Camp, the center of operation on the Stearns Lease, was located near the mouth of the present Wild Cat Way on Union Oil Road. Union Oil Road was later named East Deodara. What began as tent housing, cook tent, and workshops quickly evolved into a community of homes, boarding houses, and warehouses.

During the 1920s, oil production appeared to shift to property to the east, including record-breaking activity at the Olinda tract and Shell's Columbia Lease. A 1928 aerial photograph shows extensive development of the Columbia Lease including numerous oil derricks and pumps, roads, and industrial and residential structures. This same photo shows very little activity on the Stearns Lease, with only the gas plant, roads, and a few oil derricks and pumps evident.

During World War II, two Army battalions moved into permanent housing on the Stearns Lease from temporary quarters at Brea Olinda High School. During this time Stearns Lease came to be known as "Camp Brea." The Stearns Lease was identified as one of the nation's strategic oil fields. These local soldiers drilled wells, built roads and bridges, and prepared to revitalize oil production on the Stearns Lease. These revitalization plans were never carried out, however, due to the slow advancement of the allied forces in the Pacific.

Most recently, activity on the Stearns Lease has seen a decrease in conventional oil pumping and an increase in secondary recovery systems using water injection and steam to extend the life of this oil field, now nearly 100 years old. The Navy was correct in the 1940s when they recognized the Stearns Lease as a prolific one. This property has been called the most prolific of all petroleum fields in the southland. It's lifetime yield is predicted to be 95 million barrels.

Tonner Hills and Tonner Canyon take their name from a colorful 19th century local character, Patrick Curran (P.C.) Tonner. Mr. Tonner was a hard-drinking young Irish schoolmaster, real estate agent, and

sometimes attorney who served as the defense attorney in the Rancho Cañada de la Brea lawsuit. Ironically, he lost[19].

(4) Existing Cultural Resources

The site does not have any known prehistoric cultural resources. One historic resource, designated as ORA-1483H, was identified on the Columbia Stearns Lease; however, this feature lies outside the development area. This resource consists of structural debris such as iron pipe, bricks, and concrete fragments. The site is 60 meters by 30 meters and in a bench cut of a south-facing slope of a hill in the northern part of the Columbia Lease. Upon inspection of the 1928 aerial photograph, a structure or partially demolished structure is located in approximately the same location as this historic resource. The structure is likely related to oil production and non-residential in nature.

Several hundred oil wells are located on the property, some operating and some abandoned. There appear to be three types of pumps on the property. Two of these types appear to be historic. Representative pumps were photographed, documented, and evaluated for significance. The pumps are recommended not eligible for listing in the National Register of Historic Places or CRHR as individual sources or as elements of a district because they lack context and integrity. The oil wells have been in production continuously and have been updated as technology has improved. Therefore, the pumps themselves do not have their original components and lack integrity. The tank farms and buildings associated with these historic oil wells are no longer extant. The tank farm and other oil facilities on the property currently are modern. Therefore, as a resource, the oil field lacks integrity and the wells lack context.

b. Paleontologic Resources

The information in this section is based on a report prepared in February 2000 by John Minch and Woolfolk, based on a site assessment and historical and scientific review of records. This report is included in the Technical Appendices of this EIR.

The north side of the site is bounded by moderately sloping, smoothly eroded hills, which form a ridge above Tonner Canyon. This ridgeline slopes gently to the south and west in an alluvial fan, extending onto the coastal plain.

As might be expected, the site covers many layers of deposits of high paleontologic sensitivity. Sedimentary units on the site include the upper Miocene Puente Formation, Pliocene Fernando Formation, Pleistocene La Habra Formation, Quaternary alluvium/colluvium, Quaternary non-marine terrace deposits, and recent alluvium.

[19]Brea, "Celebrating 75 Years"

The site is located in the Puente-Chino Hills, at the northern end of the Peninsular Ranges Geomorphic Province of California. The Puente-Chino Hills separate the Los Angeles basin/coastal plain from the upper Santa Ana River Valley. Reverse and right lateral strike-slip movement along currently active strands of the northwest-trending Whittier fault zone formed the Puente-Chino Hills. The main fault branch within the Whittier fault zone directly underlies Tonner Canyon (a fault valley). The Puente-Chino Hills are rich with oil and gas fields, and this site lies within the boundaries of the Brea/Olinda oil and gas field.

Significant paleontologic resources are defined as fossils or assemblages of fossils that are unique, unusual, rare, uncommon, diagnostically or stratigraphically important, or that add to an existing body of knowledge in specific areas, stratigraphically or regionally. Paleontologic remains are protected under provisions of the Antiquities Act of 1906 and subsequent related legislation, policies, and enacting responsibilities and are accepted as non-renewable resources significant to our culture.

Listed below, in chronological order, are descriptions of each geologic unit identified as underlying the site. Included is a description of the lithologies, depositional environments, and various fossils types associated with each bedrock unit.

(1) Puente Formation

The Puente Formation is divided into four members: La Vide, Soquel, Yorba, and Sycamore Canyon. The units are described below.

a) **La Vida Member**. The La Vida Member was deposited in the early part of the late Miocene era, in a deep marine (bathyal) environment. The unit consists of brittle, diatomaceous, platy, very dark brown to black, hard, clayey siltstone and silty claystone with interbeds of fine-grained sandstone and tan andesitic tuff. It has an upper weathered zone consisting of brown and gray-brown, diatomaceous, clayey siltstone and silty claystone. Existing locally at the base of the unit are diabasic intrusive rocks. A discontinuous bed of light yellow to tan sandy tuff is interbedded in the basal siltstone of the La Vida Member. The La Vida Member is known to produce significant paleontological resources, including fish and sea mammals such as whales, seals, sea lions and porpoise, mollusks and vegetation such as leaves and algae. Significant fossils have been recovered including mass mortality bony fish beds.

b) **Soquel Member**. Soquel Member was deposited in a deep marine (bathyal) environment. It contains medium to coarse grained, gritty sandstone and is interbedded with light gray to light yellowish-brown siltstone. The upper part is a light gray to light yellowish-brown, medium to coarse sandstone with pebbles. Near the north edge of the Yorba Linda Quadrangle it is a light gray to light yellowish-brown siltstone with boulders of grantoid rock. The siltstone units can be locally siliceous and may contain chart beds. The lower part of the unit is light gray to light yellowish-brown thick bedded to massive sandstone containing zones of large concretions and medium- to coarse-grained, gritty sandstone containing zones of large concretions and medium- to coarse-grained, gritty sandstone interbedded with siltstone. The unit also contains zones of large concretions. The Soquel

Member has been known to produce significant paleontological resources, including fish, whales, seals, sea lions, porpoise, other mammals, algae, leaves, and mollusks.

c) **Yorba Member**. The Yorba Member of the Puente Formation was deposited in a deep marine (bathyal) environment. It contains light gray to pinkish-brown sandy siltstone and interbeds of gray to light brown medium- to coarse-grained sandstone. Locally it contains thick sequences of interbedded sandstone with some occurrences of light gray punky diatomaceous siltstone. The Yorba Member has been known to produce significant paleontological resources, including fish, whales, seals, sea lions, porpoise, other mammals, algae, leaves, and mollusks.

d) **Sycamore Canyon Member**. The Sycamore Canyon Member of the Puente Formation contains alternating silty sandstone and pebbly conglomerate. Like the Yorba Member, the Sycamore Canyon Member of the Puente Formation represents a deep marine (bathyal) depositional environment. Lithologies consist of a light yellowish-brown to brown pebble conglomerate and conglomeratic sandstone; light-yellowish-brown, fine- to medium-grained, thin-bedded to massive feldspathic sandstone; and light gray, fairly well-bedded to massive siltstone. Rapid lateral gradations are a common occurrence within this unit. In the Prado Dam quadrangle, the uppermost part of the Sycamore Canyon Member consists of white sandstone, gravel, and siltstone, possibly of Pliocene age in part. The Sycamore Canyon Member has been known to produce significant paleontological resources, including fish, whales, seals, sea lions, porpoise, other mammals, algae, leaves and mollusks.

(2) Fernando Formation

The Fernando Formation is early to late Pliocene in age and has been divided into lower and upper members, based on an extensive erosional unconformity and differences in lithology. The lower member of the Fernando Formation is early Pliocene in age and was deposited at the base of a shelf slope in approximately 4,000 feet of water. The lower member contains thick alternating sequences of silty fine- to coarse-grained sandstone and lenticular pebble-cobble conglomerates. Lithologies consist of dark greenish gray to light greenish gray, poorly bedded to massive, micaceous siltstone; alternating pale-yellow-gray to orange-gray massive silty sandstone, orange-gray to pale-brown massive pebble conglomerate, and local beds of intraformational breccia. Basal conglomerate contains locally abundant angular fragments of Puente Formation siltstone and diabase. The lower Fernando Formation sandstone contains foraminifers, leaves, and mollusks.

The upper member of the Fernando Formation is late Pliocene age, deposited in a neritic or shelf environment where depths range from 3,000 to 600 feet. Lithology of the upper member consists of light gray to tan, fine-grained silty sandstone, with coarse-grain to pebble sandstone and sandy conglomerate interbeds. Fossils include fish otoliths, echinoids, leaves, mollusks, and foraminifers. The upper member has been separated into three units as described below:

- **Lower unit** - pale-olive-gray to pale-yellow-brown sandstone with thin partings of sandstone, and pale-yellow-brown massive pebble3 conglomerate at a base and locally abundant angular fragments of platy white siltstone derived from the Puente Formation. A regional unconformity exists at the base of this unit.

- **Middle unit** - pale-olive-gray to pale-yellow-gray massive silty sandstone with locally scattered pebbles and limey concretions. It concludes a few thin beds of marly silt, containing abundant poorly preserved mollusks and foraminifers.

- **Upper unit** - pale- to moderate-yellow-brown massive friable sandstone and pebbly sandstone with fine-grained sandstone at top of unit which locally contains numerous mollusks.

(3) La Habra Foundation

The late Pleistocene La Habra Formation was deposited in a sub-aerial braided stream environment that likely represents the remnants of the Coyote Creek drainage, associated with erosion of the San Gabriel Mountains. The interbedded units range from clay deposits to siltstones and coarse sandstones. Locally, lignite coal deposits are present, inferred to represent ox-bow lakes and abandoned meanders. Locally, some areas grade upward from coarse sand to clay, while other areas have well-developed paleosols. The high incidence of caliche nodules indicates an arid paleoenvironment. A rich vertebrate, botanical, and invertebrate record of fossils has been documented from within the La Habra Formation, including such specimens in the site vicinity as land vertebrates, freshwater snails, ostracods, and plant fragments. The base of the La Habra Formation has also yielded various mammalian specimens, including *Elephas imperator* (Imperial mammoth).

(4) Older Quaternary Alluvium

Older alluvium ranges from early to late Pleistocene in age. These deposits generally consist of semi-consolidated and poorly sorted tan to ochre-red-brown, fine- to coarse-grained clastic fluvial deposits deposited within abandoned stream channels or alluvial fans. General lithologies include gravels, sands, silts, and clays and have a thick soil development. Older alluvium deposits are often faulted, buried beneath younger alluvial deposits, and can be extensively dissected and elevated with respect to the surrounding area by more modern erosional processes. Orange County paleontologists have collected very significant land mammal fossil resources from these deposits, including bison, horse, sloth, tapir, camel, deer, antelope, and other mammals.

(5) Quaternary Terrace Deposits

Non-marine terrace deposits range from early to late Pleistocene age and generally consist of light red-brown to yellow-brown, semiconsolidated, poorly to well-sorted, coarse-grained sandy conglomerate with interbeds of silts, clayey sands, and sands. Radiocarbon dates indicate that most Non-marine terrace deposits in Orange County are older than 32,600 years. As with Older alluvium, numerous significant Pleistocene mammalian fossils have been collected from Non-marine terrace deposits in Orange County, including musk ox, camel, horse, mastodon, mammoth, ground sloth, and bison.

(6) Quaternary Colluvium/Slopewash

Quaternary colluvium/slopewash consists of slope-mantling deposits that are deposited at the base of a slope or along a slope surface in response to weathering and gravity. These unconsolidated deposits are characteristic in lithology and paleontological sensitivity to the bedrock from which they were derived. Quaternary age fossils may also be present within these deposits, as a result of being buried by these materials. Depending on the character of the underlying bedrock, colluvium/slopewash consist of dark brown to black, dense to medium dense, slightly moist, porous, silty clays, derived from weathered bedrock materials and organic materials from upslope areas.

(7) Recent Alluvium

Recent alluvium includes fluviatile sediments deposited as part of the Holocene cycle of alluviation. Recent alluvium is deposited mainly within drainage channels and consists of silts, sands, and gravels, often derived from bedrock material in nearby source areas. Recent alluvium is generally unconsolidated, unweathered, poorly sorted, and displays crude stratified bedding structures. A variety of terrestrial fossils can be found in older recent alluvium, the most significant of which are land mammals.

(8) Fossils Adjacent to the Site

Published and unpublished paleontological literature indicate that the site and surrounding area are underlain by bedrock formations having a high paleontological sensitivity. Fossilized micro and macro flora and fauna of marine and non-marine origin, including vertebrates, land mammals, and invertebrates, have been recovered from localities adjacent to the site and elsewhere in Orange County.

A report prepared by RMW Associates for the Olinda/Olinda Alpha Landfill located directly to the site to the east was reviewed by JMAW. The RMW report indicated that a wide variety of marine and terrestrial fossils have been collected from the Puente Formation during grading monitoring activities associated with the landfill. Fossils collected included fish, birds, and marine vertebrates from the La Vida Member of the Puente Formation. The Soquel Member of the Puente Formation has yielded invertebrates near the west end of the area. During the field survey conducted by JMAW in 1996, fossil specimens were collected adjacent to and north of the site. These fossils include a variety of marine and non-marine specimens, from siltstone and shales assigned to the Sycamore Canyon and Soquel Members of the late Miocene Puente

Formation. Marine and terrestrial fossils collected include fish scales and bones, and dicot leaf and wood fragments.

(9) Significance of Fossils

All of the geological units described above contain documented and significant fossil resources. Other parts of Orange and Los Angeles Counties have yielded significant and scientifically valuable fossils. Future paleontological salvage and mitigation monitoring work performed in the Puente-Chino Hills during grading activities will only serve to further the knowledge of these previous findings.

A wide variety of fossil specimens have been found in the Puente Formation, including a wide variety of mollusks, foraminifers, fish, terrestrial plants and marine mammalian specimens including sharks, whales and plants. A rare and significant finding within the Puente Hills area has been the presence of the cephalopod *Argonauta* sp. (paper nautilus) within the Puente Formation. Local paleontologists feel that their accounts of algal deposits from the Miocene era are not complete and a far more extensive and richer algal flora have yet to be collected and described. All fossil specimens within the Puente Formation are significant in that they provide information regarding paleoenvironmental conditions existing during the Miocene era in southern California.

The Fernando Formation has produced a wide variety of fossil specimens throughout the Los Angeles/Orange County basin, including various Pisces otoliths, echinoids, mollusks, foraminifers, and leaves. Fossils collected from the Fernando Formation help to define paleogeographic conditions during the Pliocene time by indicating water depth.

Paleontologic resources found within older Quaternary alluvium and stream terrace deposits are considered to be very significant. Fossils found in this region often consist of larger extinct land mammals that dominated the landscape in Orange County in the very recent geologic past (last 2 million years). These fossils allow scientists the ability to reconstruct the conditions within which fauna and flora existed on a landscape very similar to that of today.

Recent Quaternary colluvium/slopewash, alluvium and landslide debris cal all be derived from source areas underlain by the Puente, Fernando, and La Habra Formations. These highly fossiliferous source rocks may therefore be expected to contain fossils within surficial Quaternary deposits. These Quaternary deposits may also contain nearly recent fossils, which would be considered very rare and very significant.

(10) Paleontological Sensitivity Ratings

Table 4.12-1 provides paleontologic sensitivity ratings for each of the geologic units identified as underlying the site and provides recommended paleontological monitoring schedules to be employed during construction and grading activities. Descriptions of the known paleontological resources (fossils) associated with each geologic unit are provided below.

Table 4.12-1 - Paleontological Sensitivity Ratings and Monitoring Schedules

Geologic Unit	Sensitivity Rating	Recommended Monitoring Schedule
Puente Formation (La Vida, Soquel, Yorba, and Sycamore Canyon Members)	High	Full time
Fernando Formation (lower and upper members)	High	Full time
La Habra Formation	High	Full time
Older Quaternary alluvium	High	Full time
Quaternary non-marine terrace deposits	High	Full time

The paleontological sensitivity rating of the Puente Formation is considered to be high. Some of the finest and most complete examples of marine algae, terrestrial leaves and very rare paper nautilus shells have been collected from this formation. The Puente Formation is highly fossiliferous and has produced fossil leaves, fishes including invertebrates and sharks, marine and terrestrial mammals in the eastern Puente-Chino Hills, Anaheim Hills, El Toro and San Dimas areas.

The paleontological sensitivity rating of the Fernando Formation is considered to be high. Both the upper and lower members of the Fernando Formation have yielded fossils, including echinoids, mollusks, and foraminifers.

The paleontological sensitivity rating of the La Habra Formation is considered to be high. The La Habra Formation has yielded terrestrial fossils such as freshwater snails, ostracods, plant fragments and large rare land mammals such as imperial mammoths. These non-marine deposits have been found in the vicinity of the site.

The paleontological sensitivity of older Quaternary alluvium/Quaternary alluvium that is not in the active stream channel is considered to be high. This geologic unit is late Pleistocene in age and known to yield remains of extinct "Ice Age" animals and other significant paleontological resources from localities in Orange County and the Los Angeles Basin. In Aliso Viejo mastodon bones have been recovered from alluvium, as well as other vertebrates from other locations. In Foothill Ranch a horse tooth fragment from a Pleistocene stream deposit has been documented. Fossils collected from this geologic unit and associated pond deposits have included fish, frogs, turtles, lizard, snake, birds (raptors and song birds), rabbits, hares, squirrels, gophers, kangaroo rats, saber-tooth cats, sloths, coyote, mammoth, horse, camel, and bison.

The paleontological sensitivity of Quaternary non-marine terrace deposits is considered to be high. This geologic unit is late Pleistocene in age and may contain the remains of extinct "Ice Age" animals. Radiocarbon dates of non-marine deposits, and thus the fossils within them, are older than 32,600 years. Fossils found in this unit may include saber-tooth cats, sloths, bison, and camel. These types of fossils may also be present within terrace deposits of a slightly younger age.

Construction activities such as pit excavations for roads, housing developments and quarries in the Los Angeles basin have yielded the remains of Rancholabrean type animals in Quaternary colluvium/slopewash deposit areas. These fossils are considered to be very rare and include elephants, horses, bison, saber-tooth cats, deer, and sloths. This unit was found on-site containing widely scattered platy ships derived from the underlying Puente Formation. The paleontological sensitivity of Quaternary colluvium/slopewash is considered to be the same as the underlying unit (in this case the Puente Foundation).

4.12.2 Thresholds of Significance

For the purposes of this EIR, the thresholds of significance for evaluating project impacts are based upon suggested criteria from the County of Orange Environmental Checklist and the CEQA Environmental Checklist found within Appendix G of the CEQA Guidelines. The project would result in a significant impact if it would:

- Disturb archaeological or paleontological resources;.
- Affect historical resources; or
- Have potential to cause a physical change which would affect unique ethnic cultural values.

Section 15064.5 of the CEQA Guidelines provides a detailed explanation of historical and archaeological guidelines for determining the significance of impacts on historical and unique archaeological resources. The CEQA Guidelines define three ways that a property can qualify as a significant historical resource for the purposes of CEQA review: 1) if the resource is listed in or determined eligible for listing in the California Register of Historical Resources (CRHR), 2) if the resource is included in a local register of historical resources, as defined in §5020.1(k) of the *Public Resources Code* or identified as significant in an historical resource survey meeting the requirements of §5024.1(g) of the *Public Resources Code*, unless the preponderance of evidence demonstrates that it is not historically or culturally significant, or 3) the lead agency determines the resource to be significant, as supported by substantial evidence in light of the whole record. The purpose of this evaluation is to present the determination of significance for the purposes of CEQA.

A historical resource may be eligible for inclusion in the CRHR if it:

- is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- is associated with the lives of persons important in our past;
- embodies the distinctive characteristics of a type, period, region, or method of construction, represents the work of an important creative individual, or possesses high artistic values; or
- has yielded, or may be likely to yield, information important in prehistory or history.

Significant cultural resources may be avoided through redesign of the project or construction planning, or protected and preserved through various means. If a project proponent agrees to avoid affecting any of the cultural resources identified in the project area, evaluation of these resources for potential to be listed on the CRHR is not required. If avoidance or protection of a significant cultural resource is not possible, mitigation measures are required as set forth in *Public Resources Code* §21083.2(c-l). A significant cultural resource need be given no further consideration (*Public Resources Code* §21083.2(h)).

4.12.3 Project Impacts Prior to Mitigation

a. Cultural Resources

The project area contains one potentially significant historic archaeological site (ORA-1483H). This site has yet to be evaluated and may have potential to yield important historic information. Its eligibility has yet to be determined. The project design avoids any impacts to this site by avoiding grading within its boundaries. Care must be taken, however, as buried resources were discovered in the vicinity of the identified site and may indicate further buried resources in the area (Exhibit 4.12-1). Any impact to this archaeological site would be classified as a significant impact. Impacts are reduced to less-than-significant levels by implementing Mitigation Measures CR-1 and CR-2.

The oil wells and pumps on the site have been recorded and evaluated and were not recommended as eligible for listing in the National Register of Historic Places or CRHR. Some of these wells will be dismantled as a result of this project. Impacts to the wells will not be considered as significant. No mitigation measures are necessary.

It is possible that the site contains buried cultural resources that were not identified as a result of this investigation. Any unknown resources such as this could be inadvertently unearthed during grading and other ground-disturbing activities associated with development of the proposed project. This activity could result in the demolition or substantial damage of significant cultural resources. Impacts are reduced to less-than-significant levels by implementing Mitigation Measures CR-2 and CR-3.

Site investigation and literature review have revealed a high paleontologic sensitivity rating for the sedimentary units on the site. Grading activities and other ground-disturbing activities associated with construction of the proposed project are likely to expose paleontological resources in each of the geologic formations previously discussed. These units are known to yield significant fossils adjacent to the site and in other areas of the Puente-Chino Hills and Orange County. The units have a moderate to high paleontologic sensitivity in the site area. Implementation of the mitigation measures presented in this section and careful development of the site are necessary. The actions presented may increase knowledge of the geologic units and improve existing fossil collections and provide a better understanding of known fossil assemblages and the depositional environment of these rock units. Disruption of the site as a result of development would result in significant impacts on paleontologic artifacts. However, by implementing Mitigation Measures CR-4 as stated below, potential impacts would become less than significant.

4.12.4 Mitigation Measures

a. Cultural Resources

CR-1 A qualified archaeological monitor approved by the County of Orange and paid for by the developer/property owner shall be present to monitor all ground-disturbing activities within 250 feet of ORA-1483H.

CR-2 If buried cultural resources, such as chipped or ground stone, significant historic debris, building foundations, or human bone, are inadvertently discovered during ground-disturbing activities, work will stop in that area and within 100 feet of the find until a qualified archaeologist monitor approved by the County and paid for by the developer/ property owner can assess the significance of the find and, if necessary, develop appropriate treatment measures in consultation with the County of Orange and other appropriate agencies.

If human remains of Native American origin are discovered during project construction, it is necessary to comply with state laws relating to the disposition of Native American burials, which fall within the jurisdiction of the Native American Heritage Commission (*Public Resources Code* §5097). If any human remains are discovered or recognized in any location other than a dedicated cemetery, there will be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the coroner of the county has been informed and has determined that no investigation of the cause of death is required. Section 7050.5 of the *California Health and Safety Code* requires that construction or excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must contact the California Native American Heritage Commission.

If the remains are of Native American origin:

a. The descendants of the deceased Native Americans may recommend to the landowner or the person responsible for the excavation work a means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in *Public Resources Code* §5097.98, or

b. And the Native American Heritage Commission was unable to identify a descendant or the descendant failed to make a recommendation within 24 hours after being notified by the commission, the landowner shall re-inter the human remains with appropriate dignity on the property in a location not subject to further subsurface disturbance.

According to the *California Health and Safety Code*, six or more human burials at one location constitutes a cemetery (§8100) and disturbance of Native American cemeteries is a felony (§7052).

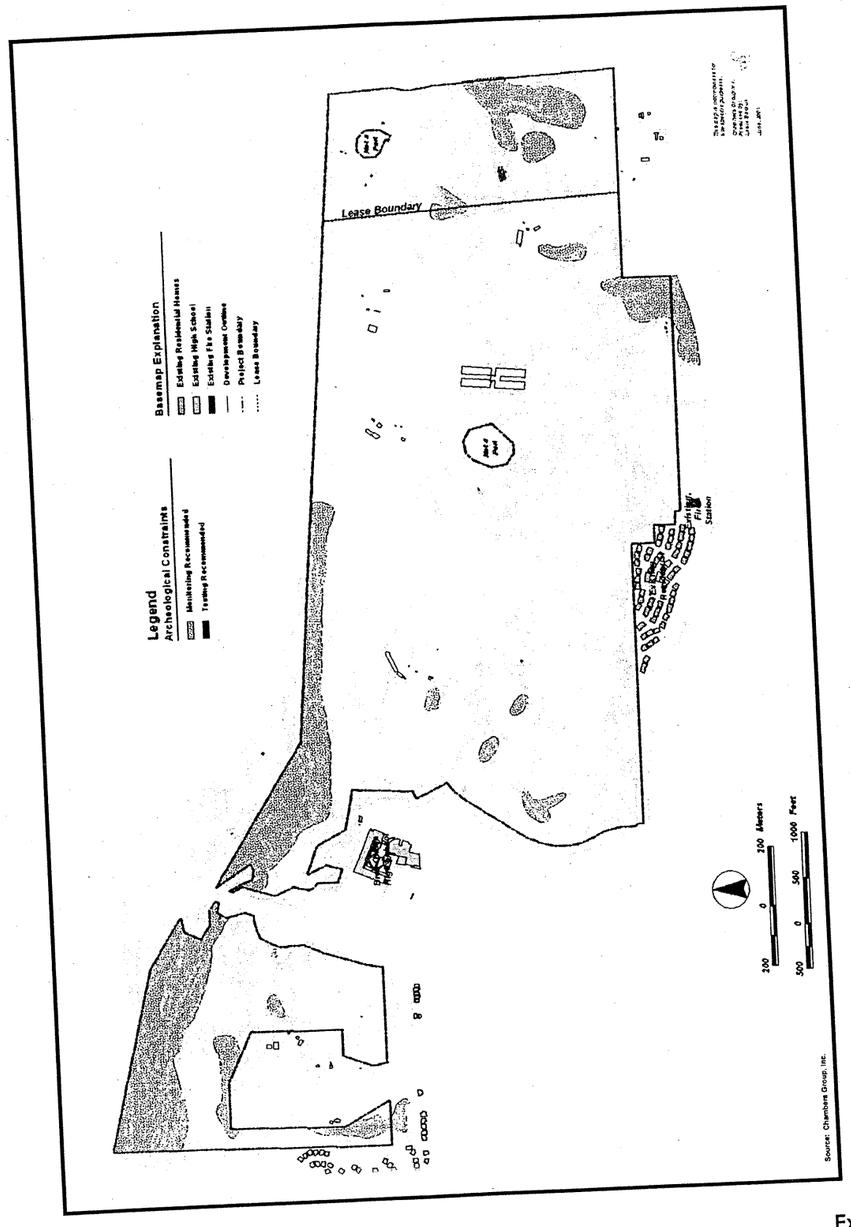

Exhibit 4.12-1
Cultural Resources Constraints

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The construction contractor and the County of Orange will ensure that work is halted until appropriate treatment measures are implemented if potentially significant cultural resources are discovered during construction activities.

CR-3 The areas with dense vegetation but relatively level topography, such as along Tonner Creek and on ridgetops and hilltops, shall be monitored by a qualified archaeological monitor approved by the County and paid for by the developer/property owner when vegetation grubbing and clearing occur and during grading.

b. Paleontological Resources

CR-4 Prior to the issuance of a grading permit, the developer/property owner shall direct a County Certified Vertebrate Paleontologist (CCVP) to provide written evidence (letter verification) to the Manager, Subdivision and Grading, indicating that a CCVP has been retained to observe (monitor) grading activities and salvage and catalog fossils as necessary. The hiring of the CCVP will be approved by the County and paid for by the developer/property owner. The CCVP will ensure the following actions are implemented:

- *Develop monitoring plan.* A paleontological resource monitoring plan shall be developed by a CCVP. This plan should include a schedule for grading monitoring to be maintained while conducted within fossiliferous geologic units, in order to further evaluate on-site fossil resources.

- *Conduct salvage operations.* Salvage operations shall be initiated and coordinated with the developer and the County if significant concentrations of fossils are encountered during grading.

- *Protect unearthed fossils.* Paleontological field monitors (staff paleontologists) shall be equipped to salvage fossils as they are unearthed to avoid construction delays and remove samples of sediments which are likely to contain the remains of small fossil vertebrates. Monitors must be empowered to temporarily halt or divert grading equipment to allow the removal of large specimens. If significant concentrations of fossils are encountered or separate equipment is operating at distances greater than 1/8 mile apart, additional staff paleontologists may be required during grading in order to maintain compliance with mitigation measures.

- *Establish resource surveillance procedures.* The CCVP shall be present at the pre-grading conference, shall establish procedures for paleontological resource surveillance, and shall establish, in cooperation with the project developer, procedures for temporarily halting or redirecting work to permit sampling, identification, and evaluation of the fossils. If major paleontological resources are discovered, which require long-term halting or redirecting of grading, the paleontologist shall report such findings to the project developer and to the County of Orange.

- *Protect fossil finds.* During grading, the CCVP shall determine appropriate actions, in cooperation with the project developer, which ensure proper exploration and/or salvage of encountered paleontologic resources (fossils). Excavated significant fossil finds shall be offered to the County of Orange, or its designee, on a first-refusal basis. The project developer may retain said fossil finds if written assurance is provided that they will be properly preserved, unless said finds are of special significance, or the County of Orange indicates a desire to study and/or display them, in which case the fossils shall be immediately accessioned to the County of Orange, or designee. These actions, as well as final mitigation and disposition of the resources, shall be subject to the County of Orange guidelines and regulations. Prior to the issuance of a precise (fine) grading permit, the paleontologist shall submit a final report for approval by the County of Orange.

- *Observe grading.* Paleontologic grading observation, supplemented by weekly periodic in-grading supervisory inspections by the CCVP, shall be maintained when grading in all on-site geologic units. This will enable further evaluation, protection and salvaging of any significant paleontological resources encountered on-site. Monitoring on a full-time basis is required as significant concentrations of fossils are anticipated within geologic units to be exposed during grading of the site. Monitoring schedules can only be altered during the project by the CCVP.

- *Complete salvage operations quickly.* If significant concentrations of fossils are encountered, which cannot be collected during monitoring time, salvage operations must be initiated and completed as quickly as feasible at the direction of the CCVP and coordinated with the on-site grading foreman. The County of Orange, or its designee, and the property developer will be notified regarding any paleontologic salvage operation as soon as possible.

- *Prepare final report.* Prior to the issuance of certificates of occupancy, or as required by the County of Orange, a final paleontological report – paid for by the developer – shall be prepared for submission, review, and approval by the appropriate lead regulatory agency. The report shall include grading dates, methodologies, an itemized inventory of specimens and analysis of the significance of encountered fossils, and information regarding curation of collected fossils to the point of identification and accession of the fossils to the County of Orange or a museum repository with a retrievable storage system. The final report and inventory, when submitted to the appropriate lead agency, signifies completion of the program to mitigate impacts on paleontologic resources.

4.12.5 Cumulative Impacts

With mitigation, development of the proposed project is not anticipated to significantly impact cultural or paleontological resources within or adjacent to the site boundaries. Individual project impacts are evaluated and mitigated on a project-by-project basis. Project development in combination with other cumulative projects would not significantly alter any regional or cumulative cultural, scientific or historical resources.

4.12.6 Unavoidable Adverse Impacts

With implementation of the recommended mitigation measures, impacts to cultural, scientific or historic resources will be reduced to a less than significant level.

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4.13 Recreation

This section discusses the potential park and recreation impacts associated with the proposed project. The information in this section is based on the Recreation Element of the Orange County General Plan. This chapter examines the existing and future parks and recreation opportunities in the project vicinity and the potential impacts of the proposed project on these resources.

4.13.1 Existing Conditions

a. Parks and Recreation Opportunities

There are 288 acres of County regional parks, a number of public parks, and recreation areas surrounding the project area. Parks located within a 2-mile radius of the project site include Chino Hills State Park, Carbon Canyon Regional Park, Country Hills Park, Gilman Park, Tuffree Park, George J. Koch Park, Brea Junior High Park, Olinda Regional Park, Tri-City Park, and Olinda Heights Park (under construction) (see Exhibit 4.13-1). In addition to these nearby park sites, residents can enjoy a variety of other recreational opportunities within a short travel distance. These include Yorba Regional Park, Featherly Regional Park, Craig Regional Park, Weir Canyon Wilderness Park, Frank G. Bonelli Regional County Park in San Dimas, and the Cleveland National Forest in eastern Orange County.

(1) County Parks

Following is a list of County regional parks in the vicinity of the project site.

- ***Craig Regional Park*** - a 129-acre park owned by the County of Orange. The park is both a passive-use and active-use park that includes a 4-acre fishing lake, restrooms, picnic tables and shelters, barbecues, a playground and tot lot, a concessions building, a grass amphitheater, ball fields, and basketball, volleyball, and racquetball/handball courts.
- ***Olinda Regional Park*** - a proposed regional park that will be constructed by the County of Orange as part of reclamation of the Olinda Landfill after it closes in 2013 (or later). The 250-acre site is intended to be developed with a balance of park and wilderness areas, including active and passive recreational activity areas. An existing 119-acre portion of the park is owned by the County due to a recent acquisition, but is not open to the public pending future reclamation and addition of ultimate Olinda Landfill acreage to this parcel, as well as access.
- ***Carbon Canyon Regional Park*** - a 125-acre regional park situated within a floodplain at the base of the Carbon Canyon Dam and accessible from Carbon Canyon Road. The park includes maintenance and administration facilities and active and passive uses. Facilities include restrooms, picnic shelters (including a large 350-person shelter), barbecues, picnic tables, a 4-acre fishing lake, equestrian trails, hiking trails, and a bike trail. Active uses include a lighted tennis court, multi-purpose fields, volleyball courts, and play equipment.

(2) City Parks

The City of Brea provides planning, operations, and maintenance for City parks and recreational facilities. Brea's park system includes City-owned parks, school sites under joint-use agreements with the Brea-Olinda Unified School District, and county regional parks. In addition, the City of Brea operates and maintains various bicycle, equestrian, and jogging trails throughout the City.

Brea provides recreational opportunities for a broad range of age groups and interests including three public golf courses, sports fields and complexes, and playgrounds for children. Soccer, Little League Baseball and Pop Warner Football leagues are offered, as well as strong Scouting programs. The City of Brea sponsors programs and services that include adult and youth excursions, adult and youth sports leagues, summer aquatics park and ball field reservations, recreation classes, Tiny Tots, summer day camp and Park Play Daze. There are currently seven parks located in Brea that are maintained by the city with the other parks being maintained by the county or Tri-City Authority.

Table 4.13-1 - Brea Park and Recreational Facilities

Park Name	Size (acres)	Park Facilities
Arovista Park	14.84	Lighted field sports, amphitheater, skateboard park, restrooms
Brea Junior High Park	13.06	Lighted field sports, lighted basketball and volleyball courts, restrooms
City Hall Park	4.47	Olympic size pool, basketball courts, play areas
Country Hills Park	6.21	Basketball courts, play areas, tennis courts, lighted sports fields
Greenbriar Park	3.5	Barbeques, play areas, picnic tables, restrooms
Lagos De Moreno Park	1.5	Barbeques, play area, picnic tables
Olinda Ranch Park	18.0	Under construction
Tamarack Park	5.6	Lighted field sports, basketball courts, play areas, restrooms

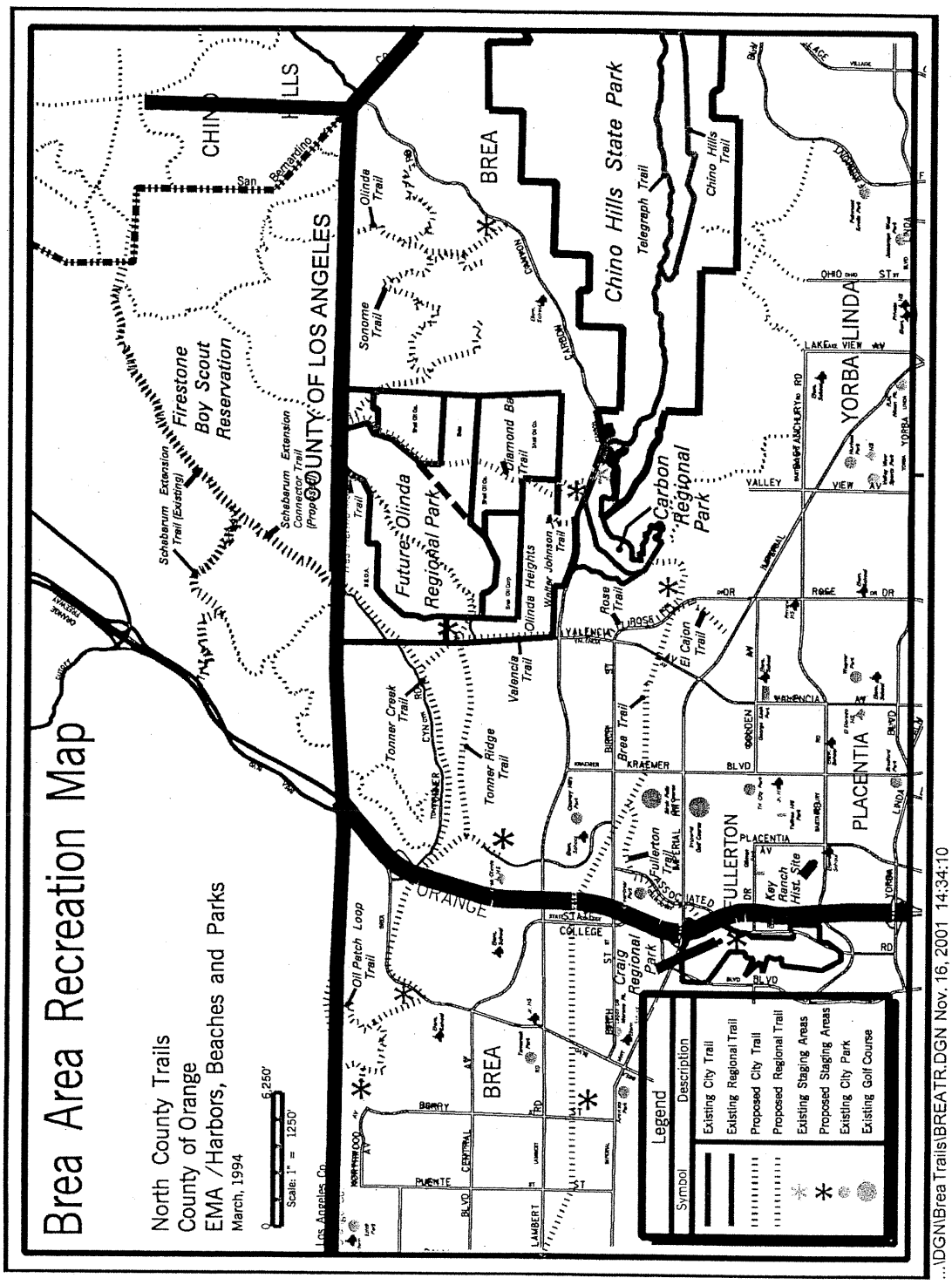

Exhibit 4.13-1
Existing and Proposed Trails

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b. Regulatory Setting

(1) County of Orange General Plan, Recreation Element

The County of Orange General Plan, Recreation Element, sets forth a comprehensive strategy for the acquisition, development, operation, maintenance, management, and financing of county recreation facilities that are necessary to meet Orange County's existing and future recreation needs. The Recreation Element serves to guide and direct local government decision making regarding recreation issues and facilitates the coordination of local, regional, state, and federal efforts. County of Orange Local Park Code requires 2.5 acres of land per 1,000 persons when residential dwelling units are proposed within the unincorporated areas of the county.

The Recreation Element of the General Plan includes five main sections:

- Purpose of the Element
- Constraints and Opportunities
- Local Parks Component
- Regional Riding and Hiking Trails Component
- Regional Recreational Facilities Component

The project implements policies and is consistent with contained within the Local Parks Component of the Recreational Element of the General Plan as follows.

2.32 To acquire park lands by requiring residential developers to provide a minimum of 2.5 net acres of usable local park land for each 1,000 residents. In no case shall the credit given for park land and improvements exceed the total requirement under the Local Park Code. No credit banking shall be permitted when a developer provides the full requirement in acreage and also provides improvements.

2.34 Developers may be required to improve local park sites as a condition of approval for General Plan amendments, zone changes, area plans, feature plans, and/or subdivision maps.

The developer of Tonner Hills will pay local park in lieu fees or obtain credit for public local park dedication as provided for in the County of Orange Local Park Code (Title 7, Division 9, article 5 of the Codified Ordinances) equivalent to the local park requirement for the project as established in the General Plan. In addition, the Tonner Hills Planned Community will provide parks to include the 5.8-acre Wildcatters Park and 1.8 acres of passive parks for the active and passive recreational needs of its residents. The County of Orange Local Park Code requirement is computed by utilizing density acreage requirements of .008 acre/DU for densities up to 6.5 DU/acre and .006 acre/DU for densities from 6.6 DU/acre to 15.5 DU/acre. Using these factors, the Local Park Code requirement is approximately 7.3 acres of park land for the Tonner Hills project.

(2) City of Brea Municipal Code, Park and Recreational Facilities

For comparative purposes, the City of Brea parkland dedication standards were evaluated. The City of Brea, within whose sphere of influence the project is located, establishes dedication standards under §18.64.080.D:

> Standards for dedication. The amount of land to be dedicated or the fees to be paid shall bear a reasonable relationship to the use of benefits of the park and recreational facilities by the future residents of the subdivision. The City Council establishes a ratio of 5 park acres to 1,000 population, in accordance with the Subdivision Map Act.
>
> Population density. Population density for the purpose of this chapter shall be determined in accordance with the latest (1988) Census of Population on Housing. Mean population per dwelling unit is as follows:
>
> 1. Single-family dwelling units - 3.5 persons per dwelling unit
> 2. Two-family dwelling units - 3.5 persons per dwelling unit
> 3. Multiple-family dwelling units - 2.0 persons per dwelling unit
> 4. Mobile home dwelling units - 1.7 persons per dwelling unit

The Tonner Hills Planned Community estimated population is 2,276, which would require parkland dedication of approximately 11.38 acres. The project would not be consistent with this city standard.

4.13.2 Thresholds of Significance

For the purposes of this EIR, the thresholds of significance for evaluating project impacts relating to recreation are based upon suggested criteria from the CEQA Environmental Checklist (Appendix G of the CEQA Guidelines). The project would result in a significant impact if it would:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that a substantial physical deterioration of the facility would occur or be accelerated.
- Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.
- Conflict with adopted recreational plans or policies.

4.13.3 Project Impacts

a. Parkland

The proposed Tonner Hills Planned Community is estimated to generate approximately 2,276 additional residents, which will increase the demand upon existing local, county and state recreational facilities. Using county parkland standards, the proposed project would require the dedication of approximately 7.3 acres of parkland. The project site contains a recreational lease park, Wildcatters Park, which historically has been leased out for private functions by reservation only. The 5.8-acre park is located adjacent to Neighborhood 2 of the development. The park will be improved as a neighborhood park for the Tonner Hills community and for area residents from outside the Tonner Hills Planned Community entering the community via the pedestrian/bicycle/ equestrian trails.. Improvements will include informal recreation areas, restrooms, and parking and picnic areas. Vehicular access is available to residents of Tonner Hills via Street A. The park will be maintained by the Tonner Hills Master Homeowners Association. It is the intent of the applicant that the expanded uses and accessibility of this park will apply towards the project's parkland dedication requirement.

Approximately 1.8 acres of parks will be incorporated into the community to provide residents with areas for passive recreation and casual socializing. These park areas will be improved with benches, pergolas, and landscaping encouraging their use by residents as gathering areas.

With the combination of Wildcatters Park and the neighborhood passive parks, the project is consistent with parkland dedication ordinances. In order to insure this standard is achieved, mitigation measure R-1 is proposed.

b. Trails

The County of Orange currently has 348 miles of existing and proposed riding and hiking trails throughout the county. The regional riding and hiking trails provide for equestrian, pedestrian, and mountain biking uses. These trails are located in areas that are regulated by the County of Orange for unincorporated areas. This regional trail system provides linkages with many local community trails throughout Orange County and trails from surrounding counties (Exhibit 4.13-1).

The Tonner Hills Planned Community proposes the development of the Tonner Ridge Trail, a City of Brea Master Planned Trail. Tonner Ridge Trail will link several trails and parks, including Tonner Creek Trail, Carbon Canyon Regional Park, and Chino Hills State Park. Development of Tonner Ridge Trail will extend approximately 11,200 linear feet of hiking and riding trail within the open space area in the northerly portion of the project site. When both Tonner Canyon Road and Valencia Avenue are completed and open to through traffic, the project will include a signalized horse crossing across Valencia Avenue to facilitate a connection to the proposed Valencia Trail in the City of Brea. This hiking and riding trail will be a shared-use route. Users include hikers, mountain cyclists, and equestrians. Pedestrian and bicycle access to the trail is provided through the system of street-adjacent paved pedestrian walkways and local street bike paths

which ultimately connect to the Class I off-street bicycle paths located within collector streets. A section view of the proposed concept for the Tonner Ridge Trail is included as Exhibit 4.13-2.

c. Open Space

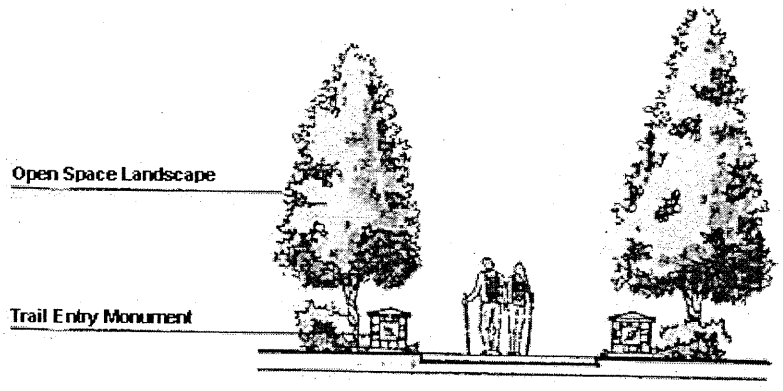
The open space of Tonner Hills is an important component contributing to the livability of the community providing habitat preservation areas, buffers between land uses, places for people to gather and an enhanced sense of place. The Tonner Hills Planned Community proposes approximately 546.8 acres of open space to include preservation and enhancement of habitat areas, wildlife mobility corridors, the Tonner Ridge Trail area, and disturbed and revegetated open space areas.

Natural and enhanced open space areas proposed for Tonner Hills will comprise approximately 514.1 acres and will primarily include areas supporting native plant communities. This open space will be placed within Scenic Preservation Easements dedicated to the County of Orange to ensure that the subject open space is secured in perpetuity. This figure does not include the 32.7-acre potential public use area. Open space areas within the project site include preserved and restored native plant communities valuable for wildlife habitat and public recreation. The open space areas are primarily comprised of coastal sage scrub and woodland habitats. California walnut and coast live oak woodlands also provide food, cover, and nesting habitat for a variety of birds, amphibians, reptiles, and mammals. Riparian woodlands along Tonner Creek will be preserved. The natural open space will provide connectivity between open space areas located east of Tonner Hills so wildlife species are free to move through the area. These open space areas will be enhanced to provide a diversity of plant communities that are valuable for public recreation and wildlife value. The existing terrain will be incorporated as part of the natural open space in order to preserve the wilderness value and character of the site. Improvements within the open space areas may include enhancement of native habitat that will improve the habitat value and trail improvements designed to minimize human disturbance to native habitats. The open space areas of Tonner Hills are depicted in Exhibit 4.13-3.

Disturbed open space areas within the project will be revegetated and reserved for open space use. Fuel modification zones adjacent to residential development will be permitted within these areas as a buffer between the residential and natural open space areas. Emergency access roads from residential areas and development of two water storage tanks to serve the community will also be permitted within this open space area.

d. Public Use Area

An area consisting of 32.7 acres has been reserved within Tonner Hills for public uses by public entities. This area is suitable for development of a variety of public uses such as parks, a school, a sports complex, community center, or any other similar public use.



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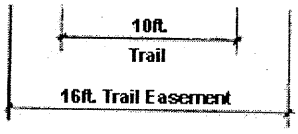

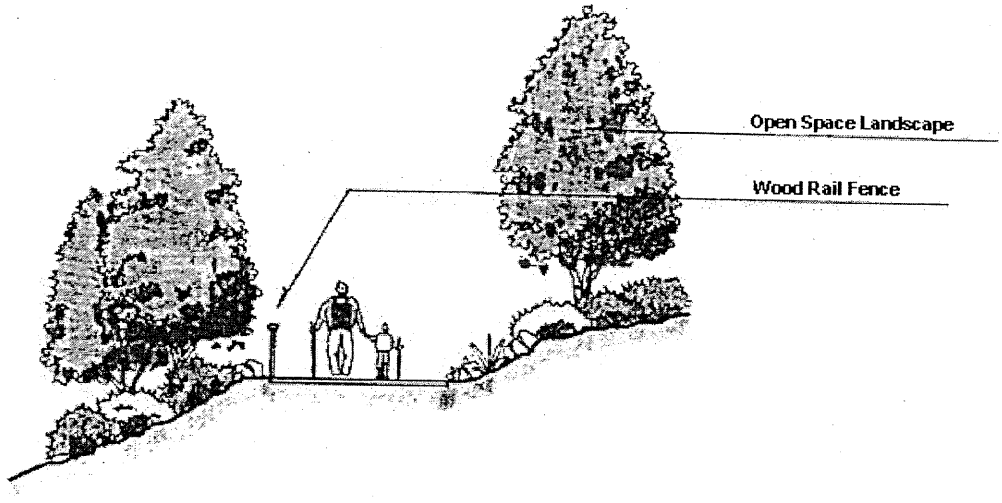

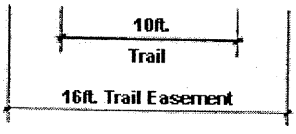

TYPICAL TRAIL CONDITIONS

Source: Tonner Hills Area Plan, November 2001

Exhibit 4.13-2
Tonner Ridge Trail

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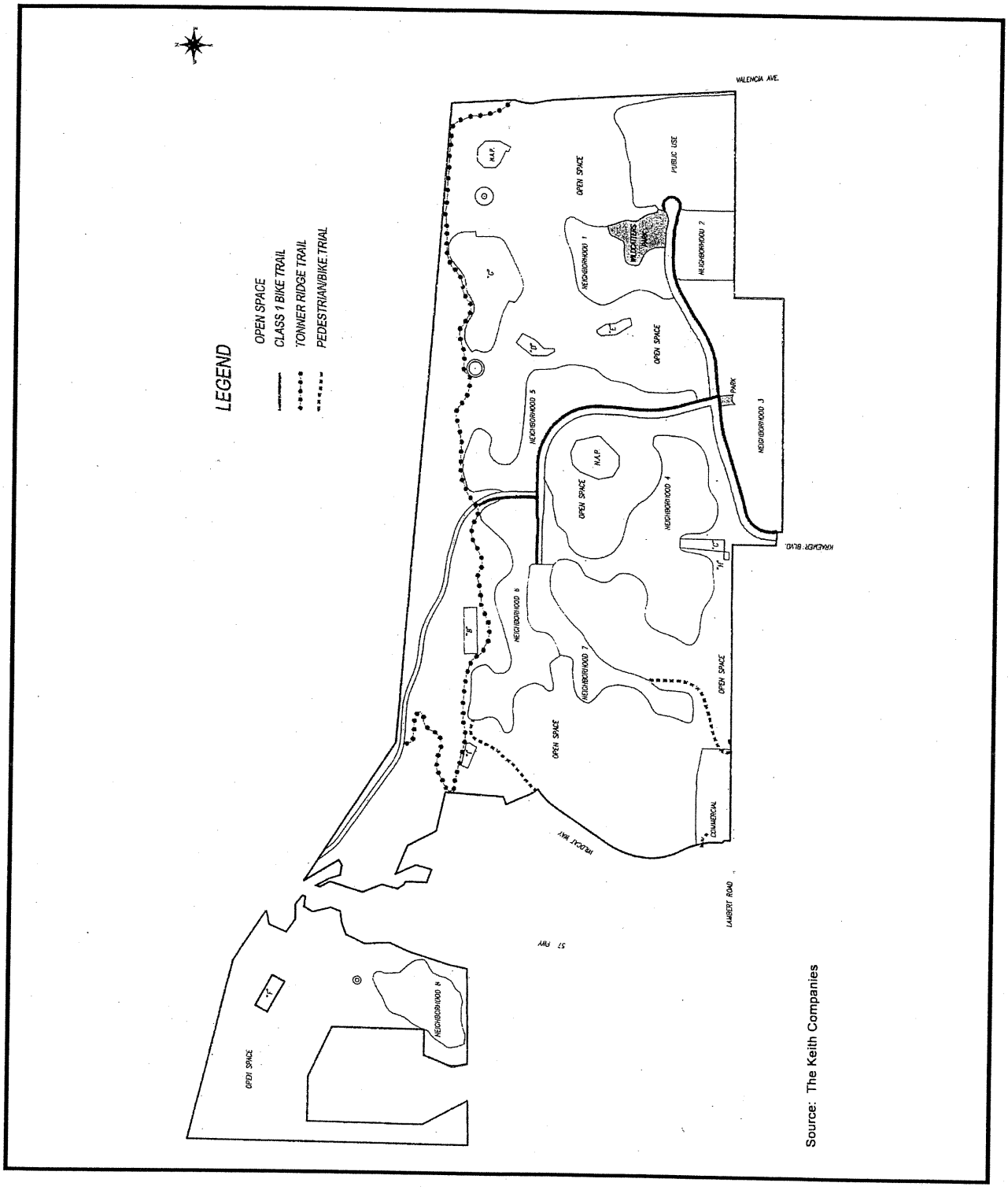

Exhibit 4.13-3
Parks, Trails, and Open Space

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4.13.4 Mitigation Measures

R-1 Prior to approval of any subdivision map that creates building sites, the applicant shall:

1. Designate public parkland for dedication or provide for payment of in lieu fees according to the requirements of the Local Park Code. The 5.8-acre Wildcatters Park has already been identified as part of the total dedication that will be required.

2. Irrevocably offer to dedicate a 16-foot-wide recreation an easement for riding and hiking trails (Tonner Ridge Trail) in a location and in a manner meeting the approval of the Manager, PFRD/Harbors, Beaches and Parks/Program Management and Coordination prior to recordation of an applicable subdivision map in compliance with county Standard Conditions of Approval Manual conditions for recreation easements.

3. Provide for Class I paved bike trails through the project on collector streets and on those pedestrian/emergency access roads.

4. Dedicate a Scenic Preservation Easement to the County of Orange over 514.1 acres of natural and enhanced open space (of the type to permit fuel modification and continued oil operation infrastructure until oil operations are phased out) to ensure its status in perpetuity. Easement dedication(s) shall be subject to the approval of the Manager, PFRD/HBP Program Management and Coordination, prior to recordation of applicable subdivisions, in compliance with County Standard Conditions of Approval Manual conditions for scenic preservation easements.

5. Areas to be irrevocably offered to the County for scenic preservation easement purposes shall be landscaped and equipped for irrigation, as applicable, and approved in accordance with the County standard conditions of approval for Public Area Landscaping, subject to the approval of the Manager, PFRD/HBP Program prior to recordation of applicable subdivision map(s).

R-2 Prior to approval of an applicable subdivision map, a trail and bikeway improvement plan shall be submitted subject to approval of the Manager, PFRD/HBP Program Management and Coordination. Improvement plans shall include, but not be limited to (as applicable), trail and bikeway alignments, wood rail fences, cross sections for trail and bikeways, drainage, irrigation, and landscaping palette.

4.13.5 Cumulative Impacts

Future development will add greater demand to local and regional recreation facilities. This can be mitigated by implementing applicable recreation policies and requirements to individual projects, by payment of park impact fees and/or by providing additional community recreation opportunities such as regional bicycle trails.

4.13.6 Unavoidable Adverse Impacts

Project-related impacts upon recreation facilities are considered to be less than significant with provision of the public use space, private recreation facilities, and trail improvements.

4.14 Mineral Resources

This section addresses potential impacts to petroleum resources, the significant mineral resource on the site, and recovery operations occurring on the project site. Data used in this section was provided by Bruce Laverty with Nuevo Energy Company.

4.14.1 Existing Conditions

The project area is located in one of Southern California's oil-producing areas. Oil was first discovered in this area as naturally occurring tar seeps in the late 1800s. Since then, oil and methane have become important natural and economic resources for the Tonner Hills area.

The land underlying the proposed Tonner Hills Development is composed of three separate mineral fees, East Naranjal, Columbia Stearns and Stearns, collectively referred to as Stearns. Exhibit 4.14-1 delineates the boundaries of each mineral fee area. A mineral fee is established when the surface and subsurface title are bifurcated, creating a mineral fee, or title, along with the surface fee. Nuevo Energy Company owns both the mineral and surface fees for all three Stearns properties; however, the Columbia Stearns Fee, comprising the easterly 100 acres of the property, is leased to Aera Resources, Inc.

The Stearns Fee is part of the Brea-Olinda oil field that dates back to the late 1800s. Nuevo Energy Company acquired the Stearns Fee from Union Oil of California in 1996. From inception through January 1, 2001, the Stearns Fee produced 128.5 million barrels of oil and 115 billion cubic feet of natural gas. There are an estimated 31.5 million barrels of oil and 27 billion cubic feet of gas in reserve. Current production from the Stearns Fee is 1,900 barrels of oil per day and 1,750 million cubic feet of gas per day. Eight thousand barrels of water are produced daily with the oil production. Oil and gas are produced from Miocene and Pliocene zones with the wells producing at a depth of 4,000 to 6,000 feet beneath the surface of the property.

The Stearns Fee was in primary production until late 1999. Primary production means that the oil in simply pumped out of the formation with no stimulus. In late 1999 a pilot water flood project was started on the east side of the property with the possibility of expansion to the west of the property. The water flood technique is a pilot program designed to increase overall production by using fewer wells.

Water flood involves reinjecting water produced from the field into subsurface fault breaks that define production zones, in an attempt to stimulate oil production. The oil then floats on top of the injected water to refill the formation, consolidates the oil within a formation, resulting in improved production efficiency. The 8,000 barrels of water produced daily from the oil production being re-injected into the formation to encourage production was historically, that disposed of to the Fullerton Waste Water Disposal Company, or more recently to the Orange County Sanitation District. At this time, it is too soon to quantify the benefits from the pilot water flood project.

Natural gas produced at the Stearns Fee does not meet the standards to sell directly for commercial use, and it has not been economically feasible to treat the gas to commercial standards. Historically the gas has been burned off in a flare located in the gas plant. In 2000 two gas-powered turbines were installed at the gas plant. These turbines burn the produced gas and generate approximately 7 megawatts of electricity per day. Two megawatts are used for the oil field operations, and the balance is sold to the Independent Service Operator. The gas flare is now limited to a maximum use of 200 hours per year.

4.14.2 Thresholds of Significance

For the purposes of this EIR, the thresholds of significance for evaluating project impacts are based on suggested criteria from the County of Orange Environmental Checklist and the CEQA Environmental Checklist and the CEQA Environmental Checklist found within Appendix G of the CEQA Guidelines. The project would result in a significant impact if it would:

- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state; or
- Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

4.14.3 Project Impacts Prior to Mitigation

There are 210 oil wells (including 14 water injection wells) currently in production on the property, with approximately 82 idle wells and 87 previously abandoned wells. With the development of the project, an additional 85 wells will be abandoned, and selected idle or shut in wells will be returned to production. The project is designed to provide the continued production of oil from open space areas and select sites within or neighboring the residential neighborhoods. It is anticipated that, with the replacement and upgrading of infrastructure facilities, production will remain at approximately 1,800 barrels of oil per day and 1,600 million cubic feet of natural gas per day. The life of the field is expected to be at least 25 years. The daily production rate and the life of the field may be enhanced by a secondary recovery (water flood) effort. No reduction in the availability or production of on-site mineral resources (petroleum and methane) is anticipated with implementation of the project. Therefore, the proposed project will not result in any significant impacts to mineral resources.

4.14.4 Mitigation Measures

No mitigation measures are required.

4.14.5 Cumulative Impacts

There are no known significant cumulative impacts. No impacts to mineral resources are expected since the field will remain in production at its current level.

4.14.6 Unavoidable Adverse Impacts

Impacts to mineral resources are considered to be less than significant.

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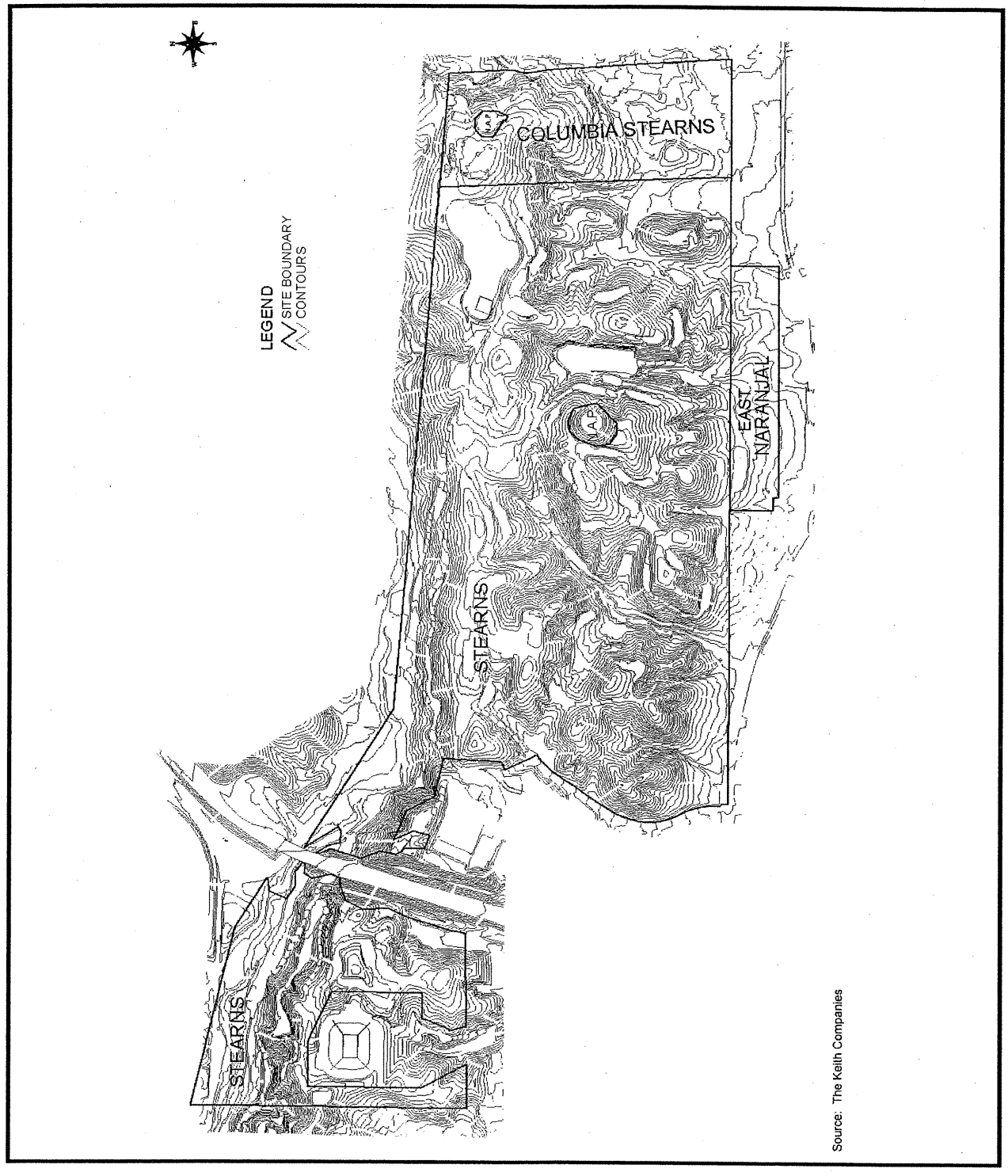

Exhibit 4.14-1
Mineral Fee Boundaries

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4.15 Hazards

4.15.1 Existing Conditions

This section provides an analysis of the hazards and risks to the public and environment posed by the proposed project. Because the proposed project incorporates residential and commercial development into an active oil production facility, the assessments considered here thoroughly evaluate the risks associated with the existing oil production and the integration of residential development in such a setting to make these facilities safe for and compatible with nearby residences. An analysis of the wildfire risks is included in Section 4.16, Public Services. Section 4.4, Geophysical provides a focused assessment of the geotechnical conditions on-site and attending project impacts.

This section incorporates data from other technical studies, including the Remedial Action Plan by Harding ESE (December 1999), the Stearns Gas Plant Risk Management Plan by Sierra Pacific Environmental (June 1999), and the Stearns/Brea-Olinda Facility Health Risk Assessment for 2000 by Vector Environmental (March 2001), the Risk Analysis by Reese-Chambers Systems Consultants (April 2002), and the Hazard and Operability Study Revalidation Report by Risk Management Professionals (March 2002). All of these reports are included in the Technical Appendices.

a. General

The proposed Planned Community encompasses three oil- and gas-producing properties owned entirely by Nuevo Energy Company. These properties include the Stearns Fee, the East Naranjal Fee, and the Columbia Stearns Lease. Nuevo acquired these properties from Union Oil of California in April 1996. The site has been utilized for oil and gas production since 1890 when the first oil well was drilled.

Nuevo leases a portion of the proposed project site (the Columbia Stearns Fee) to an outside entity, Aera Energy LLC, an oil producer with facilities on approximately 97.1 acres of the site. Nuevo Energy Company operates the remaining 713.2 acres of the site.

Currently, there are 210 active oil wells (including 14 water injection wells) on-site, in addition to 82 idle wells and 87 abandoned wells. Two active tank farms that process crude oil are located on-site. A gas plant, which collects and processes natural gas from producing oil fields for sale or for lease production operations, is located in the northeastern portion of the site. Tank farms and oil sump locations, a former gas plant site, other associated production facilities, surface and subsurface flow lines, underground utilities, and associated facilities (including those of other oil companies) span the site. A gun club was previously located on-site.

This section discusses and provides an analysis of public health and safety issues as they relate to remediation and the proposed development of the project, as well as specific regulations pertinent to protecting public health and safety and the environment. This section also provides a preliminary assessment of oil field production and remedial activities and their impacts on the development criteria for

the proposed planned community. The Remedial Action Plan (RAP) outlines procedures and clean-up levels approved by the Orange County Health Care Agency (OCHCA) and the Santa Ana Regional Water Control Board (SARWQCB).

The information in this section is based on an evaluation of on-site conditions and a review of environmental documents that were developed from environmental site assessments, remedial action planning, and remedial implementation conducted in the general oil field, at the gun club, and in the natural gas processing plant areas.

The risks and hazards associated with ongoing oil operations are discussed in this section. The oil and gas activities on and near the Tonner Hills project involve the production, processing, storage, and transportation of oil and gas, which are classified as hazardous materials. Crude oil is classified as hazardous material because it is flammable. In addition, other hazardous materials, such as hydrogen sulfide, ammonia, and other chemicals, are often present where oil and gas development activities occur. This section also presents a health and safety analysis to assess the potential risk to the surrounding area and to members of the public from the oil and gas activities that would still be present if the proposed project was approved and developed. The information presented herein is based on the risk analysis prepared by Reese-Chambers Systems Consultants (2000).

The approach used in the analysis consisted of the following steps:

- Compiling a list of hazardous materials that may be present.
- Determining the types of impacts (i.e., incidents and accidents) that can potentially occur involving oil and gas. The incidents chosen were based on historical data for similar facilities and on the specific oil and gas activities that will remain.
- Estimating the probability of these impacts occurring. Again, this was based on historical data and the specific remaining oil and gas activities.
- Estimating the potential consequences to the surrounding area for each potential impact and incident. Computerized modeling of the potential incidents was utilized to estimate the area of potential consequences from incidents producing radiant heat from a fire, a flammable gas cloud from a release, a toxic gas cloud from a release, and blast overpressure and flying debris from an explosion. It is noted here that performing detailed modeling of the potential incidents requires in-depth information on the facility and operations and was beyond the scope of this analysis. For example, only conceptual data is currently available on the consolidated tank farm. The analysis presented here is based on the drawings and other information provided by the developer/property owner, information available on similar type facilities, and assumptions based on experience. The assumptions that were made are conservative; therefore, the results of the analysis may over-predict the potential hazard.

- Evaluating and recommending mitigation measures as appropriate.
- Identifying any remaining unavoidable adverse impacts.

b. Regulatory Framework

Regulations exist for industrial facilities and sites where investigations or remedial activities are carried out. These regulations are intended to reduce routine hazards, reduce risks of upset (accidents), enhance response in the event of an upset, and control hazardous materials and wastes. The regulations governing the existing oil and gas plant and site remedial activities are described below.

(1) Oil and Gas Plant Regulatory Control

The primary regulatory agency for onshore oil and gas activities in California is the California Department of Conservation, Division of Oil, Gas and Geothermal Resources (CDOGGR). CDOGGR supervises the drilling, operation, maintenance, and plugging and abandonment of oil and gas wells. CDOGGR's program includes well permitting and testing, safety inspections, oversight of production and injection projects, environmental lease inspections, idle-well testing, inspection of oilfield tanks, pipelines, and sumps, hazardous and orphaned well plugging and abandonment contracts, and subsidence monitoring. CDOGGR's mandated responsibilities are contained in §3000 et seq. of the *Public Resources Code* and Title 14, Chapter 4, of the California *Code of Regulations*.

The abandonment process begins with the removal of surface equipment and the capping of the well. The oil well cellar is removed, and any oil-impacted soils associated with the well are excavated and remediated or removed from the area. Once the surface equipment is removed, an abandonment rig is placed over the well head to remove the cap and all down hole equipment such as tubing, rods, and packing. As the equipment is removed, each formation is sealed off with a concrete plug. Between each plug, the casings are sealed with a special mud. Each formation is sealed off from the other to prevent fluid contact between distinct oil-bearing formations and to ensure that fresh water formations are not impacted by fluid transfer from oil-bearing formations. The upper 50 feet (or more, dependent upon the formation) of the well is sealed with a final concrete plug. The well casing is cut off 10 to 15 feet below the immediate ground surface and a metal plate is welded over the well annulus.

CDOGGR inspects the abandonment throughout each step of the process. Each concrete plug is tested before the next reach of mud is placed. Upon the final capping of the well, a test is made to determine if any methane is escaping from the annulus.

The California Department of Fish and Game, Office of Oil Spill Prevention and Response (OSPR) has set forth requirements for oil spill prevention and response for facilities that can release oil that has the possibility of reaching marine waters. OSPR regulations require that facilities that can potentially release oil to marine waters be able to demonstrate that they have the necessary response capability on hand or under contract to respond to specified spill sizes, including a worst-case spill. The regulations also require

that a risk and hazard analysis be conducted on each facility in accordance with procedures identified by the American Institute of Chemical Engineers. Each facility must also develop a State Oil Spill Contingency Plan. The regulations also establish financial responsibility requirements and require that each facility submit an Application for Certificate Responsibility to OSPR.

The Environmental Protection Agency (EPA) requires that facilities with petroleum storage tanks prepare a Spill Prevention Control and Countermeasure Plan that addresses tank design, construction, operation, secondary containment, and facility drainage. A Spill Prevention Control and Countermeasure Plan has been prepared for the facility.

The federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the subsequent Superfund Amendments and Reauthorization Act (SARA) establish reporting requirements and liability for the release of hazardous substances. One part of SARA, the federal Emergency Planning and Community Right-to-Know Act (EPCRA), sets emergency release reporting requirements and also requires facilities that use and store hazardous materials in amounts above certain thresholds to satisfy certain notification and reporting requirements.

The EPA requires all facilities that handle, manufacture, use, or store certain toxic and flammable substances above the specified threshold quantities to develop and implement a Risk Management Program in accordance with the "Chemical Accident Prevention Provisions" rule (Part 68 of Title 40 of the Code of Federal Regulations). The California Accidental Release Program regulation (California Code of Regulations, Title 19, Division 2, Chapter 4.5) essentially mirrors the federal Risk Management Plan regulation with some additions. Among other things, the federal and California Risk Management Plan requires that a risk analysis be performed on covered processes and that a worst case release scenario be developed on which a hazard footprint can be calculated. A Risk Management Plan has been prepared for the Stearns Gas Processing Plant[20].

The California Hazardous Waste Source Reduction and Management Review Act of 1989 (known as SB 14) requires facilities that generate hazardous wastes in amounts above certain quantities to prepare a Source Reduction and Evaluation Plan and Performance Report every four years.

To protect the public welfare, California law (Chapter 6.95 of the California *Health and Safety Code*) requires facilities that use and store hazardous materials in amounts above certain thresholds to prepare and implement an approved business plan. The plan must include a hazardous materials inventory, an employee-training program, and an emergency response contingency plan.

[20] Sierra-Pacific Environmental 1999, as cited in Reese-Chambers Systems Consultants, 2000

(2) Remedial Activities Regulations

At the federal level, the EPA has the primary responsibility for enforcing the laws and regulations that govern the handling of hazardous materials and wastes. The Resource Conservation and Recovery Act (RCRA) defines when a hazardous substance is a hazardous waste based on a number of criteria, and regulates hazardous wastes from "cradle to grave," that is, from generation of the waste through disposal. At the state level, the Department of Toxic Substances Control (DTSC) has taken the overall lead in hazardous materials permitting and site remediation. DTSC sometimes acts jointly with other agencies such as the Regional Water Quality Control Boards (RWQCB). Senate Bill 1082 requires that a Unified Hazardous Materials Management Regulatory Program (Unified Program) consolidate certain state and local programs dealing with hazardous materials at the county and/or city level under a local Certified Unified Program Agency (CUPA). This includes inspection and enforcement activity related to hazardous material/waste generation, treatment, storage, and release response plans, *Uniform Fire Code* hazardous materials management plans and inventories, and above-ground storage tank spill prevention control plans.

The Orange County Fire Authority (OCFA) is the lead regulatory agency for the investigation, remediation, and mitigation of hazardous soil gas contamination. OCFA's "Guideline for Combustible Soil Gas Hazard Mitigation" sets forth its policy for the scientific investigation, remediation, and/or mitigation of potentially hazardous concentrations of combustible soil gases associated with the construction and occupancy of a building or structure. Areas requiring investigation and/or mitigation are properties or proposed structures in a designated oil field, in close proximity of an oil well within 300 feet of any gas seepage zone, or at any other location OCFA identifies as being a potential source of combustible gas. The definitions for different classes of waste are discussed below:

- Characteristic Hazardous Waste - *Health and Safety Code* (H&SC) §25157.8, enacted on January 1, 1999, states that, except under specific conditions, soil containing more than 350 parts per million (ppm) of lead, 2,500 ppm of copper, or 2,000 ppm of nickel is required to be disposed of at a Class I hazardous waste landfill.

  Pursuant to H&SC Chapter 671, Section 1, Article 4.2 (SB1248), the OCHCA can enter into an agreement with the property owner for remedial action oversight, providing the site is not subject to an order by the DTSC or the RWQCB and that OCHCA has provided these state agencies with 10 days' notice prior to conducting the remediation. In addition, since January 1, 1997, under the "Certified Unified Program Agency" provisions of state law, OCHCA is responsible for inspecting and enforcing compliance at sites that conduct treatment subject to Permit by Rule.

- California Designated Non-Hazardous Wastes - Soil contaminated with crude oil is identified as a California Designated Non-Hazardous Waste. Crude oil is not listed as a hazardous waste under H&SC, Chapter 6.5, Division 20, Article 13, Management of Used Oil. However, crude oil production sites (i.e., oil fields) have been known to be contaminated with regulated hazardous waste constituents. Therefore, a project proponent must demonstrate to OCHCA, through a thorough site assessment, that the constituents are crude oil only. The management of this type of affected soil is addressed in the OCHCA

memorandum dated August 20, 2001 and entitled "Site Assessment and Cleanup Criteria for Crude Oil Production Sites."

The site lies in the Brea-Olinda oil field where oil/natural gas seeps have been identified. Site development plans must comply with the OCFA requirements for the investigation, mitigation, and remediation of combustible soil gases. These requirements are outlined in OCFA's "Guideline for Combustible Soil Gas Hazard Mitigation."

The specific permits below will be required and/or complied with during remedial and/or mass grading operations:

- California Regional Water Quality Control Board Stormwater Pollution Prevention Plan
- County of Orange Grading Permit
- South Coast Air Quality Management District (SCAQMD) Rules 1166 (Volatile Organic Compound Emissions from Decontamination of Soil) and 403 (Fugitive Dust)
- Orange County Fire Authority, Planning and Development Services' "Guidelines for Combustible Soil Gas Hazard Mitigation" (Guideline C-03, January 31, 2000)

c. Existing Operations

The major elements of the oil and gas development operations currently on the project site include oil production and water injection wells; oil- and gas-gathering pipelines, oil storage and processing facilities; a natural gas plant; a power generation turbine; and utility lines, including fuel gas lines. In addition, oil and gas are transported from the site by pipeline, petroleum products such as natural petroleum gas are transported from the site by truck, and various chemicals are delivered to the site by truck.

The wells produce crude oil emulsion, which consists of crude oil, water and gas in solution, and gas. Some gas is separated from the emulsion via gravity, merged with the produced gas, and sent by pipeline to the gas treatment plant. The remaining emulsion, consisting of crude oil, water, and some gas in solution, is sent by pipeline to one of the two oil production and storage facilities, where the three components are separated using various methods. The gas is piped to the gas plant for further treatment, the crude oil is stored in tanks for shipment off-site via pipelines, and the water is treated and then piped to injection wells. The gas plant removes water, natural gas liquids (NGLs), and propane from the gas. The NGLs and propane are transported off-site in tanker trucks.

The crude oil is classified as a hazardous material because it is flammable and can burn, producing radiant heat, which can cause burns. It can also produce flammable vapors that can flow with the wind and become ignited if they come in contact with an ignition source. The produced gas is mostly methane, which is the predominant constituent of natural gas. The gas, both before and after treatment, is a flammable gas that, if released, can drift with the wind. Hydrogen sulfide (H_2S), a potentially toxic gas if inhaled, is also produced in relatively small amounts. H_2S is commonly found in fossil fuels and is commonly found at varying concentrations in an oil field.

The site has a history of oil production and processing activities. Oil facilities that have been on the property and related activities that have taken place on-site include wells, pole-mounted transformers, former gas plants, a current gas plant, storage tanks, sumps, offices, warehouses, chemical storage and usage, spills, former debris sites, drip pots, and a former gun club. Remediation of some of these areas either has been completed or is currently in progress under approved Remedial Action Plans.

Phase I Environmental Site Assessments were conducted to identify potential areas of environmental concern on the site, and Phase II Site Assessments were conducted to investigate these areas of concern. Concentrations of lead, arsenic, polychlorinated biphenyls (PCBs), copper, benzene, volatile organic compounds (VOCs), and total petroleum hydrocarbons (TPH) were detected in soils. The Remedial Action Plan for the site was approved by the OCHCA in December 1999. A copy of the RAP is included in the Technical Appendices. The RAP establishes the clean-up levels and procedures to address the concentrations of identified releases in soils. The areas specifically identified for remediation are presented in Table 4.15-1 and illustrated in Exhibit 4.15-1. The remediation will be conducted in three phases: an initial phase prior to site decommissioning, a second phase during site decommissioning, and a third phase in conjunction with the site grading for redevelopment purposes.

Table 4.15-1 - Proposed Remediation

Phase 1: Areas Remediated or Will Be Prior to Decommissioning
East Naranjal Sump 36 A and B
Core Storage Drainage (Drainage 5)
"Old" Stearns Gas Plant
Former Brea Gun Club
Phase 2: Areas to Be Remediated during Decommissioning
East Naranjal Tank Farm
Sump 211 (Pipeyard)
Debris Area 154
Phase 2: Areas to be Remediated during Site Grading
Columbia Stearns Sumps 21, 48, 55, 56, 57, 66
The Columbia Stearns Drainage
Columbia Stearns Tank Sites 45 and 72
Drip Pots 54 and 58
Stearns Sumps 32 and 86
Dewatering Facility

The RAP describes procedures to clean up identified releases to levels acceptable to OCHCA and the SARWQCB for the proposed residential and open space uses. If necessary, procedures are included to reduce specific chemical concentrations in soils to levels that are protective of human health and the environment.

(1) Oil Field Operations and Conditions

- **Tar Seeps** - The Tonner Hills project is located within the Brea-Olinda oil field, one of the oldest and most prolific oil-producing regions in California. As with many of the oil discoveries in the late 1800s, the field was first recognized by the abundance of oil seeps at the surface. In the northern and north-central portions of the site, adjacent to but south of the Whittier Fault, oil-bearing strata of the Puente Formation have been folded upward by compression along the fault. Where erosion has exposed this unit at the surface, there are localized active and semi-active oil seeps and dry tar-stained sands. In the southern portion of the site, the oil-bearing geologic units are found at great depth, beneath non-oil-bearing sediments.

  The existing seeps are present in a relatively narrow band trending across the northern part of the site in a west-northwesterly direction. They appear to be fault-controlled, as for the most part they are confined between the Tonner and Escondido Faults. In the eastern and central part of the site they are generally present at or near the top of the ridge above Tonner Canyon. The exception to this is the small seep area located farther down the south-facing flank of the ridge, near Valencia Avenue. In the western part of the site, the seeps are located near the bottom of Tonner Canyon. When the oil reaches the surface, it loses its mobility as the volatile constituents evaporate, and the oil thickens into tar and asphaltum. The thickness of the asphaltum ranges from a few inches to several feet.

  Surficial geologic units that overlie the oil-bearing bedrock may also contain oil, typically in localized areas where the oil has migrated along permeable layers in the sediments or along permeable pathways. Permeable layers of alluvium become stained as stream channels cut down through oil-bearing bedrock and the oil migrates laterally into the channels. Such conditions have been observed in the eastern portion of the site, south of Well 68 in the Columbia Lease.

  At the adjacent Olinda Ranch project, significant portions of the grading encountered oil-bearing bedrock, as well as localized areas consisting of soils stained with naturally occurring hydrocarbon. The heaviest concentrations and the most frequent occurrence of seepage were present in the sandstone, pebbly sandstone, and conglomerate beds of the La Habra and Puente Formations. Although locally saturated with oil, the sands and gravels commonly did not show a steady flow of oil, even after exposure to the hot summer sun for many days. The greatest portion of the active seepage appeared to be localized and from fractures in the bedrock.

  It was also noted that a large part of the oil-impregnated bedrock did not actively seep. Seepage rates varied considerably over time. Typically, a seep would flow most rapidly when freshly cut, gradually slowing as the exposure time lengthened. The heaviest seepage occurred in a canyon on the eastern part of the site. A subdrain outlet in this area produced about 1.5 gallons per day during the period it was monitored.

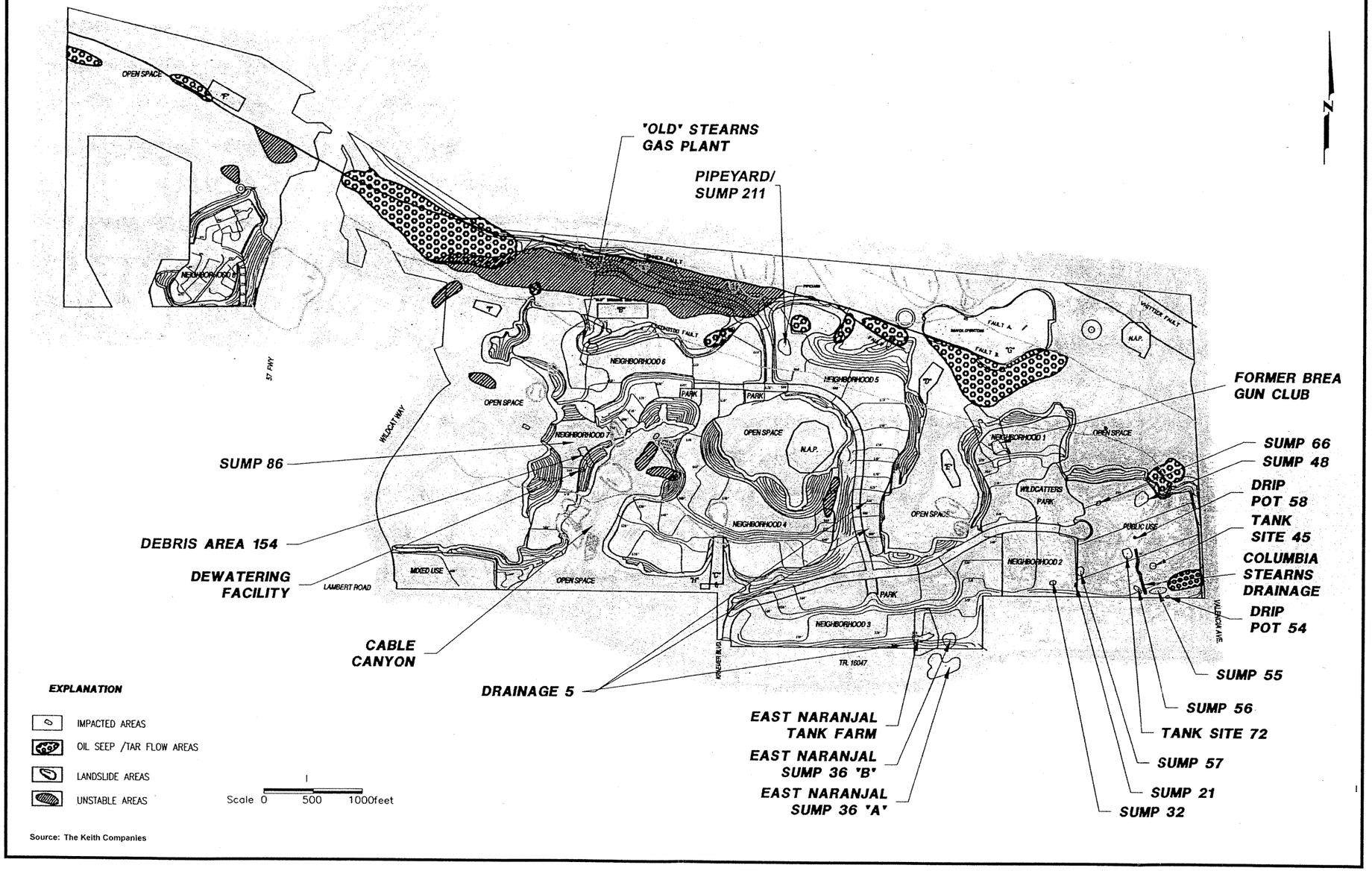

Exhibit 4.15-1
Remediation Plan

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Other seeps at the site produced considerably less oil, producing only a cupful to a few gallons over several months (including hot summer months). Seepage rates were also affected by the consistency of the oil, which in general appeared to be slightly thicker than motor oil. A few isolated seeps contained very thick oil that flowed very slowly. Several abandoned oil well casings acted as a conduit for the migration of crude oil and natural gases to the surface.

Widespread exposures of the older alluvium capping the oil-bearing bedrock at Olinda Ranch generally did not contain oil. This unit consisted primarily of massive (non-stratified) silty fine sand estimated to be at least 100,000 years old. Oil seepage from the older alluvium, which was minor in occurrence, was from fractures, man-made features such as well casings, or other penetrations such as deep rodent holes or tree roots.

Oil and gas seeps have been of great interest in petroleum exploration; however, the movement of hydrocarbons through soil and rock is a complex and poorly understood process. Migration is generally vertical, but it can also be lateral, especially if a seal or barrier is encountered. It is generally agreed that seeps occur predominantly along high permeability pathways, such as faults, fractures, bedding planes, and pore networks. Diffusion is thought to occur under certain conditions, but is not a primary migration mechanism, and in fact is not considered to be a likely mechanism for larger hydrocarbons.

Seepage expression can be a function of many factors besides the presence of reservoir rock near the surface. Seepage requires energy, and a number of sources have been suggested including hydrostatic pressure, gas pressure, capillary action, and differential compression at depth. Surface seepage rates appear to be significantly affected by temperature (seeping more heavily on hot summer days); however, this is probably due primarily to the melting of the tar seal that develops over the seep on cooler days. Seepage can also be affected by changes in the subsurface oil and gas accumulations, changes in reservoir pressures, changes in the water table, or more subtle changes such as in the barometric pressure. Catastrophic events such as earthquakes can have almost immediate effects on oil migration patterns. Consequently, near-surface migration and seepage is a dynamic process, and some seeps have been known to appear and disappear over short periods of time.

- **Drip Pots** - Drip pots are normally placed in topographically low places in gas production line(s) and are used as collecting chambers in the pipe to accumulate liquids that condense out of a natural gas stream (i.e., natural gas condensate). The presence of drip pots poses a potential threat for the release of the lighter, highly mobile liquid constituents (e.g., VOCs) from the reservoir fluids if the vessel leaks. Before 1970, it was standard industry practice to "blow down" drip pots onto the ground as opposed to capturing the condensate. This hydrocarbon liquid used to be referred to as "casing head" or "natural" gasoline.

  Condensate is periodically removed from these drip pots. However, the condensate may have been released onto the ground.

  Most of the drip pot locations were sampled as part of the site investigation. The remaining unsampled drip pot locations will be sampled prior to site decommissioning.

- **Road Material** - Prior to the mid-1980s, road oiling with tank bottoms was a common practice throughout oil fields in the Los Angeles Basin. Tank bottom material is an oil-water emulsion combined with free water and other foreign matter that collects in the bottom of stock and wash tanks. Periodically, tank bottoms are cleaned out by physically removing the material or by the use of chemicals (e.g., a demulsifier) that separate the oil from the water, allowing both to be pumped out. When placed on roads, this material is eventually biodegraded by the endemic bacteria and weathered. In time, only the heavier, non-mobile hydrocarbon fractions (i.e., asphaltenes) remain.

  According to the site production foreman, only a minor portion of the current roads on the property is composed of asphaltic material generated from oil field activities. The roads were generally paved using commercial-grade asphalt. Most of the asphaltic material generated at the dewatering facility from oil field activities was applied to the western portion of the property, west of the freeway in the Tonner Canyon Tank Farm area. This area is not within the residential portion of the Tonner Hills development.

  A sample of road material, that appeared to be oil field generated, was collected in February 2001 for analysis. Analytical results of the sample detected concentrations of TPH (C16-C40) at 2,975 milligrams per kilogram (mg/kg). No metal concentrations exceeded the total threshold limit concentration or ten times the soluble limit threshold limit concentration. VOCs, semi-volatile organic compounds (SVOCs), PCBs, reactive sulfide, and cyanide were not detected at or above laboratory reporting limits. The pH value was reported at 5.8. No constituents were detected that would require mitigation measures.

(2) Oil Production Operations

- **Former Old Stearns Gas Plant** - Unocal operated a gas plant from the mid-1920s until 1996 to remove and recover propane and raw gasoline from natural gas. In 1996, the property was sold to Nuevo with the agreement that affected soils at the site would be remediated to remove contaminants that have resulted from gas plant operations.

  A Remedial Action Plan was submitted to the OCHCA to address impacted soil at the former gas plant site. Assessment, excavation, and remediation activities have been completed, and a closure report was prepared. At the site, PCBs and mercury were detected in soils at concentrations requiring excavation and off-site disposal. Soils impacted with TPH were bioremediated on-site. A case closure letter dated July 2, 2001 was issued by the OCHCA.

- **Underground Storage Tank** - Unocal removed an underground storage tank (UST) at the Brea Production Office in 1989. Most regulatory agencies did not require that soil samples be collected from under the associated fuel dispenser or product lines until the early 1990s. There is a possibility that a fuel release may have occurred in this area. This area will be assessed following decommissioning of the production office.

(3) Remedial Goals

The proposed remedial levels are specified by either OCHCA guidelines for crude oil only impacted sites (California *Code of Regulations* Title 22), or EPA Region IX, Preliminary Remediation Goals (PRGs) in soil. The PRGs for the constituents of concern are contained in Table 4.15-2.

Table 4.15-2 - U.S. Environmental Protection Agency's Preliminary Remediation Goals: Site Constituents of Concern

Contaminant	PRGs Residential Soil (mg/kg)
Sec-butyl benzene	1.1E+02
Copper and compounds	2.9E+03
Cumene (isopropyl benzene)	1.6E+02
Methyl ethyl ketone	7.3E+03
Polychlorinated biphenyls (PCBs), Aroclors 1254 and 1260	2.2E-01
Lead	130

Source: EPA Region IX Preliminary Remediation Goals (2000)

The proposed remedial criteria are set forth in Table 4.15-3 through Table 4.15-5. The cleanup standards for acceptable concentrations of crude oil impacted soil to be used for residential and non-residential property are specified in Table 4.15-3 and Table 4.15-4. The remediation goals for other selected constituents identified on-site are specified in Table 4.15-5.

The remedial process chosen in the approved Remedial Action Plan requires that non-hazardous impacted soils be excavated, remediated, and placed as fill within the project site. This impacted soil will be placed at varying depths based on detected concentrations and site usage. Soil impacted with concentrations considered hazardous will be disposed of off-site at an appropriate disposal facility.

Table 4.15-3 - Maximum Allowable Concentrations for Soil in Non-Residential Areas, Paved Roads, and Open Spaces

Depth from Final Grade	Analysis EPA Method/Constituent	Concentration (mg/kg)
Less than or equal to 5.0 feet	418.1/TRPH 8015/TPH-cc/id (C_{13}-C_{23} inclusive) 8020/BTEX 8015/VFH (C_4-C_{12} inclusive)	1,000* 1,000* B=nd, T=nd, E=0.70, X=1.75 nd
Greater than 5.0 feet and depth of buried utilities but less than or equal to 15 feet**	418.1/TRPH 8015/TPH-cc/id (C_{13}-C_{23} inclusive) 8020/BTEX 8015/VFH (C_4-C_{12} inclusive)	2,000 2,000 B=0.001, T=15.0, E=70.0, X=175.0 100
Greater than 15 feet and greater than depth of buried utilities**	418.1/TRPH 8015/TPH-cc/id (C_{13}-C_{23} inclusive) 8020/BTEX 8015/VFH (C_4-C_{12} inclusive)	14,000 14,000 B=0.1, T=15.0, E=70.0, X=175.0 600

Depth from Final Grade	Analysis EPA Method/Constituent	Concentration (mg/kg)
Notes: * - visual staining of highly weathered particles is acceptable ** - final depth of remediated soil will be such that potential exposure through future excavation activities will be maximized mg/kg - milligrams per kilogram cc/id - carbon chain identification nd - not detected EPA - Environmental Protection Agency TRPH - total recoverable petroleum hydrocarbons VFH - volatile fuel hydrocarbons, C_4-C_{12} inclusive TPH - total petroleum hydrocarbons, C_{13}-C_{23} inclusive BTEX - benzene, toluene, ethyl benzene, and total xylenes Soil samples will be analyzed for total petroleum hydrocarbons using EPA method 418.1, EPA Method 8015, or ASTM D2887		

Table 4.15-4 - Maximum Allowable Concentrations for Soil within Residential Lots

Depth from Final Grade	Analysis EPA Method/Constituent	Concentration (mg/kg)
Less than or equal to 5.0 feet	418.1/TRPH 8015/TPH-cc/id (C_{13}-C_{23} inclusive) 8020/BTEX 8015/VFH (C_4-C_{12} inclusive)	100 100 B=nd, T=nd, E=nd, X=nd nd
Greater than 5.0 feet but less than or equal to 10 feet	418.1/TRPH 8015/TPH-cc/id (C_{13}-C_{23} inclusive) 8020/BTEX 8015/VFH (C_4-C_{12} inclusive)	500* 500* B=nd, T=nd, E=nd, X=nd nd
Greater than 10 feet but less than or equal to 15 feet	418.1/TRPH 8015/TPH-cc/id (C_{13}-C_{23} inclusive) 8020/BTEX 8015/VFH (C_4-C_{12} inclusive)	1,000 1,000 B=nd, T=15.0, E=70.0, X=175.0 100
Greater than 15 feet and greater than depth of buried utilities	418.1/TRPH 8015/TPH-cc/id (C_{13}-C_{23} inclusive) 8020/BTEX 8015/VFH (C_4-C_{12} inclusive)	14,000 14,000 B=0.1, T=15.0, E=70.0, X=175.0 100
Notes: * - if odors or visual staining are apparent the concentration will be 100 mg/kg mg/kg - milligrams per kilogram cc/id - carbon chain identification nd - not detected EPA - Environmental Protection Agency TRPH - total recoverable petroleum hydrocarbons VFH - volatile fuel hydrocarbons, c_4-c_{12} inclusive TPH - total petroleum hydrocarbons, c13-c23 inclusive BTEX - benzene, toluene, ethyl benzene, and total xylenes Soil samples will be analyzed for total petroleum hydrocarbons using EPA Method 418.1, EPA Method 8015, or ASTM D2887		

Table 4.15-5 - Remediation Goals for Select Constituents

Constituent	Residential	Open Space	Site Concentration
Volatile Organic Compounds			
Methyl Ethyl Ketone (2-butanone)	7,300[1]	28,000[1]	31,600 (East Naranjal Tank Farm)
Sec-butylbenzene	110[1]	220[1]	9,900 (East Naranjal Sump 36)
Cumene	160[1]	520[1]	18,400 (East Naranjal Sump 36)
Metals			
Lead (Cal-Modified PRG)	130[1]	350[2]	1,000 (DWF2-Debris Site 154) 700 (DWF9-Debris Site 154) 1,200 (EN-D3 Drainage 5) 360 (S9-Sump 211/Pipeyard)
Arsenic	13[3]	13[3]	140 (Tank Site 450) 260 (East Naranjal Tank Farm) 32 (East Naranjal Sump 36)
Copper (CCR)	25[4]	25[4]	36 Mg/l (DWF9-Debris Site 154)
Polychlorinated Biphenyls (PCBs)			
Polychlorinated Biphenyls (PCBs)	0.22[1]	0.5[5]	7.6 (Highest Concentration detected in Drainage 5)

Notes:
1 - U.S. EPA, Region IX, 2000
2 - AB 2784, Section 2, 25157.8
3 - Based on background levels from analytical results of soil samples collected on the Stearns property
4 - CCR - California Code of Regulations
5 - OCHCA modified cleanup level
All concentrations are listed as milligrams per kilogram except for copper, which is in milligrams per liter.

(4) Characteristic Hazardous Wastes On-Site

- **Regulated Metals** - Based on the site assessment results, the total lead concentration in soil located at the former gun club and Debris Area 154 is classified as a "characteristic" hazardous waste. Almost 13,000 tons of soil containing regulated concentrations of lead was treated on-site at the gun club from August 20 to September 5, 1997 and is currently stockpiled on-site. Soil at the former gun club and other areas containing lead greater than 350 mg/kg will be transported by trucks off-site to an appropriate disposal facility. Soils with arsenic concentrations greater than 13 mg/kg were removed from the lower portions of the East Naranjal 36 Sump designated as Sump A. This material is currently stockpiled separately on-site until it can be placed as fill at a depth greater than 10 feet within the project area.

- **Volatile Organic Compounds** - Sec-butylbenzene and cumene (isopropyl benzene) were detected in a sample of tarry material collected in the upper portion of the East Naranjal 36 Sump designated as Sump B. This tarry material has been excavated and stockpiled. A determination of the appropriate location to reuse this material on-site will be based on soil sampling and analytical results.

- **Polychlorinated Biphenyls (PCBs)** - PCBs have been detected at concentrations of up to 7.6 mg/kg in the Core Storage Drainage (Drainage 5). A summary report of the sampling activities and a work plan was prepared and approved by the OCHCA. Soil containing PCB concentrations greater than 0.22 mg/kg has been excavated and stockpiled. The stockpiled soil will be reused as deep fill below the streets as part of the proposed development.

(5) California Designated, Non-Hazardous Wastes

The assessment of soil affected by crude oil was deemed to be sufficient by the OCHCA with the concurrence of the SARWQCB, and the RAP was approved in December 1999. Areas impacted by crude oil will be addressed during the three phases of remediation activities.

(6) Methane Gas

Methane gas occurs in the subsurface at the project site. Methane is a naturally occurring gas that typically forms as a by-product of bacterial digestion of organic matter, and therefore occurs ubiquitously, although generally at very low concentrations, in the air we breathe. If free of impurities, methane is colorless and odorless, and under normal atmospheric conditions, does not pose a health hazard. However, at high concentrations, this gas is flammable, and at concentrations of between 55,000 and 140,000 ppm, it is explosively combustible. At very high concentrations it can cause asphyxiation due to oxygen displacement. Methane is not toxic below levels that would lead to asphyxiation.

In the subsurface, methane forms in areas where organic-rich sediments, such as in a swamp, are undergoing bacterial decomposition. Because of its origin, this type of methane is referred to as "biogenic." A man-made example of such an area would be a landfill or dairy pasture. Methane and other natural gases can also form at great depth, where they are most often associated with petroleum deposits. Since this type of methane forms as a result of thermal (heat) alteration of petroleum and/or organic matter in the rocks, it is termed "thermogenic" or "petrogenic." Methane produced near the surface is generally at low to very low pressures, whereas that derived from oil-producing zones is generally at high pressures. There are numerous chemical characteristics of the gas that may reveal clues about its origin. However, the processes by which the gas forms and moves through the rocks or sediments are often very complex, altering and adding to the chemical characteristics of the gas. Consequently, the source is frequently very difficult to determine. Some gases may be a combination of both thermogenic and biogenic processes.

Regardless of the environment in which it forms, methane is lighter than air, and therefore tends to migrate upward through permeable sediments, rock fractures, and even man-made structures (such as well casings). If the geologic unit is permeable enough, the gases eventually reach the surface and mix with the atmosphere. Under certain conditions, the gas can become trapped under an impermeable layer. In nature, these impermeable layers are typically comprised of claystone or similar fine-grained materials. As the gas accumulates under the impermeable layer, it can build up to high concentrations and pressures. Man-made structures, such as pavement or building foundations, can also prevent gas form venting to the atmosphere. Methane can accumulate in the upper reaches of poorly ventilated building components, such as basements, crawl-spaces, and attics.

Since the project is located in an oil field, the occurrence of methane is not unusual. In fact, the Brea-Olinda oil field, of which it is a part, was discovered in the 1880s by the presence of oil and gas seeps at the surface. In the 1986, after a serious methane gas explosion and fire in the Fairfax area of Los Angeles (the former Salt Lake oil field), the CDOGGR identified other urban oil fields with a potential for hazardous gas accumulations. The Brea-Olinda field was included in this investigation, a study that consisted of soil gas sampling and analytical work.

Within the Tonner Hills project site, then known as the Stearns property, 70 soil gas samples were taken with a probe or portable hydraulic auger. Sampling locations were spread throughout the property, including the parcel west of the Orange (SR 57) Freeway, and ranged in depth to 5 feet below the surface. The samples were then analyzed for hydrocarbons in the C1-C4 range (which includes methane, ethane, and other soil gases associated with methane). Of the 70 sites sampled, 17 contained soils with methane concentrations above 1,000 ppm, a concentration considered by the CDOGGR (1986) to be potentially hazardous if allowed to seep into and accumulate in structures. Seven of the sites contained concentrations greater than 5,000 ppm, the Orange County Fire Authority threshold for mandatory mitigation procedures. The highest concentration measured was 26,279 ppm (CDOGGR, 1986).

The 17 highest concentrations detected were distributed primarily along the northern part of the site, in close association with the natural oil seepage areas on the property. In the area west of the 57 Freeway (vicinity of Neighborhood 8), the oil and gas seeps are located near the bottom of Tonner Canyon, several hundred feet from the proposed development. East of the freeway, the oil and gas seeps trend along the south flank of Tonner Canyon, starting near the base on the west and rising to the top of the ridge in the central part of the site. From there the trend crosses the ridge and passes just south of the gas plant operations. Geologically speaking, this trend is roughly defined by the Tonner Fault on the north, and the Escondido Fault on the south. The seepage zone impacts the northern parts of Neighborhoods 5 and 6, as well as the northern part of the Public Use Area. It should be noted, however, that the remainder of the soil gas samples taken in the seepage zone, including some that were taken near oil seeps, had measured concentrations of less than 1,000 ppm. See Exhibit 4.15-2 for the locations of the measurement sites.

At the Olinda Ranch development, immediately east of the site, several methane investigations were undertaken prior to grading. These included soil gas sampling and the installation of several monitoring wells. During grading, the bottoms of all excavations were sampled for soil gases, and where high methane concentrations were detected, subsurface collection systems were installed on the native ground prior to fill placement. The collection systems, which consisted of gravel blankets or gravel-filled trenches, were then vented to the atmosphere.

The preliminary analytical work at Olinda Ranch, as well as the in-grading work, indicated that most of the gas seepage was located in areas where oil-bearing bedrock was exposed or was present in the shallow subsurface. Methane at high concentrations was also detected in excavations around the base of several abandoned oil wells located outside the oil seepage area. It was concluded that at these locations, the gas was using the outside of the well casing as a conduit to the surface. It should be noted that locations at Olinda Ranch where high methane concentrations were detected prior to grading were sampled again after the final grading cuts were made. At some locations the high concentrations could no longer be detected. This suggests that methane concentrations in soil can either change over time or with changes in elevation. Methane concentrations measured at Olinda Ranch during grading ranged up to approximately 800,000 ppm. Most of the methane was thought to be of biogenic origin; however, at a few locations the gas detected was thought to be thermogenic.

In summary, methane gas occurs on the project site, but is not prevalent. Based on the combined data from this site and the adjacent Olinda Ranch site, it is likely that methane at potentially hazardous concentrations is locally present. Methane gas in the shallow subsurface can be anticipated primarily in the northern part of Neighborhoods 5 and 6, in addition to the northern part of the Public Use Area. This is the same general area where naturally occurring bedrock and oil seeps occur at or near the surface. In the remainder of the site, soil gases may be detected locally at low concentrations (consistent with "background" levels typical of uncontaminated soils throughout southern California). Nevertheless, localized, anomalous high concentrations of methane may be detected in areas of the site not associated with the oil and gas seepage zones.

d. Existing Operation Hazards

The following discusses the potential risks from elements of the existing operations on the project site.

- **Wells** - According to Nuevo, as of December 2001, there are 210 active oil wells (including 14 water injection wells), 82 idle wells, and 87 abandoned wells on the project site. Wells abandoned prior to 1987 may not meet current abandonment standards. A review of all abandoned wells in residential areas will be performed. CDOGGR may order the reabandonment of any well if there is reason to question the integrity of the previous abandonment. Existing wells can leak gas or oil. These types of leaks are generally small. An oil leak would generally be contained to the well cellar surrounding the well or flow with the terrain. Catch basins are strategically located to prevent releases from entering drainage paths that can eventually reach marine waters. An oil release will not generally present a hazard to the existing surrounding community.

  A gas release can produce a flammable gas cloud that can drift with the wind. The produced gas is lighter than air and therefore acts as a neutrally buoyant gas and mixes with the atmosphere rather than acting as dense gas and remaining near the surface. A gas release from one of the existing wells would be expected to disperse to levels below the lower flammability limit before reaching populated areas.

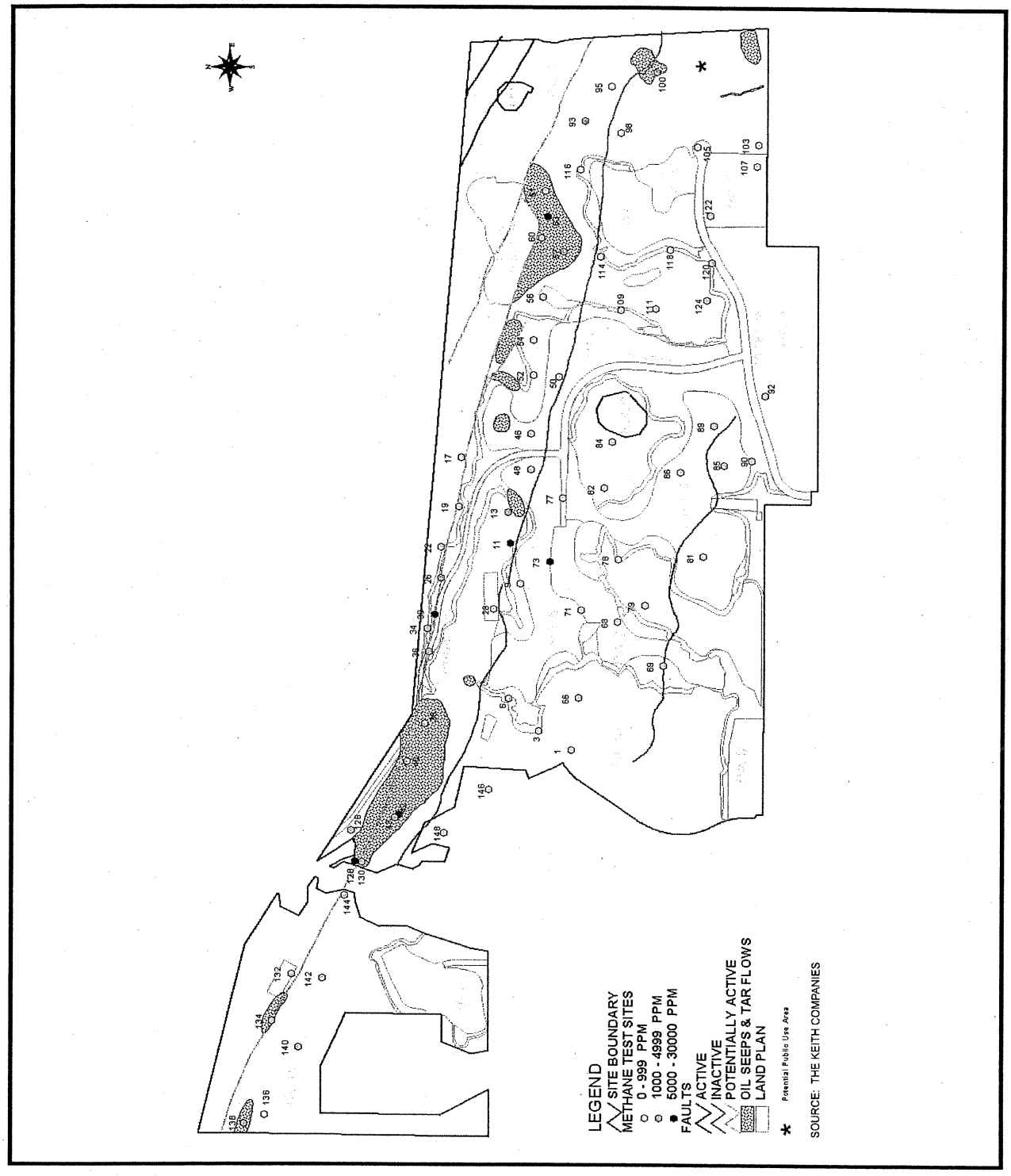

Exhibit 4.15-2
Methane Gas Measurement Sites

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Blowouts are possible if new wells are drilled. A blowout is defined as the uncontrolled flow of formation fluids from a wellbore. It occurs when formation fluids flow uncontrolled into a low-pressure subsurface zone (an underground blowout) or to the surface (a surface blowout). Most commonly, a blowout happens when there is insufficient pressure in a wellbore to control subsurface pressures.

If wellbore hydrostatic pressure is allowed to drop below the subsurface formation pressure, then a "kick" will occur as the formation fluids flow into the well. Typically, a kick is circulated out of a well in a controlled manner, with formation fluids flowing into a production flowline or emergency flare line. When a kick is detected during drilling operations, the blowout prevention equipment is closed, sealing the wellbore and preventing any additional formation fluid from entering the wellbore. Additional kick-control procedures are implemented such as circulating higher density drilling fluid into the wellbore until the kick is circulated out of the well and normal operations can be resumed. A surface blowout occurs when formation fluids flow to the surface in an uncontrolled manner. A kick can lead to a blowout in rare instances (e.g., in a gas well that experiences a failure in the mechanical integrity of the equipment/system). Redundancy of equipment is a primary feature of blowout-prevention equipment design.

Information on blowouts in California is contained in a document titled "A History of Oil- and Gas-Well Blowouts in California, 1950-1990," published by the CDOGGR. This document address onshore and offshore wells. The overall drilling incident rate for blowouts during 1950 to 1990 was 1 blowout per 1,953 wells drilled. The incident rate for blowouts resulting in a release of oil was 1 per 20,315 wells drilled. The incident rate for blowouts from 1970 (after the blowout offshore Santa Barbara when there was heightened awareness and additional regulations were implemented) through 1990 was 1:3,046 (a probability of 3.3×10^{-4} per well drilled).

The overall incident rate from 1980 through 1990 was 1:2,992, approximately the same as from 1970 through 1990. During 1980 to 1990, there were 11 incidents classified as blowouts, and 32,909 wells drilled ($32,909 \div 11 = 2,992$). Four of the incidents were caused by steam injection, and another incident occurred in the abnormally high-pressured Sacramento Basin. Another incident was only a kick (not a blowout) that was able to be circulated and flared. The five remaining incidents result in an incident rate of 1:6,582 (a probability of 1.5×10^{-4} per well drilled).

H_2S is classified as a toxic gas. The "immediately dangerous to life and health" (IDLH) concentration for H_2S is 100 ppm. The IDLH concentration is defined as the maximum level from which one could escape within 30 minutes without any escape-impairing symptoms or any irreversible health effects. The distance that could be affected by a release of gas containing H_2S would be a function of the rate of release of the gas, the amount of H_2S in the gas, and the atmospheric conditions. A release of gas containing high concentrations of H_2S could have serious consequences. The potential risk of increasing H_2S in produced gas is managed in several ways. First, the H_2S concentration increases slowly. Nuevo monitors the H_2S concentration of the produced gas on a periodic basis and should be well aware of any wells that have increasing H_2S levels. Second, if the H_2S concentration rises above a certain level, then chemicals are injected into the well to reduce the H_2S concentration before the gas comes to the surface. Thus, potentially hazardous levels of H_2S should never be present at the surface. Seismic activity would not be expected to affect

wells; however, strong ground motion can cause connections to rigid equipment to break, resulting in leaks of gas or oil.

- **Oil- and Gas-Gathering and Flow Pipelines** - The produced oil and gas is transported to the processing facilities by pipeline. Each well has a flow line. The potential exists for the pipelines to leak. Because the diameters of the gathering and flow pipelines are small (2 to 6 inches), the amount of oil that can drain from the pipelines is also small. An oil leak would flow with the terrain and has the potential to reach marine waters. As mentioned earlier, catch basins are strategically located to prevent releases from entering drainage paths that can eventually reach marine waters. An oil release will not generally present a hazard to the existing surrounding community.

  As with a release from a well, a gas release from a pipeline can produce a flammable gas cloud that can drift with the wind. The diameters of the lines are small (2 to 6 inches), and the pressures in the lines are low. Thus, the release rates from the line would not produce a large hazard footprint, and a release would not be expected to reach populated areas. Downhole treatment of H_2S should eliminate the possibility of H_2S in the gas being transported in the pipelines.

  Pipelines are generally flexible and withstand ground motion quite well. The most vulnerable components of pipelines are their connections to rigid equipment, such as wells or tanks. The use of flexible connections helps mitigate the potential for these types of releases.

- **Tank Farm Facilities** - Tank farm facilities are currently located in three locations on the property. Tank farm facilities consist of pressure vessels used for separating the produced emulsion into oil, water, and gas; atmospheric storage tanks for the storage of the oil before shipment; and atmospheric tanks utilized for the treatment and storage of the separated water. The potential hazards from these types of facilities are oil spills and fires. All tanks containing oil are within secondary containment systems capable of containing at least the entire contents of the largest tank. In the event of a tank failure, the resulting oil spills would be contained by one of the secondary containment catch basins.

  If a release was to occur into the secondary containment system, and the released oil was ignited, a radiant heat hazard footprint would be produced. The size of the hazard footprint would mainly be a function of the surface area on fire. The radiant heat hazard footprint used for public risk is that level that can begin causing second degree burns to exposed skin in about 30 seconds. This level is generally 1,600 British thermal units (BTU) per square foot per hour (5 kilowatts per square meter). A fire in a 10,000-square-foot containment area for the facility will produce a radiant heat footprint of approximately 300 feet[21]. A hazard footprint of this size from the existing oil storage and processing facilities does not overlap populated areas. Additionally, the facility has installed an adequately sized tank farm fire protection system that is routinely tested to ensure that it is functional and could be used to control fires when needed[22].

[21] Reese-Chambers Systems Consultants, 2000

[22] Risk Management Professionals, 2002

- **Natural Gas Plant and Power Generation Turbine** - The Stearns Gas Plant removes water and other gas liquids, such as propane, from the gas. The processed gas is then used as fuel gas in an on-site gas turbine to generate electricity for the site. The gas plant includes various compressors, refrigeration units, heat exchangers, pumps, and storage vessels. Nuevo was required to prepare an RMP for the gas plant. As part of the RMP process, Nuevo was required to develop a worst-case scenario for a gas release and then, following EPA guidelines, estimate the hazard footprint generated by this release. The worst-case accident consisted of a release of the entire volume of the flammable material stored in a 60,000-gallon NGL storage vessel. It was then assumed that the released vapor ignited, resulting in an unconfined vapor cloud explosion (UCVE), which produced a blast overpressure hazard footprint. Using EPA methodology, the distance to the 1.0 pound per square inch (psi) overpressure was calculated to be 0.5 mile (approximately 2,500 feet). An overpressure of 1.0 psi can break windows. Nuevo was also required to analyze an alternate and more probable scenario. This scenario consisted of the release of 1,000 pounds of material followed by a UCVE. Using EPA methodology, the distance to the 1.0 psi overpressure was calculated to be 0.1 mile (approximately 500 feet).

  Another possible accident at the gas plant is a boiling liquid vapor cloud explosion (BLEVE). A BLEVE can occur in a pressure vessel, such as the propane or NGL tank. For a BLEVE to occur, four events need to occur simultaneously: significant external fire, failure of the pressure relief valves, vessel blockage, and no external firefighting efforts. It is noted that the NGL and propane tanks are located such that any leakage would drain away from the tanks. The risk analysis estimated that the probability of a BLEVE is $8x10^{-7}$ per year per vessel, which equates to $1.6x10^{-6}$ for two vessels, once in 625,000 years[23]. The following hazard footprints have been calculated in association with a complete failure and BLEVE of a pressure vessel similar in size to the NGL tank at the Stearns Gas Plant.

  - Flammable gas cloud (worst-case meteorological conditions, F stability, 2 meters/sec wind) - 902 feet
  - Blast overpressure (distance to 1.0 psi, which can break windows) - 1,237 feet
  - Blast overpressure (distance to 3.0 psi, which can rupture eardrums and damage homes) - 374 feet
  - Flying debris from a tank BLEVE up to 1,500 feet

  The gas turbine utilizes aqueous ammonia to control emissions. Anhydrous ammonia is toxic to breathe and has an IDLH of 500 ppm. Nuevo utilizes aqueous ammonia, which is ammonia dissolved in water, rather than anhydrous (pure) ammonia. The concentration of ammonia is 25%, which limits the amount of toxic gas (ammonia) that would be released into the atmosphere if the mixture is released. The EPA does not classify aqueous ammonia (25%) as a regulated substance; thus, a hazard footprint would not have to be calculated. However, California does classify it as a regulated substance and does require that a hazard footprint be calculated. The Risk Management

[23] Reese-Chambers Systems Consultants, 2000

Plan[24], using the EPA methodology for anhydrous ammonia, calculates the ammonia hazard footprint to 0.14 milligrams per liter (200 ppm) as being 0.3 mile (approximately 1,600 feet). A hazard footprint for a 25% aqueous solution was calculated based on the partial vapor pressure of ammonia over the aqueous solution at 85°F. The distance to 200 ppm was calculated to be 65 feet, which does not leave the gas plant site.

The Stearns Gas Plant is a relatively new facility with a start-up date of November 1995. According to the RMP, the seismic design and construction of the equipment, supports for the equipment, and piping supports, exceed the current provisions of the Uniform Building Code. In June 1999, as part of the Risk Management Plan preparation, a seismic walkthrough was conducted for the plant to evaluate the design, construction, and current condition of the facility.

The plant maintains a Hazardous Material Inventory that lists the types, amounts stored, and amounts used annually of hazardous materials at the plant. To minimize the potential for spills of hazardous materials and to provide guidance for emergency response to spills, the plant has developed a Spill Prevention Control and Countermeasures Plan. Other safety-related plans and procedures that promote employee safety include a Hazards Communications Manual, a Fire and Risk Control Manual, an Illness and Injury Prevention Plan, an Emergency Response Plan, and a Storm Water Pollution and Prevention Plan. The safeguards protecting against or mitigating process material releases have been verified and documented in the Hazard and Operability Study Revalidation Report[25].

- **Utility Lines** - The existing site has various utility lines, including electric lines and fuel gas lines. Fuel gas is gas that has been processed at the gas plant and then piped to various locations on the project site to be used to fuel heaters and other equipment. The gas is essentially the same as the natural gas supplied by the gas company. The gas does not contain H_2S or other potentially toxic materials. The risk from these lines is similar to that of a utility gas line (e.g., line rupture or leak resulting in the release of gas). The flammable gas cloud would not travel to residential areas because of small-diameter pipes with low pressure[26].

- **Truck Transportation** - Propane and NGL are transported from the gas plant by truck. It is possible that a truck could develop a leak and/or become involved in an accident. In 1995, based on data from the California Department of Transportation, Arthur D. Little estimated a failure rate of 0.59 spills per million truck miles traveled[27]. Little also estimated that the worst-case flammable gas cloud from a major accident involving a truck transporting NGL could travel 810 feet. It is also possible that the released product could catch fire, resulting in a radiant heat hazard footprint. The radiant heat hazard footprint was estimated to extend 284 feet. An incident involving a truck

[24] Sierra-Pacific Environmental, 1999
[25] Risk Management Professionals, 2002
[26] Reese-Chambers Systems Consultants, 2000
[27] Reese-Chambers Systems Consultants, 2000

transporting NGL or propane could also affect other traffic on the road. However, trucks are designed to federal Department of Transportation standards specifically to transport these products. Propane, NGLs, and other petroleum products are routinely transported by truck throughout the country.

e. Summary of Existing Risks

Due to the nature of oil and gas production, accidents can result in the release of hazardous materials. One method to reduce the potential for accidents to impact members of the public is to keep them separated. The existing oil and gas operations take place in an area sufficiently separated from populated areas such that even if an accident should occur, it is not expected that members of the public would be harmed. Since the proposed project is near the oil and gas operations, a BLEVE accident could occur at the gas processing facility, although the probability of such an event occurring is extremely low. The presence of wells and flowlines also presents the potential for small gas and oil releases, but the potential risk from these types of incidents can be reduced to not significant with the implementation of mitigation measures. The tank farm facilities are sufficiently separated from residential areas so as not to present spill and fire hazards. The fire and release hazards/risks associated with truck transportation and utility lines are minimal.

4.15.2 Thresholds of Significance

The proposed project would be considered to have a significant environmental impact if it would create a substantial hazard to public health or safety and/or the environment.

The significance of impacts on the health and safety of the public has been evaluated according to a two-step matrix methodology. This methodology is commonly used to evaluate public and system safety impacts and is discussed in the *Handbook of Chemical Hazard Analysis Procedures* by the Federal Emergency Management Agency, the U.S. Department of Transportation, and the EPA and the County of Santa Barbara's 1995 *Environmental Thresholds and Guidelines Manual.*

1. The first-step matrix relates public safety hazard to the classification of the severity of the hazard, and separately relates the estimated frequency of occurrence of an accident to a frequency-classification descriptor. This is shown in Table 4.15-6 and Table 4.15-7.

2. The second-step matrix relates the potential frequency of occurrence of the hazard to the severity of the hazard and provides the mechanism to evaluate the risk as significant or not significant. This is shown as Table 4.14-8. An accident that falls in the shaded area of Table 4.15-8 based on its likelihood and severity is classified as significant.

Table 4.15-6 - Public Hazard Severity Classifications

Severity	Description of Public Safety Hazard
Negligible	No significant risk to the public, with no minor injuries.
Minor	Small level of public risk, with at most a few minor injuries.
Major	Major level of public risk with up to 10 severe injuries.
Severe	Severe public risk with up to 100 severe injuries or up to 10 fatalities.
Disastrous	Disastrous public risk involving more than 100 severe injuries or more than 10 fatalities.

Table 4.15-7 - Public Hazard Frequency Classifications

Severity	Frequency Per Year	Description
Extraordinary	Less than once in 1 million years.	An event whose occurrence is extremely unlikely.
Rare	Between once in 10,000 years and once in 1 million years.	An event that almost certainly would not occur during the project lifetime.
Unlikely	Between once in 100 years and once in 10,000 years.	An event that is not expected to occur during the project lifetime.
Likely	Between once in 1 year and once in 100 years.	An event that probably would occur during the project lifetime.
Frequent	Greater than once in 1 year.	An event that would occur more than once a year on average.

Table 4.15-8 - Hazard Scenario Risk Ranking Matrix

Likelihood						
	Frequent					
	Likely					
	Unlikely					
	Rare					
	Extraordinary					
		Negligible	Minor	Major	Severe	Disaster
	Severity					

Note: Shaded area denotes significant impact.

4.15.3 Project Impacts

This section presents a discussion of the potential impacts on hazards exposure and public health and safety associated with ongoing oil and gas operations and the development of the proposed Planned Community.

a. Methodology

The project impacts are based on evaluation of on-site conditions and a review of available documents concerning the project site. Environmental site assessments and investigations have been conducted at the project site. Remedial action planning was performed based on these assessments and investigations, and remedial implementation has been conducted in some areas of the project under lead agency oversight.

The environmental issues addressed include potential impacts from oil field operations, on-site conditions, and site uses. The impacts were assessed for the presence of "characteristic" hazardous wastes (e.g., regulated metals, VOCs, PCBs) and "California Designated, Non-Hazardous Wastes" (e.g., soil affected by crude oil).

The existing conditions were evaluated with respect to the impacts they would have on the proposed development (i.e., on the environment and human health and safety). Identification of mitigation measures is based on the proposed development plans and how the site conditions or remedial activities might affect such planned uses. Additional site characterizations may be required during the grading operations to guarantee that all potential environmental impacts are properly mitigated.

Environmental conditions that may affect the proposed development of Tonner Hills include oil seeps, remediation of crude oil impacted soil, PCBs, VOCs, and regulated metal contaminated soil. Exhibit 4.15-1 illustrates the areas designated for remediation.

Remedial and/or mass grading operations will require the following permits, plans, and/or compliance with:

- RWQCB Storm Water Pollution Prevention Plan
- County of Orange Grading Permit
- SCAQMD Rules 1166 (Volatile Organic Compound Emissions from Decontamination of Soil) and 403 (Fugitive Dust)
- OCFA's Guidelines for Combustible Soil Gas Hazard Mitigation (Guideline C-03, January 31, 2000)

Due to the nature of oil and gas production, accidents can result in the release of hazardous materials. Because the proposed project places residential neighborhoods near the oil and gas operations, the most severe accident that can occur is a BLEVE at the gas processing facility, although the probability of such an event occurring is extremely low.

- **Adequacy of Remedial Action Plan** - The Remedial Action Plan was approved by the lead agency (OCHCA) with SARWQCB approval. Additional environmental site assessment activities still need to be conducted on the project site. Because the East Naranjal Tank Farm is still active, it has been only partially assessed. Following the decommissioning of the East Naranjal Tank Farm, a thorough assessment will be conducted. Some drip pot locations that were not sampled have been located and will be sampled. Assessment activities within Drainage 5 have been completed under a work plan approved by the OCHCA. Soils containing concentrations exceeding the residential cleanup goals in the approved Remedial Action Plan will be addressed under OCHCA oversight.

- **Characteristic Hazardous Wastes** - The approved remedial goals for metals, PCBs, and VOCs are designed to protect human health and the environment, and comply with applicable state statutes.

- **Adequate Characterization of Wastes** - The impacted soil has been characterized using the appropriate federal, state, and OCHCA action levels. Impacted material that cannot be reused on-site under the approved RAP will be transported off-site to an appropriate disposal facility. Impacted material that can be reused will be tracked and placed at appropriate depths considered safe to human health and the environment. Therefore, impacted soil will not be a concern.

- **Tar Seeps** - Surface oil seepage is a natural phenomenon that occurs in numerous areas of California, both onshore and offshore. In southern California, numerous communities in the counties of Los Angeles, Ventura, and Santa Barbara contain natural oil seeps. The most well-known examples are located in the Rancho La Brea area of the City of Los Angeles and in the cities of Santa Barbara and Carpenteria. Development in these areas presently includes commercial, residential, schools, and parks. The crude oil emanating from the seeps is not classified as a hazardous substance by the State of California. However, the seeps are generally considered to be unsightly and a "nuisance hazard."

  The Tonner Hills Planned Community minimizes development in those portions of the site where the heaviest oil seeps have been observed at the surface. However, the northern portion of Neighborhood 5 encroaches into a small area where surface oil seeps have been previously mapped. Further, the planned cuts in Neighborhoods 5 and 6, either for design cuts or overexcavation, may encounter oil-bearing soils, and possibly seeping oil. In addition, a portion of the Tonner Canyon entrance road crosses a mapped oil seep area. Exhibit 4.15-3 depicts the location of the tar seep areas within the project configuration.

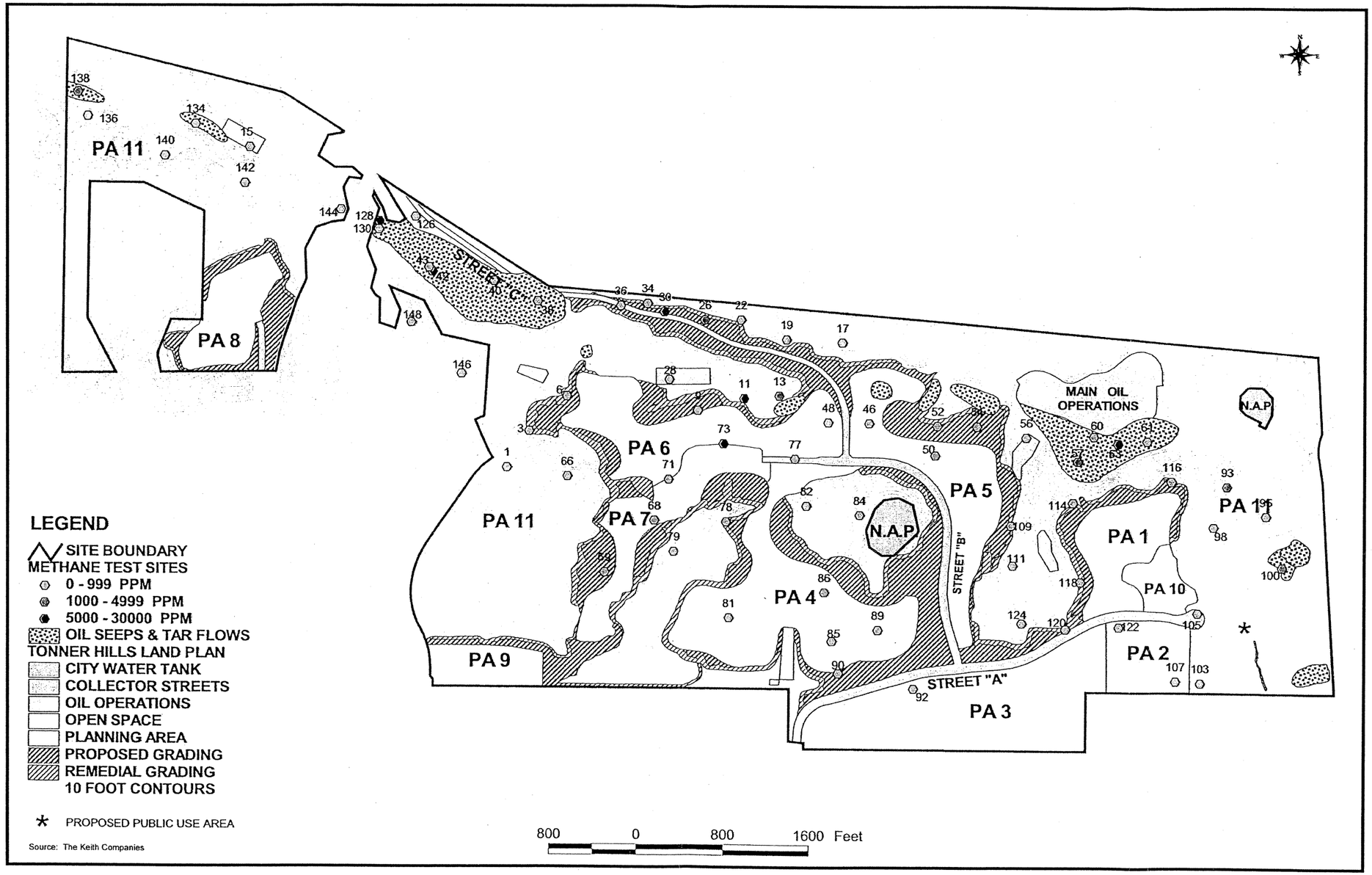

Exhibit 4.15-3
Tar Seep Areas

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At the adjacent project, Olinda Ranch, the oil seepage encountered during grading was treated in several ways. The primary mitigation measure consisted of overexcavation a minimum of 15 feet below final grades. This mitigation measure was aimed at retarding the upward migration of oil by placing a relatively dense soil layer over the oil-bearing bedrock. This method was chosen based on the observation that the relatively homogeneous older alluvium at the site had not been impregnated with oil, even where it was directly overlying oil-bearing bedrock. Secondly, where areas of more concentrated seeps were observed during grading, subdrains were installed at the base of the fill cap. The purpose of the subdrains was to create a preferred underground pathway for the oil to migrate to collection vaults located in open space areas. Three abandoned oil well casings that were providing a conduit for oil to reach the surface were also provided with oil collection systems. The collection vaults were vented so that natural gases could escape to the atmosphere. The vaults will be cleaned out as needed with a vacuum truck. A clarifier was installed for a subdrain in the eastern canyon bottom that was producing a significant amount of water in addition to a small amount of oil. The clarifier, as well as two of the vaults, are presently collecting oil from the subdrain systems.

Oil seeps and oil-bearing bedrock can have significant impacts on the grading logistics, schedules, and cost. Further, due to the dynamic and changing nature of hydrocarbon seepage, it should be recognized that the occurrence of oil seepage in the future cannot be entirely eliminated. However, with the implementation of remedial measures, the hazards associated with oil seepage can be reduced to an insignificant level. These remedial measures may include installation of subdrains and collection vaults. If subdrains and collection vaults are required in residential neighborhoods, the Tonner Hills Master Homeowners Association would be responsible for periodic maintenance of the collection vaults.

- **Drip Pots/Former Underground Storage Tank Location** - The locations of all known drip pots will be sampled. There is the potential that additional areas may be affected by natural gas condensate released from a drip pot or piping. The potential release of fuel hydrocarbons from the former UST area will be assessed following decommissioning of the production office. The potential impact on public health and safety is not considered to be significant.

- **Methane Gas** - Methane gas is present, although not prevalent, within the areas proposed for development. This conclusion is based on a site-specific study conducted by the CDOGGR in 1986, and the recent, extensive sampling and testing completed at the adjacent Olinda Ranch project, where similar geological conditions occur. At the project site, methane levels appear to be at background levels except in the northern parts of Neighborhoods 5 and 6, as well as the northern part of the Public Use Area. Potentially hazardous concentrations of methane have been detected at these locations. Areas where elevated methane concentrations have been measured in the past are closely associated with the oil seepage zones that occur in the northern part of the site. It appears

that the location of the oil and gas seepage zone is predominantly contained within two northwest-trending faults in this area, the Tonner fault and the Escondido fault. It is possible that localized gas anomalies are present outside of the major seepage zones. Exhibit 4.15-3 also depicts the location of the methane test sites.

The primary impact associated with methane is flammability. Methane is lighter than air, consequently it can accumulate in the upper levels of confined spaces, such as attics. The fact that it is colorless and odorless makes it especially hazardous, as it cannot be readily detected without special sensors. Methane is not poisonous, but could lead to asphyxiation if it replaces most of the oxygen in a confined space.

Given the potential for combustible gases to accumulate in or under buildings or structures, the OCFA has established guidelines for minimum procedures to mitigate the hazard posed by these gases. The objective of these guidelines is to prevent gases from accumulating to potentially hazardous concentrations. To that end, if combustible soil concentrations of 5,000 ppm or greater are identified at a given location, the OCFA mandates that mitigation measures be applied to all buildings within 300 feet of the affected location. If combustible soil gas concentrations greater than 12,500 ppm are identified at a given location, all buildings within 300 feet of that location are required to have a specific soil gas mitigation plan. The highest methane levels reported for the project site in 1986 were above 26,000 ppm. In addition to natural gas seepage, the OCFA guidelines include mitigation for gas leakage from abandoned wells, and mitigation procedures for buildings located near abandoned wells. The CDOGGR, as well as the OCFA, does not approve of placing buildings directly on top of an abandoned well.

The Remedial Action Plan (see Technical Appendices) for the project indicates that on-site soils containing as much as 14,000 ppm of hydrocarbon may be utilized for construction of fill embankments in the project. The source of the crude oil in the fill may be cuts made into natural oil seeps, or oil field cleanup operations. Such fills are to be placed no higher that 15 feet below final grades. These fills will generate some, although possibly small, amounts of biogenic methane. Depending on the final placement of the hydrocarbon (depth, extent, and concentration), the methane generated may have adverse impacts on the development.

The final mitigation plans are based on detailed site-specific studies. These shall include an initial baseline study in the development areas prior to grading. Sampling and testing of soil gases in excavation bottoms during grading, similar to that performed at Olinda Ranch, shall be conducted to determine the location of natural gas seeps that could vent dangerous levels of methane. Gas collection devices for these locations can then be engineered and constructed to collect the methane at or near its source, and vent it away from future homes. If oil-bearing fills are placed beneath residential areas, the concentration and distribution of these fill materials shall be documented and the data

included in the analysis for the final mitigation plans. Upon the completion of grading, a final soil gas survey of finished lots shall be prepared.

Soil gas investigations and mitigation plans will be reviewed by the OCFA, and possibly by a third-party registered professional. Mitigation measures may include, but are not limited to, passive sub-slab venting systems, sub-slab gas membrane barriers, monitoring wells, pressure relief wells, detection and alarm systems, and venting below hardscape areas. They may also include passive subsurface venting systems installed during grading. In addition, the tops of abandoned oil well casings, which are cut off a specified distance below the final ground surface, are normally fitted with a gravel-filled concrete cone and vented to the surface. The final mitigation plans should also include a "maintenance manual" that details the upkeep, monitoring, and record-keeping of any methane systems (such as monitoring wells or vents) in public or private areas. Once these mitigation measures are implemented, the hazards posed by methane gas should be reduced to an insignificant level.

- **Wells** - Nuevo estimates that there will be 210 producing wells as part of the project (see Exhibit 4.15-4). Some existing wells will be abandoned, some will be converted to water injection, and some new wells will be drilled. All wells that are abandoned are required to be abandoned in accordance with CDOGGR regulations and will require permits from the CDOGGR. Compliance with the well abandonment standards of CDOGGR will reduce the impacts of inactive wells to a less than significant level.

- **Wells/Blowouts** - The major and most spectacular accident associated with drilling operations is a blowout. Blowouts occur only during drilling operations and thus cannot occur at the wells in the residential areas once people are living there. It is possible that some of the wells may start becoming sour (i.e., contain H_2S) over time. In this case, Nuevo has stated that they will inject chemicals downhole to treat the gas to convert it to a non-toxic material. The following mitigation will reduce the potential hazard from H_2S to less than significant.

  It is possible that new wells will be drilled in non-residential areas as part of the ongoing oil operations. There is always a remote possibility of blowouts when new wells are drilled. As stated, the estimated probability of a blowout is $1.5x10^{-4}$ per well or one blowout per 6,582 wells drilled. It is also noted here that the probability of a blowout would be further reduced because wells will be drilled into a reservoir whose characteristics are well known. In addition, the reservoirs are not highly pressurized and require pumping to bring the oil to the surface. The oil does not flow to the surface due to the pressure in the reservoir. Again, since the characteristics of the reservoir are well known, H_2S would not be expected in the gas. In accordance with the risk matrix, the probability of a blowout would be classified as "unlikely" in any given year if at least one well and not more than 60 wells are drilled. The consequences of a blowout would be major if new wells are drilled in residential areas as stated. Hence, the potential public

safety impact from a blowout would be classified as significant. Both the likelihood of a blowout and the potential consequences if one occurs can be lessened to a combination that would be considered less than significant with the implementation of the various mitigation measures listed below.

As discussed previously, releases of gas and/or oil from producing wells are also possible. The probability of a major release from a wellhead complex has been estimated to be 1.05×10^{-4}, which puts such an event in the "unlikely" category. As stated previously, wells located in residential areas will be contained in vaults, which would contain small oil releases. A vault can contain approximately 10 barrels of fluid. Typically, spills are less than 1 barrel. A gas release would flow with the wind and could become ignited. It is possible that gas in the flammable region could reach a residence, thereby resulting in major consequences. If H_2S were present in the gas, the potential consequences could be worse. Thus, the potential public safety impacts would be classified as significant.

- **Oil- and Gas-Gathering and Flow Pipelines** - The produced oil and gas will continue to be transported to the processing facilities by pipeline. Each well has a flow line. The potential for the pipelines to leak will still exist. An oil leak would flow with the terrain and has the potential to flow through a residential area. It is also possible that released oil could become ignited. As stated, the flow lines have small diameters; therefore, leaks would generally be small (less than 1 barrel). Potential causes of pipeline releases are corrosion and damage by third parties. Although the probability of pipeline releases can be minimized, they cannot be totally eliminated. The potential hazard in most cases is contamination from the released material, but a fire could cause burns. The likelihood of an oil pipeline release is estimated to be "likely," but the public safety consequences would be minor and therefore not significant. However, oil releases could cause significant impacts on the environment. If leak occurs, the area would be contained, the pipe would repaired, and soil clean-up would be initiated in accordance with OCHCA guidelines. With mitigation measures, the overall impact can be reduced to a less than significant level.

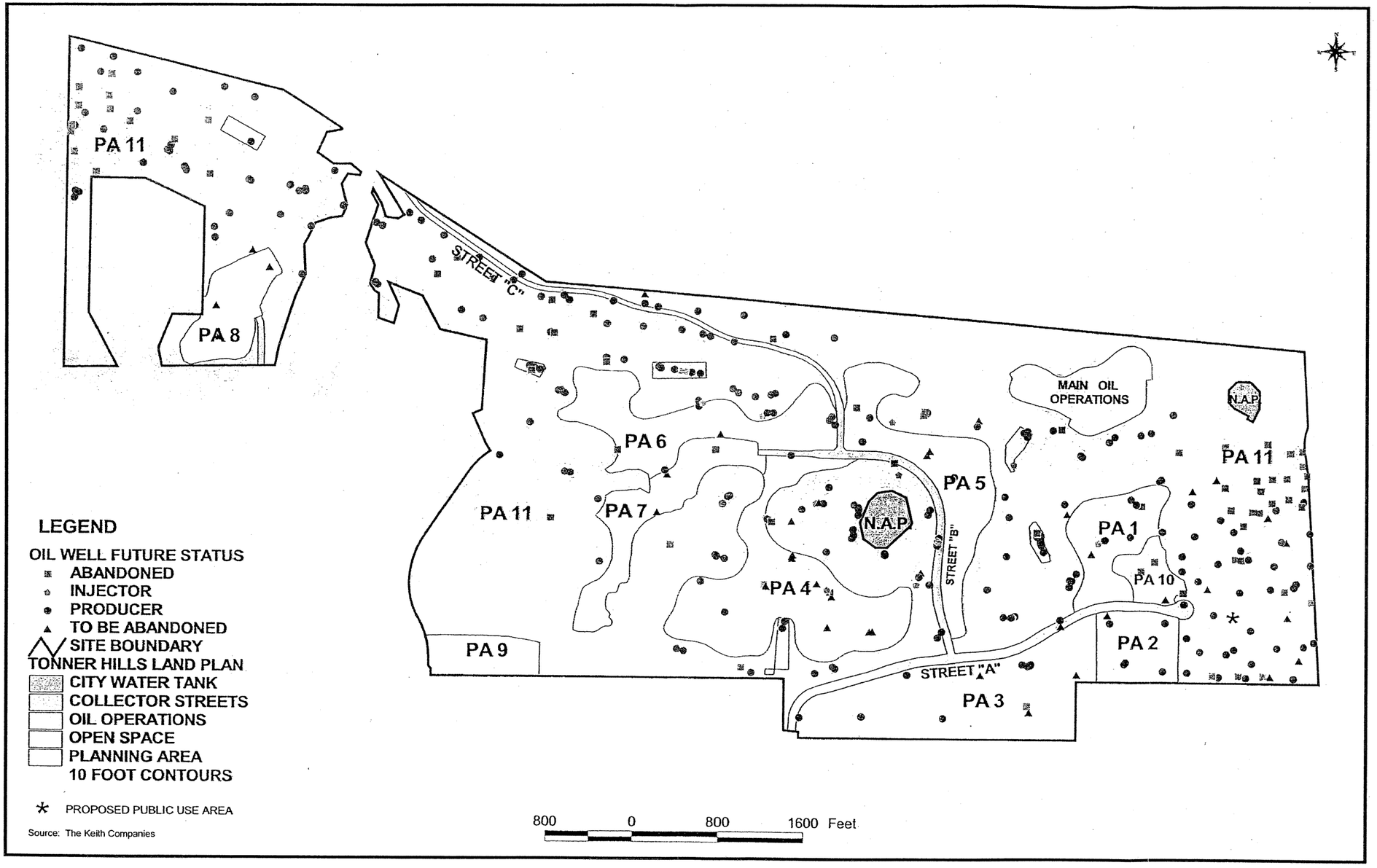

Exhibit 4.15-4
Location of Oil Wells

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As with a release from a well, a gas release from a pipeline can produce a flammable gas cloud that can drift with the wind. The diameters of the lines are small, and the pressures in the lines are low. Nevertheless, a gas release could produce a small flammable and toxic gas hazard footprint that could result in "major" consequences if the cloud were ignited. The probability of a gas release with fire is estimated to be "unlikely."[28] Depending on the location of the leak, the gas cloud could overlap a residence or roadway. Thus, public safety impacts from the gas pipelines are classified as significant. With mitigation measures in place, the overall impact can be reduced to a less than significant level.

- **Tank Farm Facility** - The tank farms that are currently in the East Naranjal and Columbia Stearns surface areas will be decommissioned prior to construction of the proposed project. A new 4,000-barrel oil tank will be built at the Tonner Creek Tank Farm facility in the northwest section of the property. Currently, the facility consists of a wash tank, two stock tanks, and a wastewater tank. A worst-case incident involving this new facility would be a release of the entire contents of one of the tanks into the surrounding secondary containment system, which then ignites and burns. However, the potential consequences from a tank farm fire is classified as "minor" because the size of a radiant heat hazard footprint from a tank fire would be considerably less than that estimated (approximately 300 feet) for a dike (secondary containment) fire[29].

  The annual probability of a tank fire has been estimated to be 7.0×10^{-5}. The rupture of an atmospheric storage tank due to all causes, including seismic events, is estimated to be 1.6×10^{-4} per year, or once in 6,300 years. The probability that the oil is ignited is 1.0×10^{-2}, or 1 in 100. Thus, the probability of a release with a fire is estimated to be 1.6×10^{-6} per tank, or once in 625,000 years, which is classified as rare[30].

  It is also possible that an explosion could occur in an oil storage tank. The County of Santa Barbara, 1988[31], estimated that the probability is 1×10^{-4} for all types of storage tanks. Modern-day storage tanks used in facilities like this are constructed with weak seam roofs that lift off if an explosion were to occur. The roof would not be expected to travel more than about two tank diameters before coming to rest and would thus not present a hazard to members of the public[32].

- **Natural Gas Plant and Power Generation Turbine** - The hazard footprints from the gas plant are displayed on Exhibit 4.15-5. As can be seen in the exhibit, the largest hazard footprint is the 1.0 psi blast overpressure hazard footprint from the RMP. A 1.0

[28] Reese-Chambers Systems Consultants, 1997 as cited in Reese-Chambers Systems Consultants, 2002
[29] Reese-Chambers Systems Consultants, 2002
[30] Reese-Chambers Systems Consultants, 2002
[31] As cited in Reese-Chambers Systems Consultants, 2002
[32] Reese-Chambers Systems Consultants, 2002

psi blast overpressure can cause windows to break. As stated, this hazard footprint is for a worst-case accident involving a release of all of the flammable material in one of the tanks, followed by an UCVE.

The size of the hazard footprint was determined by using a conservative methodology prescribed by the EPA in its "Offsite Consequence Analysis Guidance" document. This type accident, and its probability of occurring, is similar to the BLEVE discussed below. The next largest footprint represents flying debris from an explosion or BLEVE involving one of the pressure vessels. The probability of an accident of this type is extremely low and has been estimated as once in 625,000 years, which classifies its likelihood as "rare." It is also noted here that flying debris would not affect all the areas in the footprint. The consequences of the flying debris hazard footprint are classified as "severe." Thus, the public safety impact is classified as "significant." Implementation of mitigation measures described below will reduce the impact to a less than significant level.

Structures inside the 3.0 psi overpressure footprint could be damaged and people could sustain ruptured eardrums. The consequences of the 1.0 psi overpressure footprint are classified as "major." However, the public safety impacts are classified as not significant because flying debris will not impact a large area within the footprint. The consequences of the 3.0 psi overpressure footprint are classified as "negligible" because no vulnerable resources are contained within the hazard footprint, and thus are not classified as significant.

The flammable gas cloud could be ignited by an ignition source such as a pilot light or passing vehicle. It is noted here that a flammable gas cloud is not circular and extends only in the direction of the wind. It is also noted here that the flammable gas cloud hazard footprint displayed is for the worst-case meteorological conditions of F stability with 2 meters per second wind, which would result in the largest hazard footprint. These conditions only occur at night. A more typical C stability with higher wind speeds will result in a smaller footprint of a flammable gas cloud hazard. The consequences of a flammable gas hazard footprint are classified as "severe," and therefore significant. A number of mitigation measures would be implemented to reduce the overall potential impact to a less than significant level.

As stated earlier, aqueous ammonia (25%) will be used for emission control in the gas turbine power generation facility. Aqueous ammonia in a 25% concentration does not present a hazard to the surrounding community, and thus, the public safety impact from the power generation facility is classified as not significant.

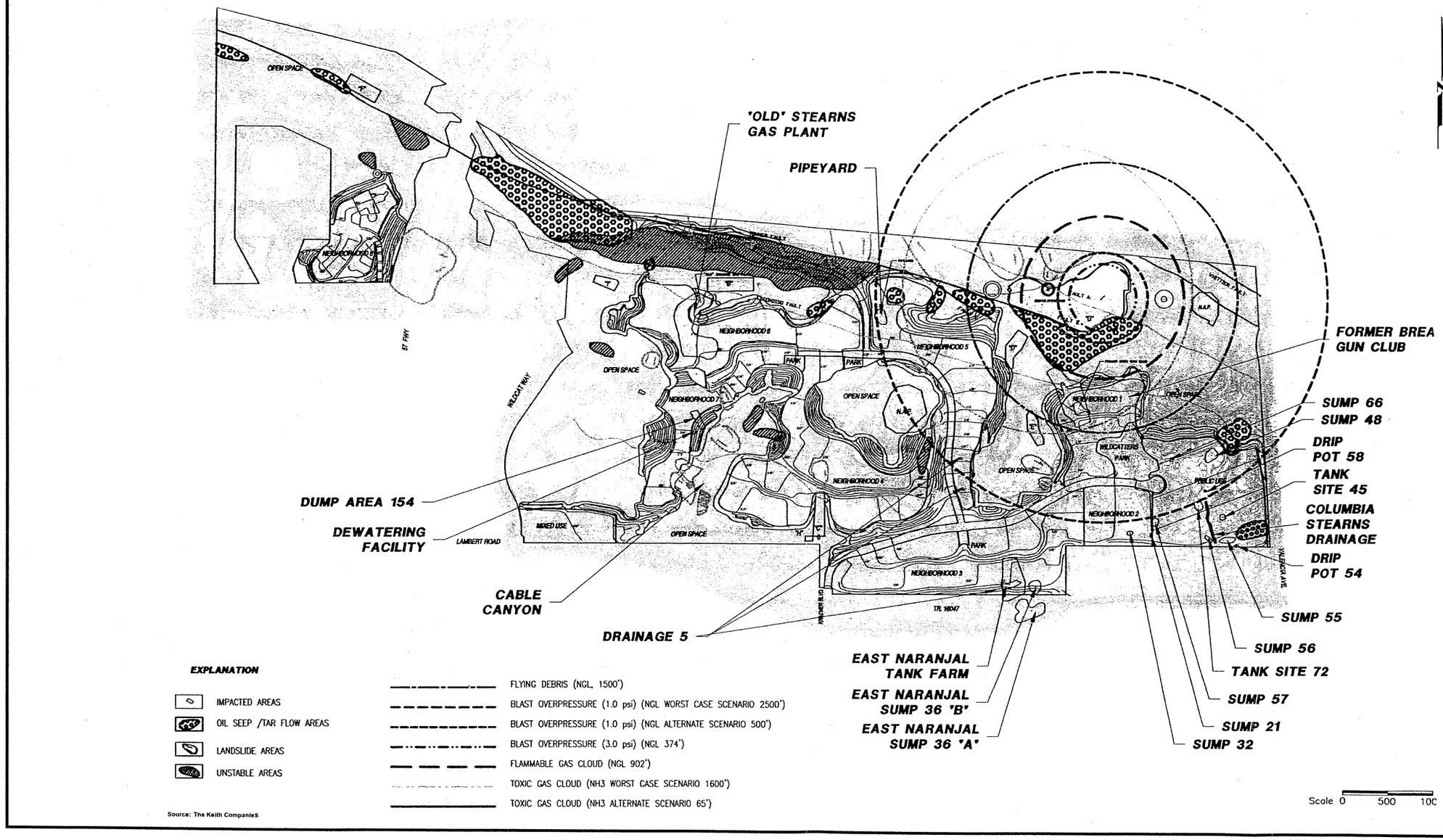

Exhibit 4.15-5
Gas Plant Hazard Footprints

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- **Utility Lines** - The risk from remaining utility lines will be similar to that of gas lines serving the residences. No above-ground utility lines will be placed in residential areas. It is expected that the number of utility lines will be reduced with the use of downhole electric pumps in the wells in residential areas. The risk from utility lines is less than significant.

- **Truck Transportation** - Trucks will continue to be utilized to transport products to and from the gas plant. Currently, a truck transports ammonia to the gas plant once a month. Propane is transported from the gas plant seven times per month. No additional trips would be required because of the project. To mitigate potential risk in the residential areas, the trucks should be required to follow a designated service road. As long as the truck traffic does not go through the residential area, the public safety impacts are classified as not significant. NGL is blended with the crude oil for shipment off-site by pipeline. Blending NGL with the oil increases the volatility of the crude oil by increasing its vapor pressure and decreasing its flash point. Many pipeline operators have restrictions on the amount of NGL that can be blended. The risk from trucking is less than significant.

4.15.4 Mitigation Measures

The following measures have been included in the project to ensure that hazards and hazardous materials impacts are avoided or reduced to less than significant level.

H-1 **Document Remediation** – An experienced petroleum environmental consultant shall document the remediation efforts during all three remediation phases, overall site grading, and implementation of the project mitigation measures in accordance with the approved Remedial Action Plan. Site closure reports containing environmental documentation will be submitted to the OCHCA and the SARWQCB for approval. A closure letter from the OCHCA will be obtained to document the completion of remediation activities prior to the issuance of building permits.

H-2 **Adhere to Proper Health and Safety Measures** - Proper health and safety measures must be followed according to a site-specific Health and Safety Plan prepared by the environmental consultant prior to and during the remediation of all areas, including areas identified to contain elevated VOC concentrations. This includes, but is not limited to, personal protection equipment for workers and monitoring for VOCs during remediation activities. Before starting remediation activities in these areas, the contractor shall obtain a permit from SCAQMD pursuant to Rule 1166. OSHA guidelines will be followed by on-site workers.

H-3 **Verification Sampling and Analysis** - Verification sampling will be conducted under the direction of a representative of the OCHCA during all three remediation phases. Additional analysis of samples may be necessary to ensure that a site is fully characterized so as not to spread potentially impacted soil throughout the property.

H-4 **Disposal of Gun Club Soil** - The impacted soil at the former gun club location will be transported off-site and disposed of at a licensed disposal facility. Documentation of the disposal activity will be included in a site closure report submitted to OCHCA and DTSC.

H-5 **Disposal of Road Material** - Asphaltic road material will be removed during grading activities and used as deep fill, and its placement, location, and elevation will be documented during mass grading activities. Documentation of this activity will be included in the site closure report.

H-6 **Disposal of Tarry Material** - If the tarry material is found to be suitable, based on analytical results for reuse on-site as deep fill, the exact depth and location will be surveyed and documented in the site closure report. If it is not suitable for burial on-site, it will be removed and transported to a licensed waste facility.

H-7 **Disposal of Soil Containing PCB-Impacted Material** - Soils containing PCB concentrations greater than 0.22 mg/kg but less than 0.5 mg/kg will be stockpiled and reused in open space or as deep fill at depths greater than 10 feet in non-residential areas of the Tonner Hills project. Excavated soils containing PCB concentrations ranging from 0.5 mg/kg and to 10 mg/kg will be stockpiled and reused as deep fill at depths greater than 10 feet in street locations that will provide a "cap" within the Tonner Hills project. Excavated soils containing PCB concentrations greater than 10 mg/kg or greater will be transported off-site to a licensed disposal facility.

H-8 **Supervision of Mass Grading Activities** - An experienced petroleum environmental consultant will be on-site during all mass grading activities to ensure that all "suspect" material is properly characterized and managed.

H-9 Prior to commencing grading operations, the developer/property owner shall consult with the CDOGGR for information on the wells located in the residential area. All wells to be abandoned, or wells not abandoned to current standards, shall meet the current standards of CDOGGR. Any previously abandoned well shall be plugged and abandoned in accordance with current CDOGGR specifications prior to grading permit approval. Evidence of this consultation shall be provided to the County Manager, Subdivision and Grading, prior to commencement of grading. Any idle wells within the Planned Community shall be abandoned prior to development unless adequate provisions are taken to ensure that operators have access to these wells prior to grading, to the satisfaction of the County. Compliance with this measure is subject to periodic site inspections.

H-10 Any previously abandoned well that does not meet current standards and is located within a residential or commercial neighborhood or within an adjacent street right-of-way shall be reabandoned in accordance with current CDOGGR specifications prior to building permit approval. Evidence of conformance to CDOGGR standards for any remedial plugging shall be provided to the Manager, Current Planning, and the Manager, Subdivision and Grading, immediately upon completion of reabandonment activity.

H-11 The developer/property owner shall demonstrate on residential site plans that no buildings shall be allowed over wells that have either been plugged and abandoned or reabandoned to the CDOGGR and OCFA current specifications or that are within 50 feet of a water injection well. Said plans shall be subject to review and approval by the Manager, Current Planning.

H-12 A seismic sensor shall be placed at strategic locations to shut down production in the event of a significant seismic event (5.0 magnitude or higher on the Richter scale). The oil operator shall conduct a study to determine the seismic thresholds for shutting down production and the location, type, and number of sensors required. The study shall be subject to review and approval by the County. The seismic sensor and shut-down system shall be in place and operational prior to the County's issuing the first Certificate of Occupancy for a residential unit.

H-13 Oil wells in residential areas will be placed with subsurface pumping units enclosed in a concrete vault. The vault will have a grated steel grill plate to restrict the unit from public access. No new wells shall be drilled in a residential area once the County issues the first Certificate of Occupancy. Within the residential, park, and commercial/mixed-use planning areas, no new wells shall be drilled, nor shall existing wells be redrilled after the County issues the first Certificate of Occupancy for a residential unit.

H-14 Any residential structure constructed within 10 feet of an abandoned well shall receive special venting treatment pursuant to CDOGGR and OCFA standards and to the satisfaction of the County and CDOGGR. The developer/property owner shall indicate compliance with this measure on proposed building plans that are subject to review and approval by the Manager, Current Planning. Compliance is also subject to periodic site inspections by the County during construction.

H-15 All habitable structures shall be located at least 50 feet from any operating well head, including water injection wells, pursuant to the requirements of the Uniform Fire Code and the OCFA and subject to monitoring and inspection by the OCFA.

H-16 All drilling, operations, maintenance, and abandonment of wells during the life of the project shall be in accordance with §3106 of the Public Resources Code and overseen and approved by the CDOGGR. Compliance with this measure is subject to periodic site inspections by the Manager, Building Inspection Services, and the CDOGGR.

H-17 If any abandoned or unrecorded wells are uncovered or damaged during excavation or grading, remedial plugging operations shall be required. If such discovery occurs, approval from CDOGGR to perform remedial activities is required. In the event the abandoned or unplugged wells are encountered during grading, Nuevo or the Construction Manager shall inform the Manager, Subdivision and Grading, within 24 hours of such an occurrence. Evidence of conformance to CDOGGR standards for any remedial plugging shall be provided to the County and the OCFA immediately upon completion of said remediation activity.

H-18 Oil wells within open space planning areas where Scenic Preservation Easements have been dedicated to the County shall contain security fencing that meets the standards and requirements of CDOGGR. This fencing shall be indicated on project plans and subject to the review and approval of the Manager, County PFRD/HBP Program Management and Coordination.

H-19 Prior to issuance of building permits, soils adjacent to oil wells abandoned in residential areas will be mitigated to meet residential cleanup requirements of the OCHCA-approved RAP. Once the project is occupied, subsequent well abandonments shall be subject to and processed in accordance with CDOGGR and OCHCA regulations.

H-20 Prior to the County's issuing the first Certificate of Occupancy, a program to carefully monitor the hydrogen sulfide (H_2S) content of the produced gas shall be developed and implemented to prevent higher levels of H_2S from becoming present in the produced gas. This program shall be reviewed and approved by the CDOGGR and the OCHCA. Downhole treatment shall begin when the level of H_2S exceeds 10 ppm.

H-21 All oil and gas flowlines shall be installed in underground trenches, separate from other utilities. Location of all pipelines shall be recorded on site plans. Seismic joints and flexible couplings shall be installed in all cases where flowlines cross known or suspected fault lines. Seismic sensing devices shall be installed to allow for the shutdown of the field in the event of a significant seismic event (5.0 magnitude or higher on the Richter scale). The developer/property owner shall indicate compliance with these measures on project utility and building plans and be subject to review and approval by the Manager, Current Planning, prior to implementation of the proposed project.

H-22 The oil operator shall compile a list of all hazardous materials used on the project site and demonstrate that the storage and use of these materials do not present a public safety hazard. This list, and documentation demonstrating that no public safety hazard exists, shall be reviewed and approved by the OCHCA and the OCFA prior to the County's issuing the first Certificate of Occupancy for a residential unit. In addition, the oil operator and the owner shall provide the same type of documentation it proposes to use a hazardous material not currently on the approved list.

H-23 Prior to issuance of occupancy permits, the geotechnical consultant shall prepare a maintenance/monitoring manual describing the responsible parties, upkeep, monitoring program, record keeping and reporting required with respect to any oil seep mitigation measures installed within the project. The report shall include a map showing the locations of all pertinent structures (such as subdrain outlets, vaults, clarifiers, etc.) and shall be approved by the Manager, Subdivision and Grading..

H-24 Prior to grading, a baseline study shall be performed to gain a better understanding of the current distribution and concentrations of methane in the area proposed for development. This study shall include soil gas sampling and analysis performed by a methane consultant. Since the distribution of methane can change with depth, the consultant's report shall include a work plan for further investigation during grading, including sampling intervals, procedures, and potential mitigation measures that might be implemented during grading. This report shall be submitted to the OCFA for approval.

H-25 During grading, soil gas sampling and analysis shall be performed on the bottom of all excavations in the development area. This would include cuts to design grade, overexcavation of building pads, the bottoms of areas where unsuitable foundation soils have been removed, buttress cuts, etc. "Bottoms" sampling shall also be conducted at each well location. The sampling and analysis shall include a determination of gas pressure, hydrocarbon concentration, and chemical composition. If anomalous, and potentially hazardous gas seeps are identified, the methane consultant shall recommend specific remedial measures and submit findings to the OCFA for approval.

H-26 During grading, any subsurface structures that may act as a conduit for methane gas (such as sewer lines, storm drains, subdrains, etc.) shall be evaluated by the methane consultant with respect to the local conditions. The methane consultant shall provide specific remedial recommendations, such as venting, as needed for approval by OCFA.

H-27 Full-time monitoring of the grading activities shall be provided by the petroleum environmental consultant in order to document the depth, lateral extent, and concentrations of any crude oil-impacted fills. This information shall be provided to the methane consultant for evaluation and consideration in the final methane remedial recommendations.

H-28 At the completion of grading, and prior to the issuance of building permits, sampling and analysis shall be performed by the methane consultant at future building locations. Based on the data collected prior to, during, and at the completion of grading, the methane consultant shall make final recommendations for methane mitigation during construction and future ongoing monitoring at buildout. The analysis and recommendations shall consider the guidelines recommended by OCFA (Guideline C-03 dated January 31, 2000) as minimum requirements. Any deviations from the guidelines shall be supported by scientific evidence, and approved by the OCFA.

H-29 Prior to the issuance of occupancy permits, the methane consultant shall prepare a manual describing the responsible parties, upkeep, monitoring program, record-keeping required, and reporting required with respect to the methane mitigation installed within the project. The report shall include a map showing the locations of all monitoring wells, vents, or other pertinent structures. The Tonner Hills Homeowners Association shall be responsible for ongoing monitoring and reporting of test sites located in the residential areas to the OCHA and the OCFA as described in the methane consultant's report.

H-30 All methane investigation and analyses shall be performed by a California registered engineer and/or geologist with demonstrated proficiency in the subject of soil gas investigation and mitigation. All methane reports, work plans, mitigation plans, and monitoring plans are subject to the review and approval of the OCFA.

4.15.5 Cumulative Impacts

Cumulative impacts associated with existent hazards and hazardous materials resulting from the proposed project development in the vicinity and surrounding areas include short-term impacts related to oil operation remediation, and project construction. Long-term impacts are associated with co-locating residential and mixed-used developments with active oil operations. Implementation of the mitigation measures described in this section will reduce the cumulative impacts to less than significant levels.

4.15.6 Unavoidable Adverse Impacts

The development plan for the Tonner Hills Planned Community includes a three-phased remediation action plan for the existing site. Site design characteristics separate the primary risk exposures of oil operations from residential development and avoid placing homes in tar seep areas. The combination of the regulatory mandates, mitigation measures listed herein, the RAP, and site design standards reduce all hazards and hazardous materials exposures to less than significant levels.

4.16 Public Services

This section provides a discussion of public services that may be affected by implementation of the proposed Tonner Hills Planned Community. Existing public agencies that provide public services to the project area are identified and evaluated for potential impacts that could occur as a result of the project. The analysis is based on information provided by the respective service providers. This section provides baseline information on and evaluates potential public services impacts associated with the proposed project.

4.16.1 Existing Setting

The proposed project site is located within the service areas of several public service agencies. The Orange County Fire Authority (OCFA), the Orange County Sheriff's Department, and the Brea Olinda Unified School District are agencies scheduled to provide public services within the project area in the immediate future. Recreation and park services are further analyzed in Section 4.13. Both the County of Orange and the City of Brea currently provide public services to the project area.

a. Fire Services

(1) Orange County Fire Authority (OCFA)

The Orange County Fire Authority (OCFA) provides fire protection and emergency services to the project area, as well as other unincorporated areas and 18 cities within Orange County. OCFA was formed on March 1, 1995 to retain a regional approach to fire protection and emergency service capabilities. OCFA maintains automatic and mutual aid agreements with adjacent non-OCFA fire departments for and emergency aid fire response in the proposed project area. However, these agreements would not include the intensity of resource demand proposed by the Tonner Hills Planned Community. The proposed project would be required to enter into a Secured Fire Protection Agreement (SFPA) with OCFA to mitigate impacts the project would pose to fire services[33]. Table 4.16-1 shows the OCFA fire stations situated nearest to the project site along with a list of equipment and personnel capabilities.

Table 4.16-1 - Orange County Fire Authority Existing Resources

Station Number	Location	Equipment	Manpower
10	18422 East Lemon Dr. Yorba Linda	1 fire engine 1 water tender	16 career personnel
34	1530 N. Valencia Ave. Placentia	2 fire engines 1 medic unit	1 Battalion Chief 8 career personnel
35	110 S. Bradford Ave. Placentia	1 fire engine	4 career personnel

Source: Eric Elmer, OCFA Facilities Planner

[33] Michael S. Rohde, Battalion Chief, OCFA, 2001

OCFA has expressed concerns over the proposed project's layout and gradient levels of emergency access roadway throughout the site and how it would affect OCFA's response times to the project area. While the planned community does not propose any roads with grades at or above 10%, the exact response time for fire services to the project area will be determined during the review of subsequent tentative tract maps when the location and gradient of the road configurations are finalized within the project site. The results of this analysis could necessitate project modifications or require additional conditions as conditions of approval to subsequent tentative tract maps to mitigate impacts the project would pose to fire services.

The proposed development lies within Special Fire Protection Areas (SFPA) for wildland/urban interface fire risk, as designated by County of Orange (Exhibit 4.16-1). SFPAs are geographic areas where human development meets or interacts with vegetative habitat consisting of the type and condition of topography, native vegetation, weather, and other relevant factors that would significantly increase the risk of uncontrollable fire spread from the ground and via airborne embers. Additionally, the project area lies within a historical wildfire corridor that has seen repeated wildfires over the history of the County. Guidelines for development within SFPAs, such as fire access road requirements and fuel modification plans (Exhibit 4.16-2), are required as a vital part in the project's development process[34].

Tonner Hills Planned Community development is situated within the fire hazard zone (e.g., foothills, mountains, non-irrigated former farming areas, and other lands containing combustible vegetation) and will require modification of the natural vegetation at its urban interface. A fuel modification zone is generally the outer boundary of the proposed development consisting of a wide strip of land where combustible vegetation has been removed and/or modified and partially or totally replaced with drought-tolerant, fire resistant plants and irrigated areas to provide an acceptable level of risk from wildland and vegetation fires. Additionally, interior slope areas with a potential for spreading fire would be reviewed by OCFA and potentially mitigated through the use of controlled landscape materials, irrigation, or other measures. Fuel modification plans vary in complexity and are project-specific. The criteria are mainly dependent upon the amount and arrangement of vegetation, topography, local weather conditions, and the degree of structure exposure relative to the proposed design and placement of those structures.

Under the proposed project, fire prevention services provided by OCFA will be extended to all areas of the proposed Tonner Hills Planned Community project. However, the project applicant shall provide necessary plans and/or information relative to fire prevention inspection, hazardous materials disclosure, fuel modification plans and underground storage tank services for review prior to project development.

[34] Michael S. Rohde, Battalion Chief, OCFA, 2001

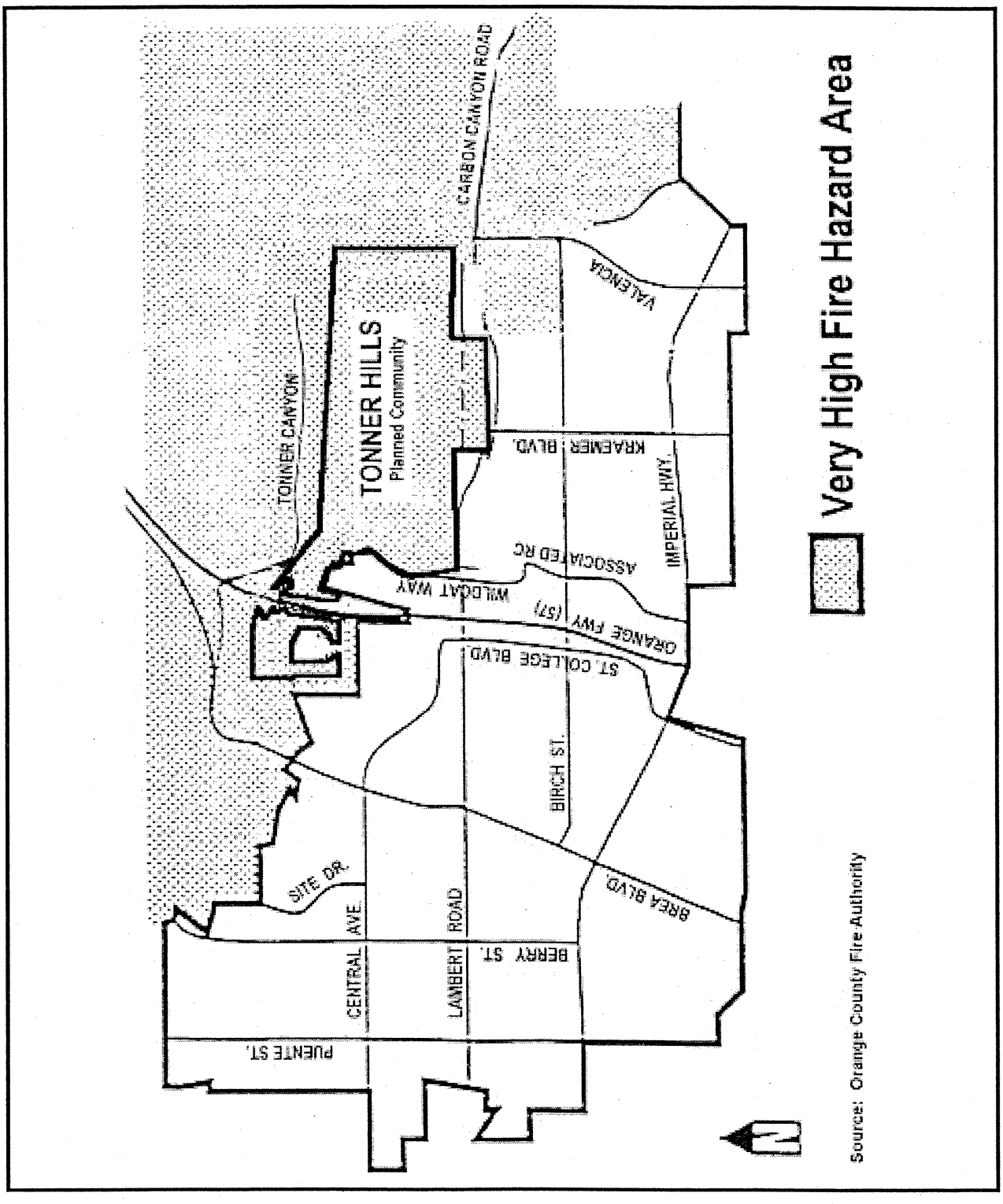

Exhibit 4.16-1

Special Fire Protection Area (SFPA)

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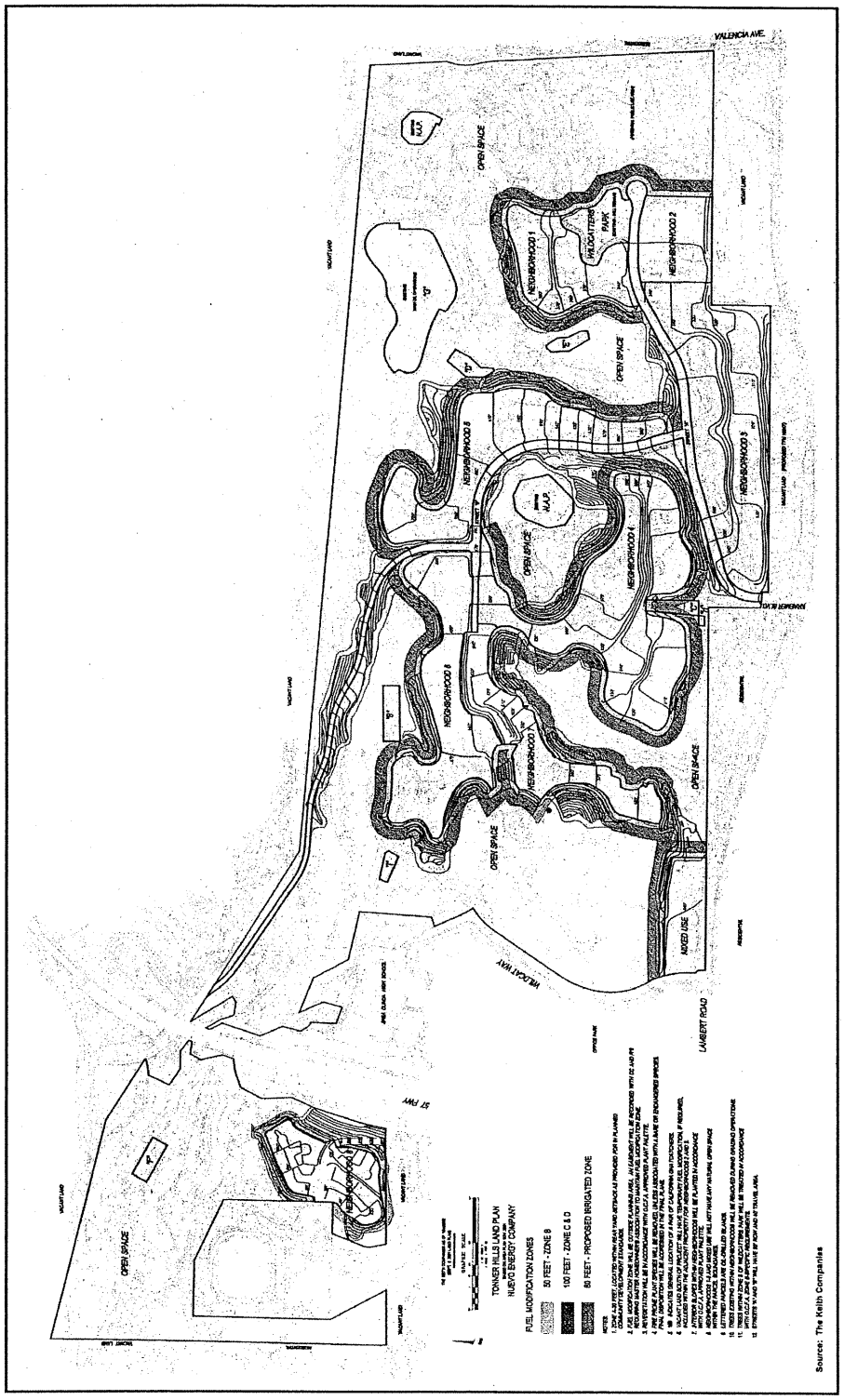

Exhibit 4.16-2

Tonner Hills Planned Community Fuel Modification Zone

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(2) City of Brea Fire Department (Brea FD)

The Tonner Hills Planned Community is currently not within the City of Brea Fire Department's jurisdiction, and the Department is not responsible for the enforcement or inspection of the project site. However, under OCFA reciprocal response and mutual aid agreements with adjoining jurisdictions along with the required Secured Fire Protection Agreement (SFPA) with OCFA, Brea Fire Department resources would be available to provide fire and emergency response services to the development.

The City of Brea Fire Department (Brea FD) provides fire protection and prevention services to areas within the City's corporate limits. Table 4.16-2 shows four strategically located fire stations throughout the city and a listing of their equipments and personnel.

Table 4.16-2 - Brea Fire Department Existing Resources

Station Number	Location	Equipment	Manpower
1	555 North Berry St., Brea	1 engine company 1 paramedic unit	4 career personnel
2	185 S. Laurel Avenue, Brea	1 engine company	3 career personnel
3	400 N. Kraemer Blvd., Brea	1 engine company 1 paramedic unit 1 truck company	4 career personnel 1 Chief Battalion
4	170 Olinda Place, Brea	1 attack 3-4 unit	1 career personnel

Source: Alford Nero, Fire chief, City of Brea

The City of Brea Fire Department consists of three engine companies, two paramedic units, nine Emergency Medical Technicians (EMT), one truck-company, and one attack unit[35].

b. Police Service

The Orange County Sheriff's Department (OCSD) is the designated law enforcement agency for 11 cities within Orange County and the County's unincorporated areas. The Tonner Hills Planned Community is situated in the unincorporated area of Orange County and is within the jurisdiction of OCSD. There are no Sheriff facilities within the Project area. The closest facility is the Orange County Sheriff's Headquarters situated at 550 North Flower Street in the City of Santa Ana.

The development of Tonner Hills Planned Community will not significantly impact OCSD[36]. There are currently four Sheriff's deputies assigned to the project area, and their response time varies depending on various factors such as time of day, location, and traffic conditions. OCSD has no plans of increasing the

[35] Joel Shennum, Division Chief, Brea Fire Department, 2001

[36] Dennis J. DeMaio, Lieutenant, Orange County Sheriff Department, 2001

number of deputies serving the project area at this point in time. The main concern OCSD has expressed on the proposed project is the lack of additional project site access to the planned community. Response times would be greatly reduced with each additional entrance[37]. The response time for police services cannot be determined until the exact location of the incident within the project site as well as the road configuration and gradient are finalized.

The proposed Tonner Hills Planned Community development is situated outside the City of Brea's City limits; therefore, the Brea Police Department (Brea PD) is not the primary law enforcement agency within the project site. Brea PD maintains a mutual aid agreement with OCSD to assist during times of overwhelming need.

c. Schools

Tonner Hills Planned Community is situated within the Brea-Olinda Unified School District (BOUSD). The District operates nine schools, including six elementary schools (K through 6), one junior high school (grades 7 and 8), and two high schools (grades 9 through 12). As of April 27, 2001, the District enrollment for these nine schools was approximately 6,111 students. Nearly all schools are currently operating at or over School Facility Plan (SFP) capacity (Table 4.16-3).

Table 4.16-3 - Brea-Olinda Unified School District 2001-02 Enrollment

School	October 2000 Enrollment	School Facility Plan Capacity
Arovista Elementary	646	500
Brea Country Hills Elementary	618	475
Laurel Elementary	533	450
Mariposa Elementary	549	475
Olinda Elementary	158	150
William E. Flanning Elementary	552	550
Brea Junior High School	979	1026
Brea Canyon High School	119	120
Brea Olinda High School	1,908	1,917
Total	**6,058**	**5,663**

Source: Barbara Ott, Facilities Planner
Brea-Olinda Unified School District (BOUSD)

There are plans for the development of an additional elementary school in the eastern portion of the City as part of the Olinda Ranch Specific Plan. The District maintains a student generation rate for grades K through 12 of 0.56 students per single-family dwelling unit and 0.38 students per multi-family dwelling

[37] Dennis J. DeMaio, Lieutenant, Orange County Sheriff Department, 2001

unit[38]. Given these rates, the Tonner Hills project would increase demand on the K-12 public school system by 512 students.

Current plans to increase student capacity for the Brea-Olinda Unified School District include the addition of portable classrooms to Olinda Elementary as new students are generated from the Olinda Ranch development area. A new classroom wing to house 500 Brea Olinda High School students is currently in the early planning stages. In efforts to alleviate crowding at all elementary schools, the Brea Olinda School Board is considering converting to the middle school concept to house grades 6, 7 and 8. The development of a new middle school facility would be required to implement this strategy[39]. Table 4.16-3 provides a numerical comparison between the current 2001 school enrollment and the plan capacity for each school site. The school facility plan capacity numbers do not include the number of portable classrooms on each school site that are capable of supporting the current district's enrollment counts. The school district is currently developing a strategic plan on long-term facility capacity needs, and any estimates on student growth rates and construction expansion plans are speculative at this point.[40]

d. Library Services

The Orange County Library, Brea Branch is located at the Brea Civic & Cultural Center, 1 Civic Center Circle in the City of Brea. Operated by the County, the Brea Library provides library services for the entire City of Brea Orange County Public Library (OCPL) currently runs 27 public library branches in various cities in the County of Orange and its unincorporated area. The Brea Branch operates under the supervision of the Central Administrative Headquarters located in the City of Santa Ana.

4.16.2 Thresholds of Significance

For purposes of this EIR, the thresholds of significance for evaluating project impacts are based on Appendix G of the CEQA Guidelines. The proposed project would be considered to have a significant environmental impact if it would result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, that need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services listed below:

[38] Phil Hillman, Assistant Superintendent, BOUSD, 2001
[39] Phil Hillman, Assistant Superintendent, BOUSD, 2001
[40] Bryan Speegle, Assistant Director, PDSD, Orange County, 2002

- Fire protection
- Police protection
- Schools
- Parks
- Maintenance of public facilities, including roads
- Other public facilities/government services

4.16.3 Project Impacts

This section presents a discussion of the potential impacts on public service agencies that could result from implementation of the proposed project.

The project site is situated in the City of Brea Sphere of Influence and the County of Orange jurisdiction. While the project is being processed under the County's jurisdiction, CEQA Guidelines §15144 and §15151 require that analysis of foreseeable actions be analyzed in the EIR. It is possible that at some future date the project area would be annexed by the City of Brea. The following is, first, an analysis of public services to be provided by the County of Orange. An analysis of the public service impacts associated with the annexation of the project by the City of Brea at some point in the future is also provided.

a. Fire Services

Implementation of the proposed planned community would result in potentially significant impacts on fire protection services and emergency response services due to the additional population, traffic, and built structures that would be added within the project study area resulting in the increase in emergency calls. The proposed development would place additional demand on the number of emergency response incidents from OCFA.

A mutual aid agreement currently exists between OCFA and Brea FD to provide services for projects located in the County's jurisdiction and the City's Sphere of Influence. This agreement will require modification to address the new development.

The OCFA classifies the project site as a Special Fire Protection Areas (SFPA) for wildland fire risk (Exhibit 4.16-1). Increased urban activity within the project area has the potential to result in an increased likelihood of fires occurring in areas near undeveloped open space. The proposed project site is situated in a hilly topographical area, which may result in impacts associated with proposed fire access road gradient levels. Under OCFA guidelines for emergency access, the gradient for access roads shall not exceed 10 percent. A detailed fuel modification plan has been prepared by The Keith Company to address impacts of the project site location in a "Special Fire Protection Area." The proposed project will adhere to OCFA development standards and guidelines and will be subjected to a full environmental review prior to the approval of the project. Mitigation measures will be required to reduce the significant impact the project will have on fire services.

The project site is currently within the County jurisdiction, and Brea fire services are provided when called upon by the Orange County Fire Authority as part of the mutual aid agreement between the two entities. If the area is annexed into the City, it is likely that fire protection services would be provided by the Brea Fire Department. In the event of annexation, the mutual aid agreement would change in terms of command structure and unit response configuration, although the exact nature of these changes to the agreement is unknown at this time[41]. The City has a Nexus Program that requires that all new development pay a fire impact fee at the time of building permit issuance. Payment of the fire impact fee would serve as mitigation to reduce the impact of Tonner Hills on the Brea Fire Department to a less than significant level.

b. Police Services

The Orange County Sheriff's Department has indicated that the proposed development will not have any significant impacts that would affect the availability to provide adequate police service to the project area. The Sheriff's Department constantly monitors growth throughout the County and re-evaluates the demand placed upon its service capabilities. The Orange County Sheriff's Department has expressed concerns that the lack of sufficient access to the project site will result in increased response times for the project area. Additional on-site access routes should be implemented to reduce police response time impacts to less than significant levels.

Tonner Hills Planned Community Development is situated outside the City of Brea Police Department jurisdiction. Therefore, the Brea Police Department is not the primary law enforcement agency to be responding to calls within project area. The proposed project will not impact the City of Brea Police Department. The Orange County Sheriff's Department maintains a mutual aid agreement with the Brea Police Department in the event that overwhelming police services are in need.

The impact to the City of Brea Police Department, if the project is annexed, was evaluated. The Brea Police Department calculated an estimated project impact. The project proposes 914 single-family homes on-site, along with open space and mixed uses. The City of Brea currently has a density mean of 3.1 residents per dwelling unit. This results in an incremental increase of 2,833 additional new residents for the proposed planned community. Based on this projection, the buildout of the project would result in an additional cost for police protection services of $181,192 per year. This figure includes patrol development, detective/juvenile support, and traffic enforcement services to be provided by the City of Brea Police Department upon annexation of the project area into the City of Brea[42]. The Brea Police Department does not anticipate any significant impacts on future police services that would be generated by the project. Lt. Martin Needham, Brea Police Department, stated, "The Brea Police Department will be prepared to provide police services to the project area when it is annexed into the City." The City's Nexus Program includes dispatch fee impacts to defray the cost of additional communications equipment that would be collected prior to issuance of building permits.

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[41] Dave Hoffman, Fire Marshall/Division Chief, May 21, 2001

[42] Martin Needham, Lieutenant, Brea Police Department, March 22, 2002

c. Schools

Based upon Brea-Olinda Unified School District's student generation ratio of 0.56 students per single-family dwelling unit, the proposed project is estimated to generate 511 students who would need to attend local schools (Table 4.16-4). The District's schools are currently operating at or over full capacity. Student enrollment will increase as a direct result of the proposed project.

Table 4.16-4 - Tonner Hills Planned Community Student Generation Rate

Proposed Residential Summary	Units	BOUSD Student Generation Rate Per Unit	Estimated Project Student Generation
Medium (Single-Family Attached)	116	0.56	65
Medium Low (Single-Family Detached)	233	0.56	130
Low (SFD 5,000 sq. ft. minimum lots)	364	0.56	204
Low (SFD 6,000 sq. ft. minimum lots)	161	0.56	90
Low (SFD 8,000 sq, ft, minimum lots)	40	0.56	22
Total	**914**		**511**

Source: Phil Hillman CPA, Assistant Superintendent Business Services
Brea-Olinda Unified School District (BOUSD)

Current plans to address the increased student enrollment include adding portable classrooms to Olinda Elementary School and a new classroom wing to house 500 students in Brea Olinda High School. As identified in Mitigation Measure PS-13, the project applicant will be subjected to the payment of school impact fees as defined by Senate Bill (SB) 50, which states that the developer no longer is required to take full responsibility of integrating new schools into their development plan. Payment of an appropriate school impact fee to Brea-Olinda Unified School District is sufficient, along with necessary mitigation of impacts under the provisions of SB 50. Senate Bill 50 limits the extent of mitigation and the ability of an agency to deny a project on the basis of inadequate school facilities.

The District will require additional safety measures associated with any increase in students arriving on, remaining on, and leaving school campuses on a daily basis. The Brea-Olinda Unified School District expresses additional safety concerns regarding the orientation and use of any retail establishments adjacent to or nearby District school sites (e.g., adult-oriented establishments).

The Brea-Olinda Unified School District has expressed concerns associated with the additional traffic volume that would be generated by the proposed project in and around the adjacent Brea High School[43]. The proposed project may result in additional traffic impacts. Traffic impacts associated with this project are further analyzed in Section 4.7 of this EIR.

[43] Phil Hillman, Assistant Superintendent, 2001

d. Library Services

The development of the proposed Tonner Hills Planned Community will result in an estimated annual operations and maintenance costs to OCPL are estimated at $40,500 after the build-out of the Project. This is based upon the "Tonner Hills Fiscal Impact Analysis" report prepared by Stanley R. Hoffman Associates on January 2002. The capital requirements for the Orange County Public Library (OCPL) are based on a service level standard of 0.2 square feet of library space per capita and 1.5 volumes per capita. Based upon the build-out population of Tonner Hills Planned Community, an estimated 455 square feet of additional library space and 3,414 additional volumes of books would be required to support the increase demand on library services in the City of Brea and its sphere of influence unincorporated areas.

4.16.4 Mitigation Measures

PS-1 **Secured Fire Protection Agreement** - Prior to recordation of the first final map within the project boundaries, including maps for financial and conveyance purposes only, the applicant shall enter into a Secured Fire Protection Agreement with the Orange County Fire Authority (OCFA).

PS-2 **Fire Hydrants**

a. Prior to the recordation of a subdivision map for development, the applicant shall submit a fire hydrant location plan for the review and approval of OCFA.

b. Prior to the issuance of a building permit, the applicant shall submit to OCFA evidence of the on-site fire hydrant system and indicate whether it is public or private. If the system is private, it shall be reviewed and approved by OCFA prior to issuance of a building permit. Provisions shall be made by the applicant for the repair and maintenance of the system, in a manner meeting the approval of OCFA.

c. Prior to the issuance of any certificate of use and occupancy, all fire hydrants shall have a blue reflective pavement marker indicating the hydrant location on the street or drive per the Orange County Fire Authority Standards as approved by OCFA. These markers are to be maintained in good condition by the property owner.

PS-3 **Water Availability** - Prior to the issuance of a building permit, the applicant shall provide evidence of adequate fire flow. The Orange County Fire Authority Water Availability for Fire Protection form shall be signed by the applicable water district and submitted for approval to the Orange County Fire Authority. If sufficient water to meet fire flow requirements is not available, an automatic fire extinguishing system may be required in each structure affected by insufficient fire flow. It is recommended, but not required, that fire flows are based upon field testing and not solely on engineering calculations to avoid issues at time of certificates and use and occupancy when verification is again required.

PS-4 **Automatic Fire Sprinkler Systems**

a. Prior to the recordation of a subdivision map for development, a note shall be placed on the map stating that all commercial structures over 6,000 square feet, all residential structures over 5,500 square feet, and all structures exceeding fire department access requirements shall be protected by an automatic fire sprinkler system, in a manner meeting the approval of OCFA. To the extent feasible, such situations should be identified during the tentative map review process, or equivalent review, and such approval should be specifically conditioned regarding appropriate fire sprinkler requirements.

b. Prior to the issuance of a building permit, the applicant shall submit plans for any required automatic fire sprinkler system in any structure to the OCFA for review and approval.

c. Prior to the issuance of a certificate of use and occupancy, this system shall be operational in a manner meeting the approval of OCFA.

PS-5 **Fire Access Roads**

a. Prior to the issuance of a mass or rough grading permit, the applicant shall provide plans and/or information for review and approval by OCFA demonstrating that adequate fire and emergency response access ways through the disturbed areas of the project site will be maintained during all phases of mass or rough grading operations.

b. Prior to the recordation of a subdivision map for development or the issuance of any precise grading permit, whichever occurs first, the applicant shall obtain approval of OCFA for all fire protection access roads within 150 feet of all portions of the exterior of every structure on-site, or an alternative means and method request shall be approved by OCFA.

c. Prior to the issuance of any precise grading permits, the applicant shall submit and obtain approval of plans for all roads, streets and courts, public or private, from OCFA in consultation with the Manager, Subdivision and Grading Services. The plans shall include the plan view and section view, and indicate the grade and width of the street or court measured flow line to flow line. All proposed fire apparatus turnarounds shall be approved by OCFA and, if needed, clearly marked when a dead-end street exceeds 150 feet or when otherwise required. Applicable CC&Rs or other approved documents shall contain provisions that prohibit obstructions, such as speed bumps/humps, control gates, or other modifications within said easement or access road unless prior approval of OCFA is granted.

d. A note shall be placed on the fire protection access easement plan indicating that all street/road signs shall be designed and maintained to be either internally or externally illuminated in a manner meeting approval of OCFA.

PS-6 **Street Markings**

a. Prior to the issuance of a building permit, the applicant shall submit plans and obtain approval from OCFA for fire lanes on required fire access roads less than 36 feet wide. The plan shall indicate the locations of red curbing and signage. A drawing of the proposed signage with the height, stroke and color of lettering and the contrasting background color shall be submitted to and approved by OCFA.

b. Prior to the issuance of any certificate of use and occupancy, the fire lanes shall be installed in accordance with the approved fire lane plan. The CC&Rs or other approved documents shall contain a fire lane map and provisions which prohibit parking in the fire lanes. The method of enforcement shall be documented.

PS-7 **Fire Hazard Notification**

a. *State Responsibility Areas.* Prior to the recordation of a subdivision map for development, the subdivider shall place a note on the map meeting the approval of OCFA that the property is in a "(High/Very High) Fire Hazard Area" due to wildland exposure based on State SRA Maps.

b. *Special Fire Protection Area Notification.* Prior to recordation of any final tract map, the subdivider shall place a note on the map meeting the approval of OCFA that the property is in a "Special Fire Protection Area" and must meet all requirements for development within the area or file for a conditional exclusion with OCFA.

c. *Special Fire Protection Area Development.* Prior to the issuance of a building permit, the applicant shall meet all requirements for development and construction within a Special Fire Protection Area, including increase street widths, Class A roof assemblies, fire sprinklers, etc., or shall receive a conditional exclusion approved from OCFA.

d. *Special Fire Protection Area Conditional Exclusion.* If applicable, prior to recordation of any final tract map, the subdivider shall place a note on the map meeting the approval of OCFA that the property is "Conditionally Excluded" from a "Special Fire Protection Area," and shall identify lots/buildings which are subject to construction requirements.

PS-8 **Fuel Modification** - Prior to the issuance of any preliminary grading permit, the applicant shall obtain the approval of OCFA, in consultation with the Manager, Subdivision and Grading Services, of a conceptual fuel modification plan and program.

Prior to the issuance of any precise grading permit, the applicant shall obtain the approval of OCFA, in consultation with the Manager, Subdivision and Grading Services, of a precise fuel modification plan and program. The plan shall indicate the proposed means of achieving an acceptable level of risk to structures by vegetation.

Prior to the issuance of a building permit, the developer shall have completed, under the supervision of OCFA, that portion of the approved fuel modification plan determined to be necessary by OCFA before the introduction of any combustible materials into the project area. Approval shall be subject to on-site inspection.

Prior to the issuance of any certificate of use and occupancy, the fuel modification shall be installed and completed under the supervision of OCFA. Further, the installed fuel modification plant pallet shall be established to a degree meeting the approval of OCFA. The CC&Rs, or other approved documents, shall contain provisions for maintaining the fuel modification zones including the removal of all dead and dying vegetation subject to triennial inspections.

PS-9 **Access Gates** - If applicable, prior to the issuance of any grading permits, the applicant shall submit and obtain OCFA's approval for the construction of any gate across required fire authority access road/drives. Contact the Orange County Fire Authority at (714) 744-0499 for a copy of the "Guidelines for Design and Installation of Emergency Access Gates and Barriers."

PS-10 **Fire Impact Fees** - The project applicant shall pay all applicable dispatch impact fees prior to the issuance of any building permits.

PS-11 **Oil Field Mitigation** - Copies of oil field mitigation measures as specified in the Mitigation Measures subsection of the Hazards section shall be provided to OCFA as part of "standard conditions" of approval for the proposed development prior to the issuance of certificate of occupancy.

PS-13 **Library Impact Fees** - The project applicant shall pay all applicable Orange County Library Services in lieu fees prior to the issuance of any building permits.

PS-14 **School Impact Fees** - Prior to the issuance of a building permit, the project applicant shall comply with Senate Bill 50 and pay the applicable school impact fees. Presently, the Brea-Olinda Unified School District's adopted School Impact Fees for Residential development is $2.05 per square foot and $0.33 per square foot for commercial or mixed use developments. Upon completion of the designated tract map, the valid amount shall be issued.

4.16.5 Cumulative Impacts

Development of the Tonner Hills Planned Community project will represent an incremental increase upon the cumulative or regional demand for fire protection services, law enforcement services and educational programs and facilities. These incremental increases in demand will impact the services and resources of the County of Orange and the Brea-Olinda Unified School District. However, as previously discussed, impacts to fire protection services, law enforcement services, and school services can be mitigated to a less than significant level with the incorporation of mitigation measures analyzed in this section. Public services and systems impacts to the City of Brea are less than significant. The project would not significantly impact regional or cumulative public services.

4.16.6 Unavoidable Adverse Impacts

Implementation of the recommended mitigation measures for fire protection, law enforcement services, and school impacts analyzed in this section will not result in any unavoidable adverse impact to public services.

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4.17 Utilities and Service Systems

This section provides a discussion of utilities and service systems that may be affected by implementation of the Tonner Hills Planned Community. Existing utility systems that provide services to the project area are identified and evaluated for potential impacts that could occur as a result of the project. The analysis is based on information provided by the respective service providers and utility companies. Although annexation of the project into the City of Brea is not part of the project, annexation is a foreseeable future action. As such, the impacts on water and sewer systems that could be provided by the City are also analyzed in this section.

4.17.1 Existing Conditions - Service Providers

The project site is located within the service areas of several public and private utility companies. Southern California Water Company, Orange County Sanitation District, Orange County Integrated Waste Management, Southern California Edison, Southern California Gas Company, and SBC Pacific Bell are scheduled to provide utility services for the project area.

a. Water

(1) Water Service - Proposed Provider

The Southern California Water Company (SCWC) is an investor-owned public utility service primarily engaged in the purchase, production, distribution, and sale of water to over 240,000 customers throughout California. The Tonner Hills development area is directly adjacent to but not in SCWC's Orange County District, and will be integrated into the Orange County District as an extension of its Placentia Customer Service Area (CSA #40-1) pending approval of development for Tonner Hills Planned Community.

The project site is located immediately north of the SCWC's Placentia System and will become part of and be served by this system. The Placentia System receives its regular water supply from a combination of groundwater (four wells) and treated surface water via pipe connection from the Municipal Water District of Orange County (MWDOC).

The combined capacity of the four wells in the Placentia System is approximately 2,735 gallons per minute (gpm), or 3.9 million gallons per day (gpd). The annual demand on the Placentia System for the year 2000 was just under 7,981 acre-feet. All four wells have chlorination as wellhead treatment and are located in the Orange County Groundwater Basin, with pumping being regulated by the Orange County Water District (OCWD).

In order to provide domestic water service to the Tonner Hills Planned Community, SCWC must first obtain a Certificate of Public Convenience and Necessity (CPCN) under §1001 of the *Public Utilities Code*

from the California Public Utilities Commission (CPUC). Once the CPCN has been obtained, SCWC will be able to provide domestic water services to the Tonner Hills Planned Community[44].

Pursuant to the newly implemented SB 221 and SB 610, Southern California Water Company (SCWC) has determined that adequate water supplies will be available to service the new Tonner Hills Planned Community by the time all units are built. SCWC has also ensured that the existing and future water supplies of businesses, residents, farmers, and the environment will not be negatively impacted by the development. A copy of the SCWC Water Supply Assessment report is available for review at the County of Orange.

SB 610 expands the requirement that public water systems prepare water supply assessments for large-scale projects. Ensuring that the water supplies of businesses, residents, farmers, and the environment are not negatively affected when large new developments are being built at faster rates is the ultimate goal of this bill. Compliance with SB 610 is required at the approval of environmental documentation pursuant to CEQA.

The following are additional requirements under SB 610:

1. Urban water suppliers to provide additional information into regional water assessments including a description of all water supply projects and programs that may be undertaken to meet total projected water use.

2. If the projected water demand of a project was not covered in the most recent urban water management plan, or if the water system does not have a management plan, or if a city or a county is required to comply, then the water assessment is also required to evaluate the water system's total projected supplies available to meet the projected water demand of a proposed project, as well as existing and planned future uses.

3. Any city or county that determines a project is subject to CEQA, to identify any water system that is, or may become as a result of supplying water to the project, a water system, to prepare a water assessment.

4. If a public water system cannot be identified, the city or county shall prepare the water assessment. the water assessment shall include a discussion indicating whether the total projected water supplies determined to be available by the city or county for the normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed project, as well as existing and planned future uses, including agricultural and manufacturing.

[44] Patrick Scanlon, District Manager, Orange County District, Southern California Water Company

5. If a public water system is identified, the city or county must inquire whether the proposed project was included as part of the most recently adopted urban water management plan.

SB 221 requires a determination, at the final stage of the land use planning process, but prior to issuance of a building permit, that adequate water supplies will be available to service the new housing by the time the new units are built. The measure encourages developers to work with local government officials to identify and finance a supplemental supply of water, if one is needed, to serve the development project.

SB 221 was designed to "strengthen the water supply planning process by requiring that a sufficient water supply be included as a condition of a tentative subdivision map for housing developments of more than 500 units, or where the subdivision would increase the customers of small water supplies (5,000 or less) by more than 10 percent." Under SB221, a city or county planning agency is required to comply with the following:

1. Within five days after determining that a tentative map application for a proposed subdivision is subject to this bill, send a copy of the application to any "public water supplier" that may supply water for the proposed subdivision.

2. Prohibit a development agreement that includes a subdivision from being approved unless the agreement provides that any tentative map prepared for the subdivision will comply with the water supply requirements of this bill.

3. Require local agencies to request the water supplier to provide proof of a sufficient water supply within 90 days of the request. The local agency shall prepare findings supported by substantial evidence to document the sufficient water supply. If the water supplier fails to respond, the city, the county, or other interested party may seek a writ of mandate to obtain the information.

4. If the water supplier determines that there is not a sufficient water supply for the proposed subdivision, then the local agency may make a finding that additional water supplies not identified in the verification provided by the water supplier are, or will be, available prior to completion of the project.

5. If there is no water supplier, the local agency shall make a written finding of sufficient water supply based on substantial evidence. The local agency may also work with the project applicant and the public water system to secure sufficient water supplies.

6. If the water supply for a proposed subdivision includes groundwater, the public water system shall evaluate the extent to which it or the landowner has the right to extract the additional groundwater needed to supply the proposed subdivision.

7. The verification from the water supplier shall also include, if feasible, a description of the foreseeable impacts of the proposed subdivision on the availability of water resources for agricultural and industrial uses that are within the public water supply system service area and not currently receiving water from the public water supply system, but are utilizing the same sources of water.

Domestic water provided to the Tonner Hills Planned Community by SCWC is obtained from its groundwater supplies (50%) and is purchased through Metropolitan Water District Orange County, which is in part supplied by the Metropolitan Water District (MWD). The nearest source is an existing turnout connection, to MWD's 96-inch Lower Feeder pipeline, which supplies water from the Diemer Filtration Plant. This turnout connection (OC-37) is located in Kraemer Boulevard approximately 800 feet south of Lambert Road. The connection will be the main source of water supply and will provide a service pressure zone with a 750-foot hydraulic grade line to the entire Tonner Hill Planned Community project area[45].

Off-site improvements needed to bring domestic water to the project consist of the construction of a 24" water transmission main in Kraemer Boulevard beginning at the OC-37 connection point and extending into the project to the 4.0-million-gallon (MG) 750 Zone reservoir. The domestic water distribution system will consist of pipelines of 8" to 12" in diameter that will be "looped" throughout the project site as depicted on Exhibit 4.17-1. All domestic water lines will be constructed in accordance with SCWC's tariff Rule 15 for main extensions on file with the CPUC.

(2) Water Service - City of Brea

The proposed water service provider is the SCWC; however, an analysis of capabilities of the City of Brea to provide water service to the project was conducted. If annexation occurs at some future date, it is most likely that the SCWC would continue to provide water services to the project area, as the infrastructure improvements would be under construction or completed. The mechanism for this continuation could take many forms. Therefore, the analysis conducted evaluated the physical impacts and capabilities of the City to provide water to Tonner Hills.

The City has a Draft Water Master Plan Update (WMPU) that outlines the planned capital infrastructure improvements to the City's system. The proposed Tonner Hills project area was included in the Draft WMPU, which serves as the Nexus Fee programmed improvements. While the capital improvements are different than those planned by the SCWC, the planned improvements would enable service to the Tonner Hills project.

[45] Tonner Hills Draft Planned Community Program Text, 2001

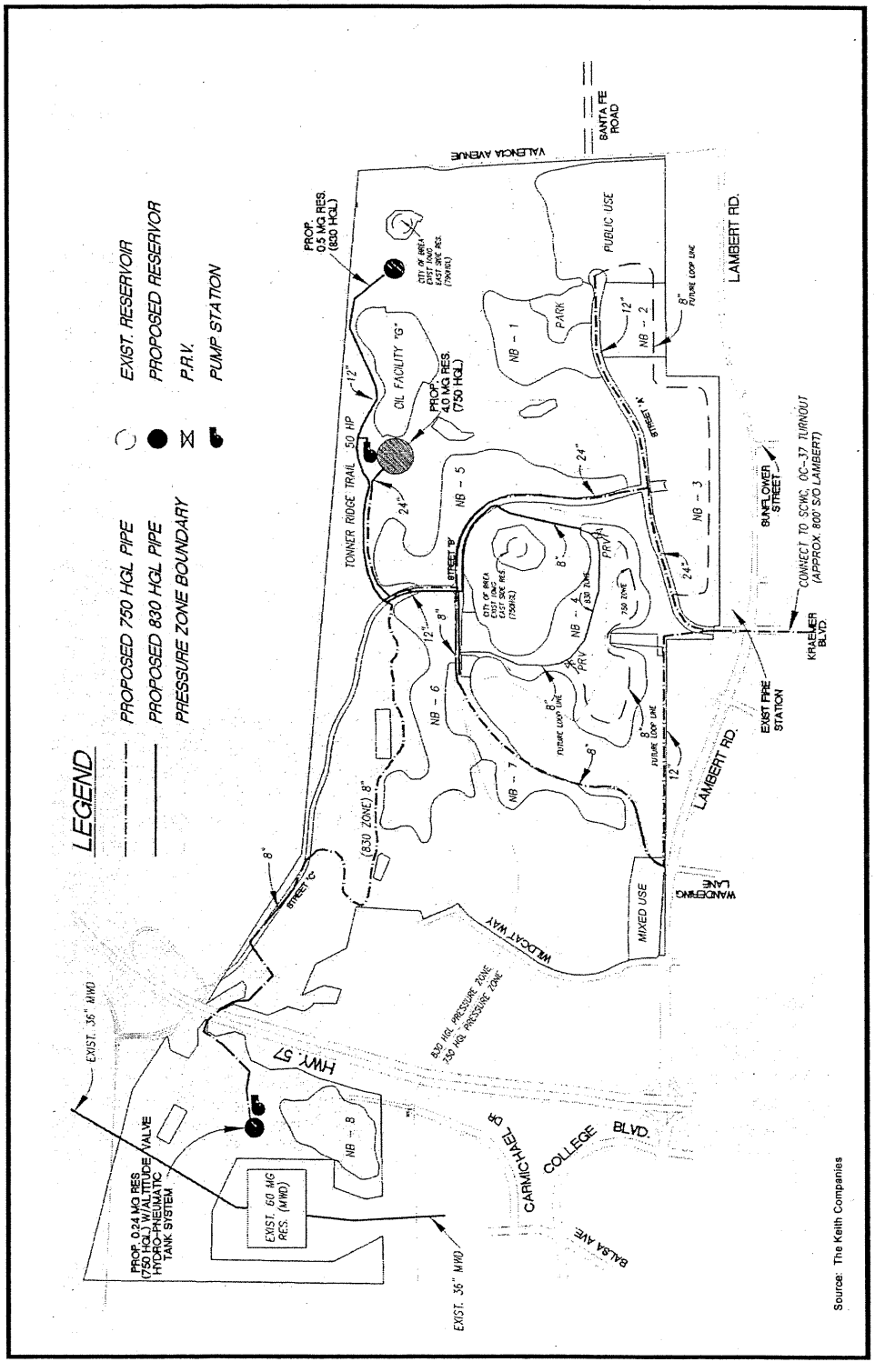

Exhibit 4.17-1

Tonner Hills Planned Community Water Master Plan

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Based on the City of Brea's Draft Water Master Plan Update (WMPU), the City can provide water service to the Tonner Hills Planned Community Project without significant changes to plans to resolve deficiencies in the City's existing storage and water distribution system that were included in the Draft WMPU. The total project cost for the City to provide water services is estimated at $7,499,000, which includes a 40% allowance for engineering and construction management costs and other contingencies. Additionally, the City's Draft WMPU accounts for the estimated water demand for the project area, which is 33% higher in the WMPU than the estimated daily project water usage[46]. Improvements proposed within the WMPU are deemed adequate and appropriate for providing water service to the proposed development.

(3) Water Reservoirs

Three new reservoir tanks are proposed to serve the Tonner Hills project site by the SCWC (Exhibit 4.17-1). The first reservoir will be a 4.0-million-gallon (MG) tank built on the property west of Oil Facility "G". The reservoir will provide water storage for the 750 Zone, which will serve the mixed use area, the two private parks, the public use site, Neighborhoods 1, 2, 3, 7, and 8, and the lower portion of Neighborhoods 4 and 5. The 750 Zone Reservoir will have a high water elevation of 750 feet. This 4.0-MG reservoir will provide equalization storage for the SCWC Placentia System, as well as water storage required by the Tonner Hills project.

b. Sewer

(1) Proposed Provider

The project site is in the County of Orange jurisdiction and is currently in the Orange County Sanitation District (OCSD) service area boundaries.

The existing sewer discharge from the site consists primarily of the activities of the oil extraction operation. During the oil extraction process, large quantities of water are injected into the oil bearing strata in order to force the crude to the surface where it can be captured by the well pumps. Once captured, an oil separator machine is used to retain the oil while separating, treating, and discharging the wastewater by-product into existing on-site sewer lines that flow into and exit the site via the Olinda Lateral Wastewater line that empties into the Orange County Sanitation District (OCSD) sewer system. Nuevo Energy, the owner and operator of the existing oil operation and the applicant for the Tonner Hills Planned Community project, previously held an industrial wastewater discharge permit (Class 1) issued by OCSD for the discharge of extraction process wastewater. Previous daily wastewater discharge allowed under the OCSD permit was 420,000 gallons per day (gpd). Current daily wastewater discharge permitted by OCSD has been reduced to 28,000 gallons per day.

[46] Thomas Hooker, Jr., P.E., Daniel Boyle Engineering, March 29, 2002

The Southern California Water Company (SCWC) will provide sanitary sewer services for the wastewater generated by the Tonner Hills development. The Tonner Hills project is directly adjacent to, but not currently in, SCWC's Orange County District. To provide sanitary sewer service to Tonner Hills Planned Community, SCWC must first obtain a Certificate of Public Convenience and Necessity (CPCN) under §1001 of the *Public Utilities Code* from the California Public Utilities Commission (CPUC).

Using OCSD's wastewater generation rates for residential wastewater, the project will generate sanitary waste equivalent to 80 percent of the water consumed. Table 4.17-2 on page 4.17-16 depicts the estimated 409,040 gpd of non-industrial wastewater that will be generated through non-industrial uses (residential, mixed use, open space), while continued oil operation within the planned community will generate approximately 28,000 gpd of industrial wastewater. The total estimated daily wastewater discharge for the Tonner Hills Planned Community is 437,040 gpd.

The total daily wastewater discharge for Tonner Hills Planned Community would be greater than what was previously permitted by OCSD for the sole use of oil operations. Previous wastewater allocation for oil operations alone measured at 420,000 gpd, which results in a significantly greater negative impact on wastewater and sewer systems than the primarily residential, mixed use, and open space (non-industrial) wastewater generated by the project.

An existing private wastewater line built by the Unocal Corporation and known as the Olinda Lateral Wastewater Line will be utilized by SCWC as their main trunk sewer to connect the project to the OCSD's trunk sewer. The lateral will be joined by the development sewer system at the lateral's northerly terminus at Lambert Road. The lateral extends due south to the Loftus Channel where it joins another lateral from the Carbon Canyon Dam area (abandoned) and then continues in a southwesterly direction where it connects to a 12" OCSD trunk sewer at Associated and Bastanchury.

The portion of the Olinda lateral that will be incorporated into the development varies in size from 6" to 10" in diameter. The 6" and 8" sections will be replaced with 10" diameter pipe. The entire lateral will then be a 10" line that is necessary for the flows generated by the development. Additionally, the lateral will be connected to an OCSD sewer in closer proximity to the development at Kraemer and Imperial.

The on-site sewer collection system for the development consists of a series of gravity lines and lift pumps that will carry the wastewater in a roughly west to east direction to the point where it enters the Olinda lateral and leaves the property (Exhibit 4.17-2).

The sewer wastewater from Neighborhood 8 is collected in a gravity system and then pumped via a 4" force main to become part of the sewer wastewater in Neighborhood 6.

The sewer wastewater from Neighborhoods 4, 6, and 7 and the mixed use area are collected in a gravity system that flows to the mixed use area. From there it is pumped via an 8" FM to become part of the sewer wastewater in Neighborhood 3.

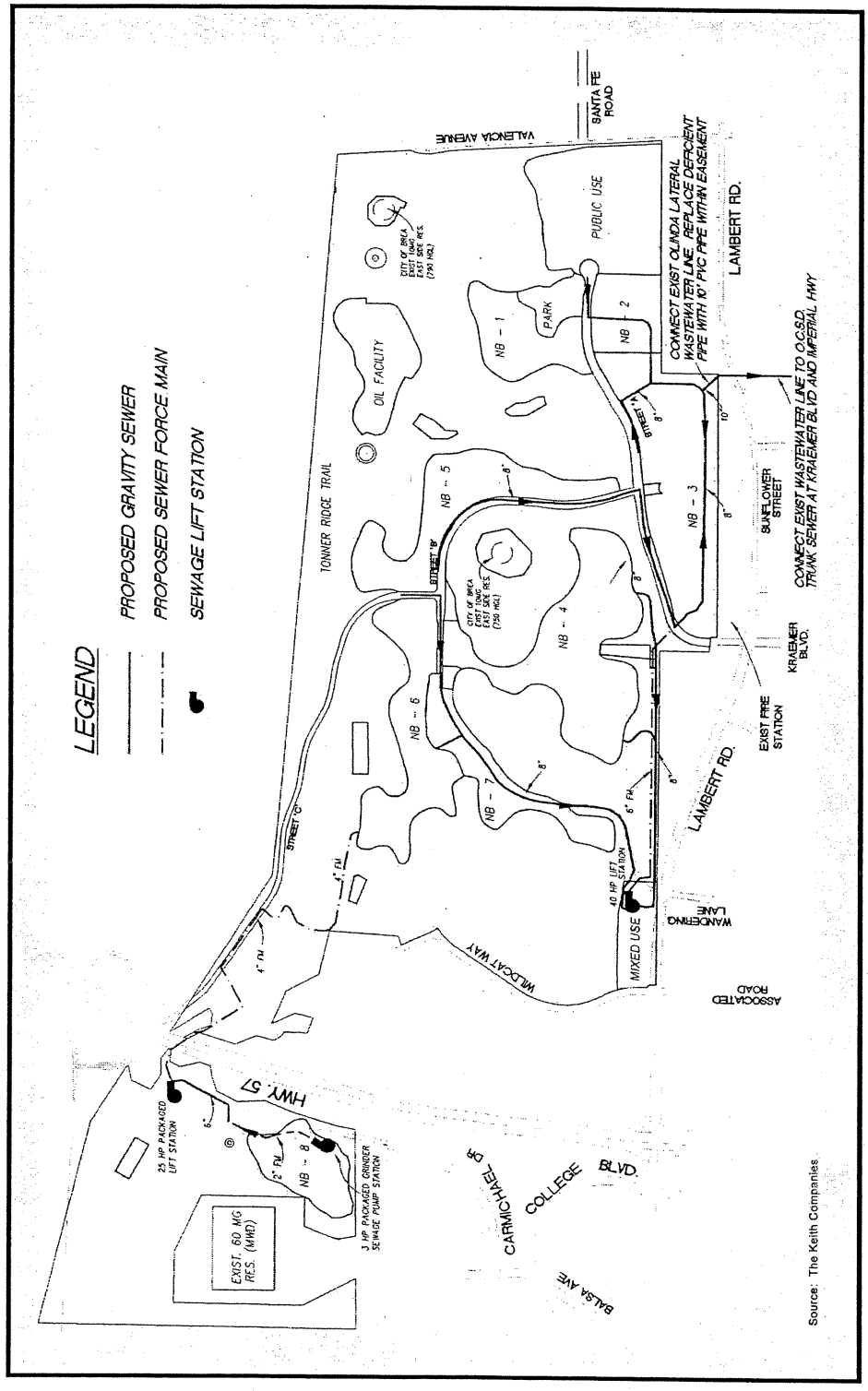

Exhibit 4.17-2

Tonner Hills Planned Community Sewer Master Plan

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The sewer wastewater from Neighborhoods 1, 2, 3, and 5, the parks, and the public use area are collected in a gravity system that terminates at the Olinda lateral.

The project's main sewer system will convey the proposed project's sanitary wastewater and the industrial wastewater from the oil extraction process to a SCWC trunk sewer, which will ultimately connect to the existing OCSD trunk sewer at Imperial Highway and Kraemer Boulevard. The proposed Tonner Hills Planned Community along with the continued oil operations on-site is estimated to generate a daily average of approximately 437,040 gallons of wastewater.

(2) City of Brea

The proposed sewer provider is the SCWC; however, an analysis of capabilities of the City of Brea to provide sewer connections to the project was conducted. If annexation occurs at some future date, it is possible that the SCWC would continue to provide sewer services to the project area, as the infrastructure improvements would be under construction or completed. The mechanism for this continuation could take many forms. The analysis conducted evaluated the physical impacts and capabilities of the City to wholly provide sewer services to Tonner Hills.

The City is also in the process of updating the Sewer Master Plan, and the analysis considered the improvements outlined in the Draft Plan. According to the Draft Sewer Master Plan, there is a deficiency in the existing sewer system at the intersection of Lambert and State College based on existing sewer flows. Approximately 37 feet of 8-inch sewer pipe is constructed with a mild slope and requires reconstruction with a steeper slope by replacing or paralleling a portion of the downstream facilities.

The future demand for the sewer system has identified an area that will need improvement. At the intersection of Lambert and State College, a cluster of manholes causes mild slopes and losses, resulting in very low velocities and under-capacity pipes in this area. Reconstruction of the sewer system at this location is recommended. The total length of the replacement required is 395 feet. The construction will eliminate the cluster of manholes, reduce losses, increase the pipe slopes, and thereby provide sufficient capacities as described in the Draft Sewer Master Plan. With these capacity improvements, already identified and planned for, the City has the capability to provide sewer service for the Tonner Hills Planned Community.

c. Solid Waste

The Orange County Board of Supervisors is responsible for the County's solid waste management system. This responsibility includes providing landfill disposal facilities and household hazardous waste collection centers, establishing and enforcing the County's solid waste management policy and regulations, and providing solid waste planning. The County of Orange Integrated Waste Management Department administers the County's solid waste management system on behalf of the County Board of Supervisors. The California Integrated Waste Management Board requires that all counties have an approved Countywide Integrated Waste Management Plan (CIWMP). The CIWMP must demonstrate sufficient solid waste disposal capacity for a minimum of 15 years, or identify additional available capacity outside the

county's jurisdiction. CIWMP has determined that the Orange County landfill system has a capacity in excess of 30 years, which is well above the 15-year threshold established by the California Integrated Waste Management Board.[47]

The County of Orange owns and operates three active landfills. The 565-acre Olinda Alpha Landfill is the closest facility to the project. The Olinda Alpha Landfill began operation in 1960 and is scheduled to cease operation and be capped in the year 2013, but could be operational for a longer time. All municipal solid waste generated within the project area will be disposed of in the Olinda Alpha Landfill, which is located at 1942 Valencia Avenue, northeast of the project site. The Olinda Alpha Landfill is classified as a Class III non-hazardous municipal solid waste, excluding asphalt and soil. The landfill is accessible to the general public via the Orange (SR 57) Freeway off Lambert Road and Valencia Avenue. Commercial trucks are only allowed access from Imperial Highway. In 1998, the Olinda Alpha Landfill was authorized to receive an annual average collection of 7,000 tons per day (TPD) and a maximum of no more than 8,000 TPD. In 2001 the Olinda Alpha Landfill received an average volume of 6,500 TPD in a 6-day (Monday through Saturday) workweek.

Taormina Industries has expressed the intent to provide the project with solid waste collection services with no impacts on their existing equipment or facilities. No upgrades or improvements on behalf of Taormina Industries will be required to serve the project area. Taormina Industries also operates the CVT Regional Material Recovery Facility which processes various recyclable materials. A recycling program will be implemented for the Planned Community.[48]

The State of California has mandated that each city and county demonstrate a reduction of at least 50% in the amount of solid wastes generated that had gone into landfills in the year 1990. The state also requires that this level of reduction be sustained in perpetuity. Project developers are expected to employ measures to reduce the amount of construction-generated wastes, and waste disposal haulers are expected to contribute by recycling residential and commercial waste collected[49].

d. Electricity

The project is located within the service territory of the Southern California Edison (SCE). SCE has agreed to provide electricity for the project area from existing facilities within the project's vicinity. Development of the project site is expected to increase total electricity consumption for the project area. SCE has determined that the electrical loads generated by the project are within the parameters of the projected load growth, which SCE is planning to meet in this area[50].

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[47] Robert Richmond, Planner IV, Regulatory Compliance, County of Orange, Integrated Waste Management Department 2001

[48] Rick Collet, Vice-President of Operations, Taormina Industries, 2001

[49] Robert Richmond, Planner IV, 2001 Regulatory Compliance, County of Orange, Integrated Waste Management Department 2001

[50] Michelle Landrith, Design Service Representative, Southern California Edison, 2001

An existing 12,000-volt overhead line is located within the project boundary. An SCE substation is located just northwest of the Kraemer Boulevard entrance to the property. Above-ground power lines are used along Lambert Road, Tonner Canyon Road, and Valencia Avenue. Underground power lines are present along Wild Cat Way. In 2000 Nuevo Energy decommissioned gas flare at the new gas plant with the installation of two gas powered turbine electrical generators. With the installation of the turbines, the total emissions from the gas operations were reduced 54% and the NO_X emissions were reduced nearly 70%. An emergency gas flare is permitted to operate 200 hours per year, during routine or emergency maintenance periods for the turbines. The turbines produce seven megawatts of power per day. The oil field operations consume two megawatts per day, leaving five megawatts of excess energy available for sale to the Independent Service Operator (ISO).

e. Gas

The Southern California Gas Company (SCGC) has existing facilities operating within the project area. Natural gas services to the project could be served from existing mains without any significant impact to the environment. SCGC has not provided a contractual commitment to serve the project. Research conducted with the SCGC depicts an existing six-inch gas main line along Lambert Road, directly across from Kramer Boulevard. An existing four-inch gas main can also be found off Wild Cat Way. Both of these existing SCGC gas main lines will serve the project without resulting in any significant impact to the environment.

Gas services will be provided in accordance with SCGC's policies and extension rules on file with the California Public Utilities Commission at the time contractual agreements are made. Gas services to the project site will be provided in accordance with revised conditions set forth by SCGC and the California Public Utilities Commission.[51]

The estimated gas usage for residential and commercial projects is generated on an individual unit basis. Gas usage varies from individual to individual to such an extent that an average usage is not accurate for every project.

f. Telecommunications Services

SBC Pacific Bell currently provides telephone services to the Nuevo Energy office on-site and will provide telecommunication services to the project with less than significant impacts. On-site telecommunications facilities will be placed underground throughout the entire community.

[51] Robert S. Wrath, Technical Supervisor, Southern California Gas Company, 2001.

4.17.2 Thresholds of Significance

For the purposes of this EIR, the thresholds of significance for evaluating project impacts are based on suggested criteria from the CEQA Environmental Checklist (Appendix G of the CEQA Guidelines). The project would result in a significant impact if it would:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.
- Require or result in the construction of new stormwater drainage facilities, the construction of which could cause significant environmental effects.
- Not have sufficient water supplies available to serve the project from existing entitlements and resources, and require new or expanded entitlements.
- Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs.
- Not comply with federal, state, and local statutes and regulations related to solid waste.

4.17.3 Project Impacts

This section presents a discussion of the potential impacts on utility services that could result from implementation of the project.

a. Water

Orange County consumes approximately 160 billion gallons (500,000 acre feet) of water annually. Approximately 70% of this water is imported into Southern California via the facilities of the Metropolitan Water District of Southern California (MWD).

Tonner Hills Planned Community covers approximately 789.8 acres. The project site is divided into eight residential neighborhoods, one mixed use parcel, two private neighborhood parks, and a public use area. The project site will also consist of continued oil field operations. Water demand analysis for the project is based on the size of each specific land use. The project consists of the development of 914 single-family residential dwelling units, 7.1 acres of neighborhood park use, 7.7 acres of mixed use, and a 32.7-acre public use (sports park) and irrigation of fuel modification zones. The entire project's average daily water consumption is estimated at approximately 0.6 million gallons per day (mgd). The maximum daily water demand for the development is determined to be 0.89 mgd, or 620 gpm.

The Tonner Hills Planned Community would result in an increased demand for additional water supply to adequately serve the project area. The project is estimated to consume approximately 600,000 gpd of water from the Southern California Water Company (Table 4.17-1). Impacts to water usage will require the development and extensions of on-site and off-site water service infrastructures, such as booster stations, reservoirs, and transmission mains.

Table 4.17-1 – Tonner Hills Planned Community Estimated Daily Water Demand

Land Use	Project Size	Consumption Factor	Daily Water Usage (gpd)
Residential	914 du	400 gpd/DU	365,600
Public Use*	1,424.4 KSF	82 gpd/KSF	116,800
Parks	309.3 KSF	82 gpd/KSF	25,400
Mixed Use	77 KSF	46 gpd/KSF	3,500
Fuel Modification Zone	–	–	53,700
Oil Operations	210 oil wells	169 gpd/well	35,500
Total			600,500

Source: Southern California Water Company
gpd = gallons per day; du = dwelling units, KSF = thousand square feet
* Specific proposed public use yet to be finalized; water consumption calculated for sport park use

The projected water supply demand for Tonner Hills Planned Community is approximately 610 acre-feet per year. The annual demand on the Placentia System for the year 2000 was just under 7,981 acre-feet.

Pursuant to Senate Bill 221 as codified at *Government Code* §66473.7 and Senate Bill 610 as codified at *Water Code* §10910, SCWC has determined that sufficient water supplies will be available during normal, single-dry, and multiple dry years within a 20-year projection to meet the project's projected water supply demands, in addition to existing and planned future uses, including but not limited to agricultural and manufacturing uses. In addition, the recent Metropolitan Water District (MWD) published a report on February 11, 2002 that provides its member agencies and retail water utilities, such as the SCWC, with information needed to comply with SB 221 (Kuehl) and SB 610 (Costa). The MWD report also concluded that "there are sufficient supplies that can reasonably be relied upon to meet projected supplement demands and that there are additional reserve supplies that could provide a margin of safety to mitigate against uncertainties in demand projections and risks in fully implementing all supply programs under development."

SCWC has prepared an extensive report documenting its compliance with SB 610 and SB 221. A copy of this water supply assessment is available at the County of Orange Planning and Development Services Department for public review.

Southern California Water Company indicate that the project will not pose a significant impact to water services and adequate water supply will sufficiently serve the planned community resulting in less than significant impact on existing and future water services.

b. Sewer

The Tonner Hills Planned Community would require additional new connections to the existing main sewer lines. The project, including the oil extracting operation, is expected to contribute approximately 437,040 gpd to existing sewer lines (Table 4.17-2).

Table 4.17-2 – Tonner Hills Planned Community Estimated Wastewater Flows

Land Use	Daily Water Usage (gpd)	Generation Rate	Daily Wastewater Flows (gpd)
Residential			
Medium density	30,000	80%	24,000
Medium-low density	116,660	80%	93,330
Low density	218,940	80%	175,150
Public Use[1]	116,800	80%	93,440
Parks	25,400	80%	20,320
Mixed Use[2]	3,500	80%	2,800
Fuel Modification Zone	53,700	0%	0
Oil Operations	35,500	80%	28,000
Total	600,500		437,040

Source: Southern California Water Company
gpd = gallons per day
1 Specific proposed public use yet to be finalized; wastewater flow calculated for sport park use
2 Fuel modification zone water usage does not generate wastewater flows into the local sewer system, due to the natural drainage into surrounding topography and landscaping.

Existing sewer line capacity for the project area is deemed adequate; however, sections of the Kraemer and Rolling Hills sewer lines will need to be upgraded.

The in-tract gravity sewers on the development will feed into SCWC trunk sewers, which will empty into Orange County Sanitation District's trunk sewers. The proposed sewer collection system will be entirely by gravity flow. The planned community is anticipated to generate approximately 0.4 million gallons per day of wastewater on average, with a maximum daily discharge flow approximately 0.8 million gallons per day. The peak wastewater flow is estimated to be approximately 1.18 cubic feet per second.

The Orange County Sanitation District and the Southern California Water Company indicate that the project will not pose a significant impact on sewer services. With the implementation of on- and off-site sewer

infrastructure improvements, wastewater impacts generated by the planned community would be reduced to a less than significant level.

c. Solid Waste

(1) Short-Term Impacts

During construction and site preparation, the project will generate a substantial amount of solid waste. Construction materials and debris, along with mature trees and steel from old oil well machinery, must be recycled to reduce this impact. The remaining non-recyclable materials must be hauled to the appropriate class of landfills. Contaminated soils will be remediated on-site, which is further analyzed in the Hazards section of this EIR. These impacts would be significant. Implementation of mitigation measures would reduce potential significant impacts to less than significant levels.

(2) Long-Term Impacts

Implementation of the project would result in long-term solid waste impacts. Using the waste generation factors provided by the California Integrated Waste Management Board, the project is estimated to produce approximately 3.5 pounds per resident per day. The California State Department of Finance, Demographic Research Unit, estimates that there are approximately 2.49 persons per household in the City of Brea. A total of 914 units are planned for this development. Approximately 2,276 residents would therefore reside in the Tonner Hills Planned Community.

Table 4.17-3 – Tonner Hills Planned Community Estimated Solid Waste Generation

Land Use	Project Size	Generation Factor	Annual Solid Waste Generation Rates (tons/year)
Residential	914 du	2.04 tons/du/yr	1,865
Public Use*	1,424.4 KSF	1.2 tons/KSF/yr	1,709
Parks	309.3 KSF	1.2 tons/KSF/yr	371
Mixed Use	77 KSF	2.4 tons/KSF/yr	185
Total			4,130

Source: Integrated Waste Management Board
du = dwelling units, KSF = thousand square feet, yr = year
* Specific proposed public use yet to be finalized; solid waste rates calculated for sport park use

The Olinda Landfill can accommodate 8,000 tons per day. Tonner Hills Planned Community development would generate approximately 11 tons of solid waste per day, or less than 0.002% of the landfill's daily capacity. Therefore, long-term solid waste impacts generated by the project are potentially less than significant.

County of Orange Integrated Waste Management Department, along with Taormina Industries, indicate that the project will not pose a significant impact on solid waste services. Olinda-Alpha landfill adjacent to the project site is capable of accommodating the additional solid waste generated by the planned community. Taormina Industries has expressed intent of providing residential, commercial, and industrial solid waste collection services for the Tonner Hills Planned Community with less than significant impacts on existing equipments or facilities. Development of the project will result in less than significant impact on solid waste services.

d. Electricity

The development of the Planned Community would increase electricity demand and consumption within the area. Electricity increases will not result in the deficiencies of existing facilities, and upgrades or improvements will not be required. Electricity needs to the project area would be served from existing lines without any significant impacts.

Table 4.17-4 - Tonner Hills Planned Community Estimated Annual Electricity Consumption

Land Use	Project Size	Demand Factor	Project Demand
Residential	914 du	6 kW/DU	5,484 kW
Public Use*	--	--	750 kW
Parks	--	--	75 kW
Mixed Use	77 KSF	4.2 kW	323 kW
Total			7,032 kW

Source: Southern California Edison
kW = kilowatt; KSF = thousand square feet
* Specific proposed public use yet to be finalized; electricity consumption calculated for sport park use

Southern California Edison (SCE) indicates that the project will not result in a significant impact on electricity services and that the existing service lines within the project area are capable of providing electricity for the planned community without significantly impacting the existing or future service capacities of SCE. Development of the project will result in a less than significant impact on electricity services.

e. Gas

The project will result in an increase use of natural gas supplied by the Southern California Gas Company. Existing SCGC facilities operate within the project area. Natural gas services to the project area would be served from existing mains without any significant impacts.

Table 4.17-5 - Tonner Hills Planned Community Estimated Annual Natural Gas Consumption

Land Use	Project Size	Consumption Factor	Annual Usage (therms)
Residential	914 du	43,800 cf/du/yr	400,332
Public Use*	1,424.4 KSF	Negligible	NA
Parks	309.3 KSF	Negligible	NA
Mixed Use	77 KSF	34,800 cf/KSF/yr	26,796
Total			427,128

Source: The Gas Company
cf = cubic feet; du = dwelling units; KSF = thousand square feet; yr = year; 100 cubic feet = 1 therm
*Specific proposed public use yet to be finalized; gas consumption calculated for sport park use

The Southern California Gas Company indicate that the project will not result in a significant impact on natural gas services and that the existing service lines within the project area are capable of providing gas for the planned community without significantly impacting the existing or future service capacities of The Gas Company. Development of the project will result in a less than significant impact on gas services.

f. Telecommunications

Telecommunication facilities are planned to be installed as part of the neighboring Olinda Heights Specific Plan project approval. Underground telephone and fiber optics lines are planned along Valencia Avenue for the specific purpose of serving the Olinda Heights development and will also be capable of serving the Tonner Hills Planned Community. With the provision of existing and additional facilities, significant impacts to telecommunication facilities are not anticipated to occur.

SBC Pacific Bell has indicated that the project will not result in a significant impact on existing telecommunications. Implementation of standard provisioning process to design and construct communication facilities within the project area if deemed necessary by the telephone service provider. Impacts to telecommunication services are determined to be less than significant.

4.17.4 Mitigation Measures

US-1 **Water Conservation** - Prior to issuance of building permits, the project applicant shall incorporate all practical and mandated water conservation measures to the satisfaction of the Metropolitan Water District of Southern California, Water Conservation Plans.

US-2 **Recycling Programs** - Prior to issuance of building permits, the applicant shall comply with guidelines set forth by the County of Orange in accordance with the California Integrated Waste Management Act (1989, AB 939), which mandates recycling programs for each jurisdiction in California.

US-3 **Consultation with Southern California Edison Company** - Prior to the issuance of building permits, the developer shall demonstrate to the Manager, Building Permit Services, Southern California Edison has been consulted regarding participation in programs designed to increase the efficiency of operation and decrease energy costs.

US-4 **Consultation with Southern California Gas Company** - Prior to the issuance of building permit, the project applicant shall consult with the Southern California Gas Company to determine the proper facilities and location needed to serve the site.

US-5 **Payment of Construction Fees** - The project applicant shall be responsible for paying the appropriate costs and fees for the construction of facilities used to serve the project site per the rules and regulations established by each utility for the extension of said facilities.

US-6 **Water Services** - Prior to the issuance of a grading permit, Southern California Water Company must obtain a Certificate of Public Convenience and Necessity (CPCN) under §1001 of the *Public Utilities Code* from the California Public Utilities Commission (CPUC).

4.17.5 Cumulative Impacts

The Tonner Hills Planned Community will result in incremental increase in the demand for utilities and service systems. However, the demands by the project are within the capacities of the service providers. Therefore, cumulative impacts from the project may result in increased demands upon utilities and service systems. Utilities and service systems such as water, sewer, solid waste, electricity, gas, and telecommunications are not anticipated to experience significant impacts due to the developer and service fees typically allocated to fund necessary on-site and off-site improvements, as well as the proposed improvements to the sewer and water systems infrastructure. Project development will, therefore, not significantly alter regional or cumulative utilities or service systems.

4.17.6 Unavoidable Adverse Impacts

The project would not result in any unavoidable adverse impacts on utilities and service system with implementation of the recommended mitigation measures.

5. Discussion of Long-Term Implications

5.1 Growth Inducing Impacts

Section 15126.2 (d) of the CEQA Guidelines states that the EIR should address the potential growth-inducing impacts of the proposed project. Specifically, the EIR must "discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects that would remove obstacles to population growth. Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects." The EIR must also "discuss the characteristics of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment." The potential growth-inducing impacts of the proposed Tonner Hills Planned Community are discussed below in terms of these criteria.

5.1.1 Direct Impacts

a. Urban Expansion

Growth-inducing impacts can be either direct or indirect. Direct growth-inducing impacts are generally associated with the provision of urban services – such as utilities, improved roadways, and police protection – to an undeveloped or rural area. The provision of these public services and utilities allows new development to occur more easily, and can induce landowners to convert their property to more intense uses.

The proposed project is unlikely to directly induce growth in the surrounding area for two major reasons:

1. The project site has been used for heavy industrial uses associated with oil and gas production for the past 100 years; and

2. With the exception of the Puente Hills and Chino Hills open space area, the surrounding area is completely developed with existing or planned residential and commercial uses. Mixed commercial and multi-family development is located to the southwest of the project site. Due to the surrounding urban development, the proposed project could be considered an "in-fill" project.

The proposed project will not result in infrastructure improvements except as they affect the project site. The northern part of the project, which consists primarily of open space and hillside, forms a natural boundary for development.

b. Economic Growth

The proposed project provides housing, commercial, recreational, and community services to the north Orange County area. The proposed project is not promoting economic growth, but responding to it. The economic benefits of the Project will include improved property values, which will improve property tax revenues, sales taxes, taxes collected on transfer of real property, etc. and would benefit the entire Brea area. Development of the proposed project will also entail attendant governmental costs such as those relating to service provision.

5.1.2 Indirect Impacts

Indirect or secondary growth-inducing impacts consist of growth induced by the additional demand for housing, goods, and support services associated with the population and employment increases caused by or attracted to the area.

The development of the Tonner Hills Planned Community will create short-term construction employment.

5.2 Summary of Cumulative Impacts

CEQA Guidelines §15130(a) states that, "an EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as defined in Section 15065(c)." This discussion, as stated in CEQA Guidelines §15130(b), "should be guided by the standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute, rather than the attributes of other projects which do not contribute to the cumulative impact."

In accordance with CEQA Guidelines §15130(b)(1)(B), the cumulative impact analysis for the proposed project is derived from several sources:

- Orange County General Plan OCP 2000;
- OCTAM 3.1 Traffic Model of the Orange County Transportation Authority;
- Projects in the planning process within a 5-mile radius of the project site in the Cities of Brea, Yorba Linda, Placentia, Fullerton and La Habra; and
- Projects approved within the last 4 years and located within a 5-mile radius of the project site in the Cities of Brea, Yorba Linda, Fullerton and La Habra.

Therefore, the EIR addresses cumulative effects based on land use data and development projections included in the County's traffic model as well as other local and regional considerations.

5.3 Significant Irreversible Environmental Changes

Section 15126.2(d) of the CEQA Guidelines states that for the preparation of EIRs, a discussion of any significant irreversible environmental changes which would be involved in the proposed action be provided. These irreversible environmental changes include: uses of non-renewable resources during the construction and operational phases of the project, the commitment of future generations to the proposed uses, and any irreversible damage that would occur from development of the project site. Development of the proposed project would result in the following irreversible significant environmental changes.

- Alteration of the human environment as a consequence of the development process. The project, which represents a commitment of land to the proposed uses, continues the trend toward urbanization of the resources in the area.

- Increased requirements for public services and utilities by the project, representing a permanent commitment of these resources.

- Utilization of various new materials, such as lumber, sand and gravel for construction. Certain of these resources are already being depleted worldwide. They will be consumed in developing and maintaining the site for urban use and may be considered a permanent commitment of these resources.

- The consumption of non-renewable and locally-limited natural resources including fossil fuels and water during project construction and generation.

However, the significant irreversible environmental changes are consistent with the County's intended uses for the site as described in the Land Use and Planning section of this EIR.

5.4 Unavoidable Adverse Impacts

The CEQA Guidelines state that an EIR must describe any significant impacts that cannot be avoided or eliminated if the project is completed. These impacts have been discussed in detail in Chapter 4, Environmental Analysis, of this Draft EIR and are listed below.

These project-related project impacts are categorized as follows:

- ***Significant*** - Significant adverse impacts that cannot be mitigated to a level of insignificance. These unavoidable impacts require the adoption of a Statement of Overriding Considerations by the Lead Agency if the proposed project is approved.

- *Mitigated* - Potentially significant adverse impacts which can be reduced to a level of insignificance or avoided entirely with the implementation of proposed mitigation measures.

- *Non-Significant* - Impacts not considered to be significant although mitigation measures may be provided.

- *Beneficial* - Impacts considered to be positive or of benefit to the site or the adjacent environment.

Several project impact areas have environmental impacts which fall into several of these above categories. These are listed in Table 5-1. A detailed discussion of these impacts is provided in Chapter 4, Environmental Analysis.

Table 5-1 - Inventory of Unavoidable Adverse Impacts

Impact Category	Explanation
Land Use and Planning	Non-Significant - With the design of the proposed project and mitigation measures relating to air quality, noise, aesthetics, hazards, and transportation/circulation, no unavoidable adverse impacts related to land use will result from the proposed project.
Agriculture	Significant - The project impact of the loss of 18 acres of Unique Farmland is considered a significant impact for which no mitigation measures are available. This significant unavoidable adverse impact requires the adoption of a Statement of Overriding Considerations by the County of Orange if the proposed project is approved. The Statement of Overriding Considerations shall identify the benefits of the project, which are roughly equivalent to the project's impacts.
Population and Housing	Non-Significant - Project impacts related to population and housing would be less than significant. No significant unavoidable impacts have been identified.
Geophysical	Mitigated - Implementation of the recommended mitigation measures specified above will reduce the potentially significant geological impacts to less-than-significant level. Except for strong seismic shaking, the development of Tonner Hills Planned Community will not result in unavoidable adverse impacts.
Hydrology and Drainage	Mitigated - Implementation of the recommended mitigation measures specified above will reduce the potentially significant impacts relating to drainage and flooding to a less than significant level. The proposed project will not result in unavoidable adverse impacts to hydrology and drainage.

Impact Category	Explanation
Water Quality	Mitigated - Implementation of the recommended mitigation measures specified above will reduce the potentially significant impacts to water quality to a less than significant level.
Transportation/Circulation	Mitigated - Implementation of the recommended intersection improvements will reduce all impacts to a less than significant level.
Air Quality	Significant - Implementation of the recommended short-term mitigation measures will substantially lessen construction-related particulate emissions. Construction-related CO, NO_x and ROG emissions from grading of project phases cannot be completely mitigated and will continue to exceed SCAQMD threshold criteria and is therefore considered significant and adverse. Project operational CO, NO_x and ROG emissions cannot be completely mitigated below established SCAQMD threshold levels; therefore, long-term air quality impacts can be considered unavoidable and significant.
Noise	Mitigated - Construction noise levels are anticipated to be less than significant at the nearest homes with the above mitigation measure. The proposed residential uses could be subject to noise levels above thresholds of significance for interior noise with windows or doors open and for exterior noise levels if barriers cannot mitigate noise to thresholds of significance. These potential impacts are mitigated to a level of insignificance through implementation of mitigation measures noted above relative to provision of sound attenuation.
Biological Resources	Mitigated - Through the implementation of recommended mitigation measures and redesign of the project, nearly all significant adverse impacts have been avoided. There will be an incidental take of California gnatcatcher, as defined by U.S. Fish and Wildlife Service. Through the Section 7 consultation process with U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service, the developer will be asking for a finding of "No Jeopardy" in the biological opinion. The "No Jeopardy" finding will allow for incidental take and specify how many pairs of gnatcatchers are allowed to be taken.

Impact Category	Explanation
Aesthetics	Mitigated - **Short-Term** No significant impacts are anticipated to occur. **Long-Term** Following implementation of proposed design features and with implementation of recommended mitigation measures, long-term aesthetics impacts associated with on-site development and remaining oil production/storage activities will be reduced to less than significant levels. With implementation of the recommended mitigation measure, potential significant light and glare impacts would be reduced to less than significant levels.
Cultural/Scientific Resources	Non-Significant - With implementation of the recommended mitigation measures, impacts to cultural, scientific or historic resources will be reduced to a less than significant level.
Recreation	Non-Significant - Project-related impacts upon recreation facilities are considered to be less than significant with provision of the public use space, private recreation facilities, and trail improvements.
Mineral Resources	Non-Significant - Impacts to mineral resources are considered to be less than significant.
Hazards	Mitigated - The development plan for the Tonner Hills Planned Community includes a two phased remediation action plan for the existing site. Site design characteristics separate the primary risk exposures of oil operations from residential development and avoid placing homes in tar seep areas. The combination of the regulatory mandates, mitigation measures listed herein, the RAP, and site design standards reduce all hazards and hazardous materials exposures to less than significant levels.
Public Services	Mitigated - Implementation of the recommended mitigation measures for fire protection, law enforcement services, and school impacts analyzed in this section will not result in an unavoidable adverse impact to public services.
Utilities and Service Systems	Mitigated - Project-related utility and service system impacts would not result in unavoidable adverse impacts with implementation of the recommended mitigation measures.

6. Alternatives to the Proposed Project

Alternatives to the proposed project are presented in this section. Each of these alternatives is designed to alleviate environmental problems identified in the EIR or were specifically requested for consideration (such as the City's proposed alternative). Several design change alternatives are also considered. Typically, the design alternatives evaluate one or more changes to the proposed plan, yet are not sufficiently different from the proposed project or alternatives that they qualify as free-standing alternatives. Many of these design features could be combined with any alternative. Each of the alternatives and design changes has been measured against the Project Objectives stated in the Project Description of this EIR, and a statement as to whether those objectives can be met under these alternatives is included.

The table below lists the project alternatives and design alternatives analyzed in this EIR.

Table 6-1 - Project Alternatives and Design Alternatives

Project Alternative 1	No Project
Project Alternative 2	No Development
Project Alternative 3	Previous 1,445-Unit Brea Highlands Project
Project Alternative 4	City of Brea Alternative
Project Alternative 5	Golf Course and Large-Lot Residential (Reduced Density) Project
Project Alternative 6	City of Brea Former General Plan
Project Alternative 7	City of Brea Revised Updated General Plan (30% Reduction)
Project Alternative 8	624-699 Dwelling Units Using Project Configuration
Project Alternative 9	Very Low Density/Estate
Design Alternative 1	Delete Tonner Hills Road
Design Alternative 2	150 Affordable Housing Units on Mixed Use Site
Design Alternative 3	Wildlife Passage
Design Alternative 4	Relocate Dwelling Units from Neighborhoods 5 and 6 to Public Use Site

It is important to note that oil field operations can continue with or without the project or an alternative being selected, and can be expanded if the appropriate steps are taken.

The County of Orange has not rejected any of these alternatives at the present. The County Board of Supervisors will weigh all information received during the public review process and render a final decision during the hearing and findings process. To comply with the requirements of the CEQA Guidelines that the EIR state why an alternative is being rejected, and because the County has not as of the publication of this Draft EIR rejected any alternative, the applicant's rationale for rejecting the alternative is presented. The County's rationale for rejection, if such an event occurs, will be presented in the findings.

It is the intent of this chapter to describe all reasonable alternatives to the project which could feasibly attain project objectives and why they were rejected by the project proponent in favor of the ultimate choice. Alternatives which do not attain all or some of the project objectives are also described. This approach is in compliance with §15126(d) of the CEQA Guidelines. The project applicant's reasons for rejection of alternatives is included herein; the County of Orange will explain the reason for its rejection of alternatives (if such an event occurs) prior to final decision-making on the project in order to consider all public comment. The alternatives herein focus on approaches capable of eliminating significant environmental effects or reducing them to a level of insignificance, even if these alternatives will not attain the project objectives or are most costly.

A reasonable range of alternatives has been presented herein. However, the EIR itself, as well as the Alternatives to the Proposed Project section, provide substantial documentary support from which variations of alternatives to the project can be evaluated. Therefore, this Alternatives to the Proposed Project section is intended to present simply a reasonable range of alternatives for discussion and evaluation.

The following discussion considers alternative development scenarios for the proposed project, including a comparison with each impact area discussed in the EIR (see Chapter 4, Environmental Analysis). These development scenarios focus on the amount of residential development proposed for the site. By comparing these alternatives with the proposed project, the environmental advantages and disadvantages of each can be evaluated and weighed.

The "No Project" alternatives must always be evaluated as a baseline of existing conditions. CEQA Guidelines §15126 also states, "The discussion of alternatives shall focus on alternatives capable of eliminating any significant adverse environmental effects or reducing them to a level of insignificance, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly."

6.1 Project Alternative 1 - No Project

6.1.1 Description of Alternative

This alternative would retain the status quo of entitlement efforts. The property would remain in oil production, which would be expanded, and the zone change and other approvals sought for the proposed project would be abandoned. This alternative is discussed pursuant to the requirements of CEQA §15126.6(e). It assumes that there will eventually be development on this site but at an unspecified time in the future.

6.1.2 Impacts of Alternative

a. Land Use and Planning

For this alternative, there would be no zone change pursued. However, state law requires that the zoning designation of the property be brought to conformity with the governing General Plan within a reasonable period of time. At the time of this writing the governing General Plan is that of the County of Orange. This raises first the issue of whether the oil production use, standing alone, would carry out the terms and policies of the County General Plan, Land Use Element. If this were found to be consistent, then the issue would remain as to whether residentially designated property in the General Plan, Land Use Element could be retained indefinitely in a non-residential state and still be consistent with the Housing Element of the General Plan. The County recently adopted modifications to the Housing Element, placing emphasis on the provision of very low income and low income housing. To the extent that retention of the property in a non-residentially developed state does not contribute to the goals of the Housing Element, it could be found that the failure to promote residential uses on this property by zoning and otherwise enabling residential development was not in conformance with the goals of the General Plan.

Although this unincorporated property is in the sphere of influence of the City of Brea, the Brea General Plan does not govern its development. As explained in Section 4.1, Land Use and Planning, the Memorandum of Understanding between the City and the County only applies if the City extends services, which is not the case here. There is no annexation proposal for the property at the time of this writing.

However, even if the City's General Plan did apply to this property, the City would have the same requirement as the County to bring the zoning and land use designation into conformity with the General Plan. The City's General Plan currently designates this property as residential, commercial, and other uses, and it would be zoned in that manner. If the No Project Alternative were selected, this process would potentially be delayed until the City came forward to re-designate the land, or another applicant pursued development entitlements.

b. Agricultural Resources

An 18-acre portion of the property would be retained in an interim state as agricultural land. This interim condition would apply until the property is rezoned and proposed for development. Since this land is not being put to agricultural use at the current time, the impact of this alternative is considered neutral.

c. Population and Housing

The No Project Alternative would avoid increases in population and housing until another project were proposed and approved to meet the County's ten-year projections for housing needs.

d. Geophysical

Implementation of the No Project Alternative would not entail any form of grading and/or landform alterations as compared to the proposed project. As the site is located in the seismically active region of Southern California, there would be a potentially significant geological impact similar to the proposed project. This alternative would not expose people and building structures in the immediate vicinity to potential impacts associated with seismic activity, slope stability, tar seeps, and methane gas greater than the proposed project. Geological impacts associated with the No Project Alternative would be potentially less significant than the proposed project.

e. Hydrology and Drainage

Implementation of the No Project Alternative would result in levels of on-site and off-site peak runoff for a 100-year storm that are greater than the proposed project. Based on the Preliminary Hydrology Study prepared by The Keith Companies dated July 24, 2001 for the proposed project, data analyzed has shown that, with the implementation of strategically located detention basins throughout the site, post-development peak runoff levels for the various drainage areas of the site would be significantly lower than pre-development conditions. Expanded drainage facilities (e.g., detention basins) and mitigation measures of the proposed project would ensure that post-development would not result in unavoidable adverse impacts to hydrology and drainage.

This alternative would not involve any form of development, including paving of the site. Therefore, significant increase of impervious surfaces of the site would not occur as opposed to the proposed project. On the contrary, analysis has shown that pre-development hydrological drainage impacts are potentially greater than the proposed project. The existing site's peak runoff levels are greater than the proposed project and, therefore, hydrological and drainage impacts associated with the No Project Alternative are potentially more significant than the proposed project.

f. Water Quality

Implementation of the No Project Alternative would result in potentially greater impacts to water quality than the proposed project. The existing site has been (for the past 100 years) and is currently being used for oil operations. This alternative would allow existing oil-bearing soils along with oil-operation-associated pollutants to continue to contribute substantial amounts into the site runoff, resulting in potentially significant water quality impacts. This alternative would fail to implement a Storm Water Pollution Prevention Plan (SWPPP) and a Water Quality Management Plan (WQMP) for the site as required in the proposed project. Expanded Best Management Practices (BMPs) and mitigation measures of the proposed project would ensure that pre-development and post-development conditions would not result in unavoidable adverse impacts to water quality.

Water quality impacts associated with the No Project Alternative would be potentially more significant than the proposed project.

g. Transportation/Circulation

Although no additional traffic would be added at this time via this alternative, no fees or other roadway improvements would be provided. Since development proposals in this area have been responsible for a number of these improvements, as well as the impacts, this opportunity would be lost.

h. Air Quality

Current air quality levels would remain substantially the same, with no opportunity to improve any impacts to air quality from existing oil and gas facilities.

i. Noise

Current noise levels would remain substantially the same.

j. Biological Resources

Under this alternative, there would be no immediate impacts to the extensive biological resources located on the site – including, but not limited to, federally listed species such as the California gnatcatcher – from development, but this does not mean that these impacts would not occur through some other mechanism such as oil field operation expansion. There would also be no improvement to the disturbed portions of the site, and no removal of non-native invasive species and ornamental species. The planned enhancements to Tonner Creek associated with the construction of Tonner Hills Road and resulting improvements to the Puente Hills-Chino Hills wildlife corridor would also not be made under this alternative.

k. Aesthetics

Aesthetics evaluations are basically subjective value judgments as to the relative value of one resource over another. In one sense, the continued presence of wells and other oil production apparatus would offend certain viewers, whereas other viewers would be offended by the view of development. Overall, the views would remain the same – a partially industrial site.

l. Cultural/Scientific Resources

No archeological or historical resources would be affected by this alternative. However, paleontological resources are historically discovered during development grading. Therefore, under this alternative, there would be a loss of opportunity to discover subsurface paleontological finds.

m. Recreation

To the extent that the property owner would be unwilling to voluntarily sell the recreation-oriented land to the City or County if its proposal were not approved, there would be an impact in terms of bringing recreational uses to the site. Further, the Wildcatters Park is privately owned and would not be available to the public except with the permission of the property owner. In fact, there is no requirement to keep the park at all, nor is there any affirmative obligation to maintain the park. The impact would be the loss of any public recreational use on this property for the entire community within the project's sphere of influence. There would also be no provision for pedestrian, equestrian, or bike trails to connect with existing and proposed trails on the County's Master Plan of Riding and Hiking Trails.

n. Mineral Resources

This alternative would have no effect on mineral resources, since the proposal does not adversely affect mineral resources. It should be noted that oil field development and other uses (e.g., nurseries, equipment storage) could be established on the property through leases.

o. Hazards

To the extent the abandonment of development on this property were a temporary condition, any hazards theorized regarding the proposed project would be reduced. However, it is the very nature of the mitigations for the project that hazards are eliminated, so this alternative is equal to the proposal with respect to this topic.

p. Public Services

Implementation of the No Project Alternative would result in a significant reduction of public service demands and impacts as compared to the proposed project. Public services are currently being provided for the site, which supports the existing oil operations. Existing levels of services would not be affected by the implementation of this alternative. This alternative would not require additional demands on school services. Fire and police protection are currently being provided for the existing oil operations. The proposed project would create significantly greater demand on public services than this alternative. Public service impacts associated with the No Project Alternative would be potentially less significant than the proposed project.

q. Utilities and Service Systems

Implementation of the No Project Alternative would result in a reduction in demand on utilities and service systems as compared to the proposed project. Utilities services are currently being provided for the site, which supports the existing oil operations. Existing levels of utility services would not be affected by the implementation of this alternative. The proposed project would create demands and impacts on electricity, water, natural gas, telecommunications, and sewer that are greater than this alternative. Impacts to utilities and service systems associated with the No Project Alternative would be potentially less significant than the proposed project.

6.1.3 Attainment of Project Objectives

While the No Project Alternative achieves the objective of minimizing the overall adverse environmental impacts, none of the other project objectives are achieved.

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6.2 Project Alternative 2 - No Development

6.2.1 Description of Alternative

This alternative would retain the current operation on the property and abandon all development now and in the future resulting in no improvement to any site conditions or characteristics. It assumes not only the abandonment of the proposed project, but any development during the projected 10-year buildout for the proposed project. This alternative is considered as it relates to long-term effects on housing/population/employment figures in meeting County growth projections.

6.2.2 Impacts of Alternative

a. Land Use Planning

This alternative would be similar to the Land Use Planning section in Alternative 1. There would be no zone change to accommodate residential or commercial use, the recreation areas would enjoy no future enhancement (or perhaps no further existence), and the existing uses would continue or be expanded. As in Alternative 1, the Orange County General Plan provisions for housing would not be met. Additionally, the County's Housing Element places emphasis on providing very low and low income housing. This alternative would not be consistent with the County's adopted plans and policies for the area.

b. Agricultural Resources

The 18-acre portion of the property would retain the agricultural designation. This land is not currently being used for agricultural purposes and would remain in this state if no development would occur. The impact of this alternative would be considered neutral.

c. Population and Housing

This alternative would avoid any increase in population and housing.

d. Geophysical

Implementation of the No Development Alternative would not entail any form of grading and/or landform alterations of the site as compared to the proposed project. This alternative would restrict all future development on the site. This site would retain its current use as an ongoing oil operations facility. Geological conditions will remain the same as depicted in the Existing Conditions section of the Geophysical chapter of this EIR. The site is located in the seismically active region of Southern California and would also be exposed to potentially significant geological impacts as analyzed in the proposed project.

This alternative would not expose people and building structures in the immediate vicinity to potentially greater impacts associated with seismic activity, slope stability, tar seeps, and methane gas greater than the proposed project. Geological impacts associated with the No Development Alternative would potentially be less significant than the proposed project.

e. Hydrology and Drainage

Implementation of the No Development Alternative would result in a greater impact to hydrology and drainage than the proposed project as previously analyzed in the No Project Alternative, Section 6.1.2.e. Existing peak runoff levels were analyzed to be greater than the post-development peak runoff levels of the proposed project. Hydrology and drainage impacts associated with the No Development Alternative would be potentially more significant than the proposed project.

f. Water Quality

Implementation of the No Development Alternative would result in a greater impact to water quality than the proposed project as previously analyzed in the No Project Alternative, Section 6.1.2.f and would result in some detriment as analyzed herein. Under this alternative, mitigation measures that would have been implemented for the proposed project would not occur. This results in greater water quality impacts than the proposed project. Water quality impacts associated with the No Development Alternative would be potentially more significant than the proposed project.

g. Transportation/Circulation

Similar to Section 6.2.2.d., Geophysical, above, although this alternative would not create additional traffic, no roadway fees or improvements would be provided.

h. Air Quality

This alternative would avoid impacts under this topical area. However, this alternative is also not capable of resolving impacts in this topical area, since development would not occur.

i. Noise

This alternative would avoid any impact, as no development would occur.

j. Biological Resources

Under this alternative, there would be no impacts to the biological resources located on the site, including, but not limited to, federally listed species such as the California gnatcatcher. There would also be no improvement to and remediation of the disturbed portions of the site, as well as the removal of non-native invasive species and ornamental species. The planned enhancements to Tonner Creek and subsequent improvements to the Puente Hills-Chino Hills wildlife corridor would also not be made under this alternative.

k. Aesthetics

As noted in Alternative 1, aesthetics evaluations are basically subjective value judgments as to the relative value of one resource over another. In one sense, the continued presence of wells and other oil production apparatus would offend certain viewers, whereas other viewers would be offended by the view of development. It can be said that under this alternative there would be no view of development, and current views would continue at whatever impact the viewer believes they produce. Oil production machinery would remain a visible impact with no current plan to shield or enhance view of this equipment.

l. Cultural/Scientific Resources

No archeological or historical resources would be affected by this alternative.

m. Recreation

The existing Wildcatters Park is privately owned. This alternative would provide no public recreation uses on the property, and the existing park would only be available with permission from the owner. The impact would be the loss of any public recreational use on this property for the entire community within the project's sphere of influence. There would also be no provision for pedestrian, equestrian, or bike trails to connect with existing and proposed trails on the County's Master Plan of Riding and Hiking Trails.

n. Mineral Resources

This alternative would have no effect on this aspect since the proposal does not adversely affect mineral resources.

o. Hazards

This alternative would maintain the status quo regarding the operation of the oil fields. Any attendant theorized hazards would remain with the property, rather than being addressed and eliminated as in the proposed project.

p. Public Services

Implementation of the No Development Alternative would result in less impact to public services than the proposed project. As previously analyzed in the No Project Alternative, Section 6.1.2.p. Public Services impacts associated with this alternative would be potentially less significant than the proposed project.

q. Utilities and Service Systems

Implementation of the No Development Alternative would result in fewer impacts to utilities and service systems than the proposed project as previously analyzed in the No Project alternative, Section 6.1.2.q. Utilities and service systems impacts associated with the No Project Alternative would be potentially less significant than the proposed project.

6.2.3 Attainment of Project Objectives

Similar to the No Project Alternative, the No Development Alternative meets one project objective – minimizing overall adverse environmental impacts. None of the other project objectives are achieved.

6.3 Project Alternative 3 - Previous 1,445-Unit Brea Highlands Project

6.3.1 Description of Alternative

The previous project presented to the City of Brea consisted of a plan for 1,445 dwelling units on 241.5 acres, as contrasted with the proposed project of 914 dwelling units on 193.9 acres. This project alternative is illustrated in Exhibit 6-1. Approximately 3.5 acres in the 1,445-unit project were to be developed with commercial uses, whereas 7.7. acres of the proposed project are to be developed with mixed uses. Park uses are commensurate between the two proposals when controlled for size, except for the 32.7 acres of Public Use being made available for acquisition. Further, the proposed project has more open space.

This alternative is being considered because its size has the capacity to increase the number of dwelling units to address the jobs-to-housing balance, one of the stated project objectives. The alternative evaluated contains a 13.4-acre parcel (56 dwelling units) that has since been sold by the landowner and is no longer part of the Tonner Hills project.

6.3.2 Impacts of Alternative

a. Land Use and Planning

This alternative could be found consistent with the General Plan for the County of Orange, but not with the current General Plan of the City of Brea. However, since the governing document for this project is the County's General Plan, consistency with the Brea General Plan is not required.

This alternative would provide for an additional 531 dwelling units beyond the proposed project in an area that is forecast for a shortage of housing. Other impacts to land use and planning are not significantly different than the proposed project.

b. Agricultural Resources

Impacts to agricultural resources are the same as the proposed project.

c. Population and Housing

Impacts are slightly higher than those for the proposed project. However, the City of Brea is a jobs-rich area, and additional housing brings more balance to the jobs-to-housing ratio. The Housing Element Goal 1 objective to provide an adequate supply of housing that varies in style, cost and neighborhood type would be met by this alternative.

d. Geophysical

Implementation of the Brea Highlands Alternative would entail substantially greater amounts of grading and landform alterations as compared to the proposed project. The addition of 531 residential units in this 1,445-unit alternative would result in an increased capacity of 58% over the proposed project's 914 units. Approximately 50 additional acres would be graded and/or altered to accommodate this alternative. The site is located in the seismically active region of Southern California, and there are potentially significant geological impacts similar to the proposed project. This alternative would expose a greater number of people along with 531 additional building structures in the immediate vicinity to potential impacts associated with seismic activity, slope stability, tar seeps, and methane gas greater than the proposed project. Geological impacts associated with the Brea Highlands Alternative would be potentially more significant than the proposed project.

e. Hydrology and Drainage

Implementation of the Brea Highlands Alternative would result in a significantly greater amount of peak runoff as compared to the proposed project. Approximately 50 additional acres required for the development of 1,445 units would result in a substantial increase of impervious surface areas. Additional drainage facilities (e.g., detention basins) and mitigation measures would be required for this alternative to reduce potentially significant impacts to below levels of significance. Hydrology and drainage impacts associated with the Brea Highlands Alternative would be potentially more significant than the proposed project requiring additional mitigation measures.

f. Water Quality

The Brea Highlands Alternative would result in significantly greater impacts to water quality. This alternative would add 531 additional residential units compared to the proposed project's 914 units, resulting in a significant increase of impervious surface area. Implementation of additional structural and non-structural Best Management Practices (BMPs) would be required for this alternative to reduce potentially significant water quality impacts to a less than significant level. Water quality impacts associated with the Brea Highlands Alternative would be potentially more significant than the proposed project.

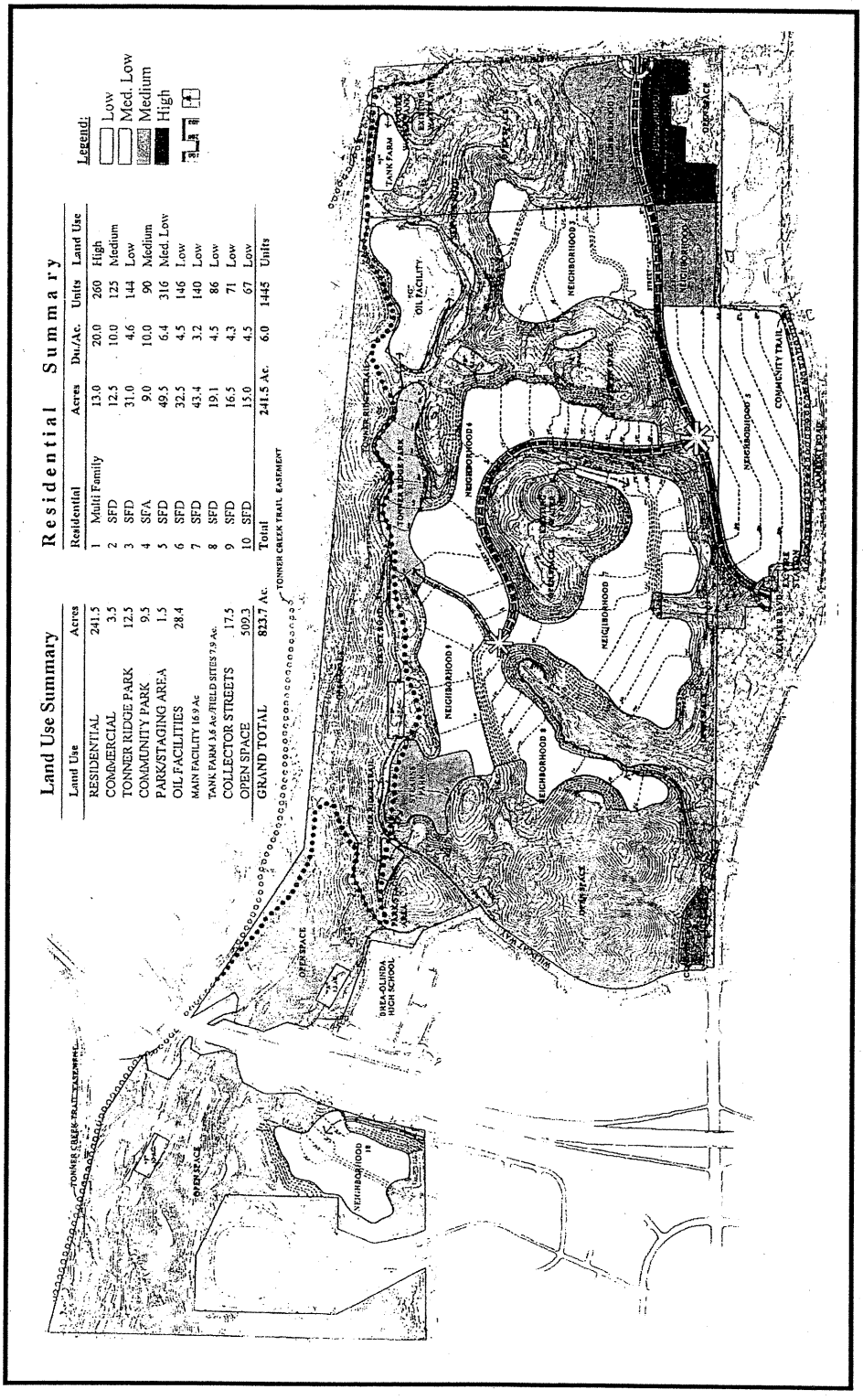

Exhibit 6-1

Previous 1,445-Unit Brea Highlands Project

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g. Transportation/Circulation

Impacts are greater than those of the proposed project. Approximately 2,687 more average daily trips would result from this alternative than the proposed project. The following table represents the average daily trip generation calculation for this alternative.

Table 6-2 - 1,445-Unit Brea Highlands ADT

	Rate	Number of Units	Total Average Daily Trips
Commercial	74.83 ADT per TSF	38.11 SF	2,851.8
Park	5 ADT per acre	23.5 acres	117.5
Residential	12 ADT per DU	1,445 DU	17,340.0
Total			20,309.3

h. Air Quality

Impacts are slightly greater than those of the proposed project, due to increased trip generation vehicle emissions.

i. Noise

Impacts are slightly greater than those of the proposed project, although impacts may not be significant in terms of an acoustic difference since it requires a substantial increase in traffic noise to increase sound levels in a manner perceptible to the human ear.

j. Biological Resources

This alternative would increase the amount of land area devoted to development, thereby reducing those resources incrementally.

k. Aesthetics

Implementation of the Brea Highlands Alternative would result in greater aesthetics impacts than the proposed project. This alternative consists of 1,445 single-family residential units, which would result in a 58% increase in development units as compared to the proposed project's 914 units. The increase of 531 residential units by the project alternative would likely increase aesthetics impacts to public vista, view corridors, and/or ridgelines as seen from secondary, collector, or major arterial roadways. The alternative eliminates Park Ridge, an area noted on the ridgeline map. This landform feature does not meet the

definition of criteria and intent for a prominent ridgeline due to its lower and flatter topographical characteristics. This alternative deletes several natural drainage courses on-site, which is inconsistent with the City of Brea Hillside Management ordinance. The proposed project is consistent with the intent of this policy. Aesthetics impacts associated with the Brea Highlands Alternative would be potentially more significant than the proposed project.

l. Cultural/Scientific Resources

Impacts are similar to that of the proposed project.

m. Recreation

In this alternative, the 32.7-acre area for a sports park or other public use is primarily devoted to neighborhoods. This is considered an adverse impact not presented by the proposed project. The impact regarding pedestrian, equestrian and bike trails is substantially the same as in the proposed project.

n. Mineral Resources

This alternative proposes continued oil operations at the existing level. It would result in no significant difference.

o. Hazards

Impacts are similar to the proposed project.

p. Public Services

Implementation of the Brea Highlands Alternative would result in significantly greater demand and impacts on public services than the proposed project. This alternative proposes the addition of 531 residential dwelling units, which results in an approximately 58% increase of additional public services to be provided compared to the proposed project of 914 dwelling units. Demand for additional fire and police protection and school services would significantly increase. Approximately 297 additional students would be generated by this alternative for a total of 809 students compared to the 511 students generated by the proposed project. The proposal of additional residential units in this alternative would allow the school district to collect additional developer fees to assist in mitigating school impacts. Public services impacts associated with the Brea Highlands Alternative would be potentially more significant than the proposed project.

q. Utilities and Service Systems

Implementation of the Brea Highlands Alternative would result in significantly greater demands on utilities and service systems than the proposed project. This alternative would add 531 residential dwelling units as compared to the proposed project, which would result in an approximately 58% increase of additional utilities services to be provided. Demand for additional water, sewer, electricity, solid waste, gas and telecommunications services would significantly increase over the proposed project. Approximately 212,400 additional gallons of water supply, 43,840 additional gallons of wastewater per day, 1,083 additional tons of solid waste per year, 37,232 kWh of additional electricity per year, and 232,578 additional therms of gas consumption per year are estimated for the Brea Highlands Alternative as compared to the proposed project. Utility service providers would remain unchanged as depicted in Section 4.17 of the proposed project EIR. Utilities and service systems impacts associated with the Brea Highlands Alternative would be potentially more significant than the proposed project.

6.3.3 Attainment of Project Objectives

This alternative achieves all of the project objectives except for minimization of environmental impacts. Relative to the proposed project, this alternative has greater environmental impacts due primarily to the increased size (acreage and dwelling units). Additional mitigation measures for water quality, hydrology, geophysical and biological resources could be required to mitigate the alternative's impacts to a less than significant level.

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6.4 Project Alternative 4 - City of Brea Alternative

6.4.1 Description of Alternative

The Brea City Council established the Tonner Hills Review Committee to provide input regarding the proposed project development application. The committee formulated an alternative development plan which it identified as "Tonner Hills Review Committee Value Statements." These statements form the basis for the alternative referred to as the "City Alternative." Unlike the proposed project, the City addressed the 789.9 acres of the project plus the acres within the City that are not part of the proposed project. For consistency purposes, the City Alternative is presented as submitted, but clarification of the geographic area is made as appropriate.

The City Alternative envisions a maximum of 755 dwelling units in 8 neighborhoods on 823.8 acres, inclusive of the acreage not included in the proposed project (Exhibit 6.1). This alternative redesigns the interior circulation system for the project by eliminating access from the northwestern boundary (the proposed Tonner Hills Road) and using Valencia Avenue and Lambert Road for ingress and egress. The design provides for several areas of "estate housing" (large houses on large lots), mainly in the areas of higher elevations. Higher density housing would be available in the southernmost neighborhoods near Lambert Road. A total of 126.2 acres of residential development is proposed. No mixed-use is included in this alternative, and the 7.7-acre mixed-use parcel remains undeveloped.

The City Alternative also designates preservation of Wildcatters Park which abuts the public use portion of the site. The City designated a 38.9-acre public use area to allow for additional park uses such as ball fields, bicycle/pedestrian paths, etc.

The following summary identifies proposed density/size/dwelling unit specifics.

	Acres	Density	Unit Count
Neighborhoods 1, 2, 3	41.3	8.2-8.6 du/ac	337-357 du
Neighborhood 4	25.3	5.4-6.0 du/ac	136-152 du
Neighborhood 5	14	3.9-5.5 du/ac	55-77 du
Neighborhood 6, 7	31.6	3.4-3.8 du/ac	107-120 du
Neighborhood 8	14	3.2-3.5 du/ac	45-49 du
Totals (includes acreage and dwelling units outside project area)	126.2	5.4-6.0 du/ac	680-755 du

This alternative is considered in response to the City of Brea's request. An extensive technical analysis of this alternative's feasibility and relative impact was made and is summarized in the following discussion.

It must be mentioned that the City Alternative includes acreage for proposed Tentative Tract 16047, which is not considered in the proposed project. This 13.4-acre property was sold by the applicant. When this acreage is deleted from the City's plan, the total remaining residentially developable acreage is reduced to 112.8 acres, compared to 193.9 acres in the Tonner Hills plan. Additionally, the City of Brea "Value Statement" requires that all fuel modification zones be accommodated within the identified areas of development and not require additional land. The impact of this requirement eliminates Neighborhood 5 and most of Neighborhoods 6 and 7 on the City Alternative. Overall, the residentially developable acreage in this alternative is reduced to less than 60 acres. Using the City's densities, this would result in a project of only 420 units, well below the City's and the County's General Plans and the City Alternative. This contradiction is noted here. The analysis evaluates a 680- to 755-DU alternative. A comparative discussion of allowable land use densities and equivalent development units is included in Section 4.1, Land Use and Planning. Also deleted in the City Alternative is the 7.7-acre mixed use property. However, the Land Use Element in the City of Brea and County of Orange General Plans designates more than 10 acres of commercial and office/financial use on the property.

6.4.2 Impacts of Alternative

a. Land Use and Planning

The Land Use Element of the County's General Plan establishes land use designations of Suburban Residential and Community Commercial for the Tonner Hills Planned Community. The suburban residential land use designation includes a wide range of housing types, from estates on large lots to attached dwelling units. The community commercial land use provides for a wide range of facilities for convenience goods and retail trade including tourist recreation businesses and community services. Table 6.4-3 on page 6-25 indicates the differences and similarities of the Tonner Hills Plan and the City Alternative. The table also illustrates the total available acreage for development after the fuel modification zones are accounted for under the City guidelines. The conflicting acreage figures are provided for disclosure purposes only. The alternative evaluated considers the construction of 680 to 755 dwelling units.

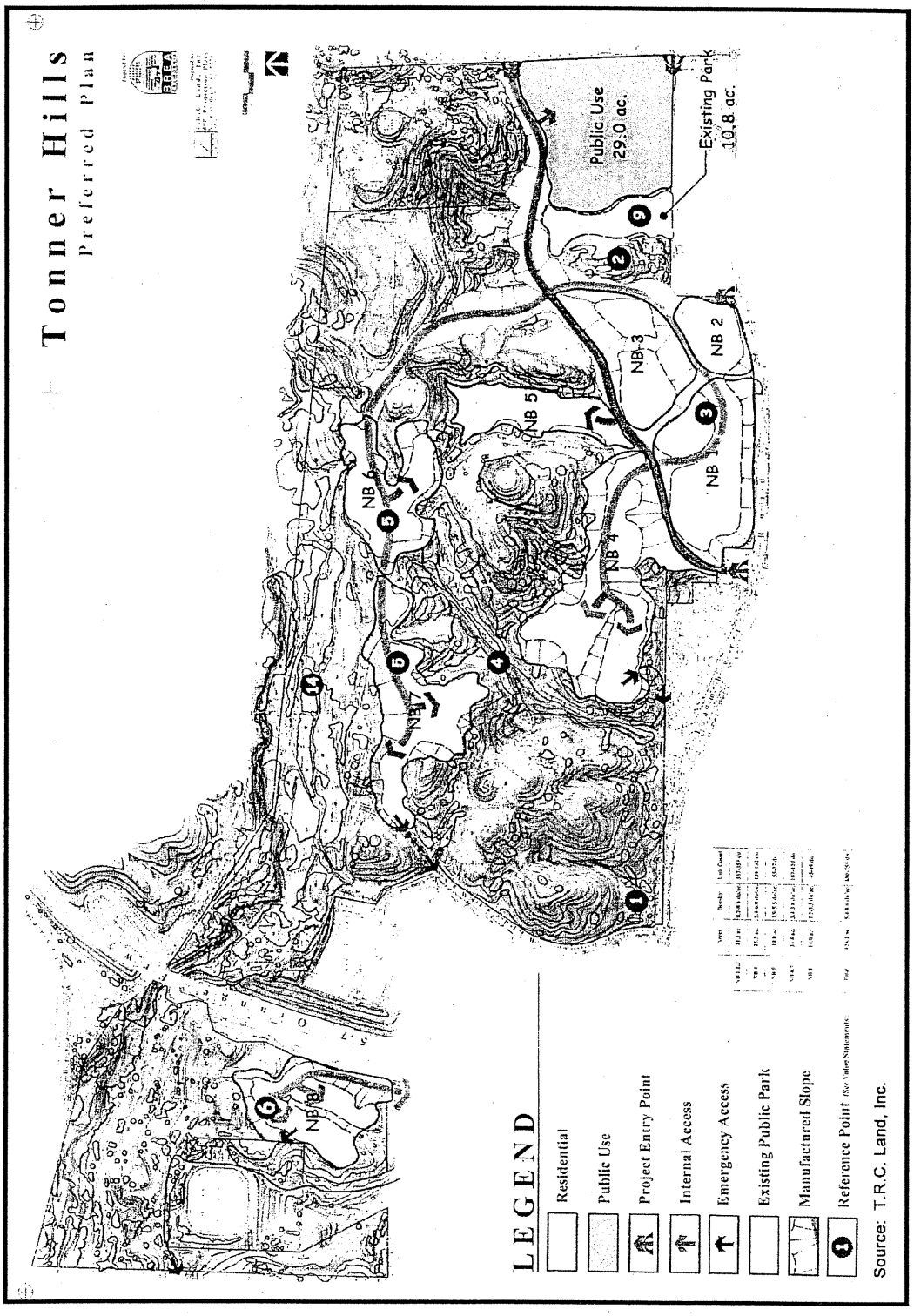

Exhibit 6-2
City of Brea Alternative

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Table 6-3 - Comparative Acreage Analysis

Tonner Hills Plan		City Alternative*		
Land Use	Acre	Land Use	Acres (Gross)	Available Acreage After Fuel Modification (Net)
Neighborhood 1	15	Neighborhood 1	22.3	22.3
Neighborhood 2	11.5	Neighborhood 2	6	6
Neighborhood 3	42.7	Neighborhood 3	14.8	14.8
Neighborhood 4	41.9	Neighborhood 4	25.6	6.7
Neighborhood 5	26	Neighborhood 5	14.9	2.1
Neighborhood 6	26.6	Neighborhood 6	15.7	5.1
Neighborhood 7	17.5	Neighborhood 7	16.2	2.7
Neighborhood 8	12.7	Neighborhood 8	10.7	0.1
Total Residential	193.9	Total Residential	126.2	60.8
Public Use	32.7	Public Use	38.9	
Wildcatters Park	5.8	Parks	10.2	
Mixed Use	7.7			
Oil Facilities	15	Oil Facilities	22.1	
Collector Streets	20.6	Collector Streets	26	
Open Space	514.1	Open Space	600.4	
Total	789.8	Total	823.8	

*The City Alternative includes acreage outside the project area within the City of Brea, including 13.4 acres not under ownership of Nuevo Energy and 7.7 acres currently the subject of negotiations with Brea-Olinda Unified School District. The available acreage calculations are shown for illustration only.

b. Agricultural Resources

The project site is classified as X (Other Land) and U (Unique Farmland) by the California Farmland Mapping and Monitoring Program 1998 Important Farmland Map for Orange County. The Unique Farmland designation applies to the 18-acre portion of the property that was used until recently for commercial nursery purposes. As with the project proposed, the City Alternative would convert the site to urbanized uses that would no longer be available for agricultural activities. Conversion of land classified as Unique Farmland to urbanized uses is considered a significant impact.

c. Population and Housing

The population of the City of Brea was 36,518 in 2000. Over the past 10 years, the city has experienced an 8% growth rate. According to the City's Website, population growth rates have slowed considerably over the past few decades. The 2000 population count was 35,500. The Southern California Association of Governments (SCAG) has projected a 2% increase between 2000 and 2010. Since the project site is not located within the City of Brea boundaries, the housing and population figures are drawn from SCAG and the Regional Housing Needs Assessment (RHNA) for Southern California. Brea's "fair share" new construction housing needs have been projected at 1,052 homes between January 1998 and June 2005.

The proposed project is a large master planned development with a projected 10-year buildout and would comply with all County regulations associated with affordable housing and the General Plan policy for the "development of adequate housing to meet the needs of low and moderate income households." The City Alternative would provide for 680 to 755 housing units (including dwelling units outside the project area), while the proposed project would provide 914 units. As with the proposed project, the City Alternative, when added to the existing housing, would not exceed the estimated projected housing need through buildout based on figures provided by SCAG. No impacts are expected.

As indicated in Section 4.3, Population and Housing of this EIR, in 2010 the number of jobs available in the City of Brea is projected to be 45,797 and by 2020 the number will be approximately 47,793. This equates to a 30% increase in employment over 23 years, compared to a growth of 4% in City population and an 8% growth in housing during that period. The City Alternative is inferior to the proposed project in providing additional housing needed to achieve a jobs-to-housing balance.

d. Geophysical

The physical characteristics of the City Alternative differ considerably from the proposed project. A neighborhood-by-neighborhood comparison is presented below by topical area.

(1) Faulting

The City Alternative situates Neighborhood 6 on Fault C as well as the Tonner Fault, which will require additional studies of the faults as well as fault trenching. It is not known whether this arrangement is feasible, but situating neighborhoods on faults is generally regarded as undesirable. The proposed planned community places housing outside of the known fault zones thus avoiding any neighborhood development on active or potentially active faults.

(2) Landslides and Slope Stability

The City Alternative places the northeastern part of Neighborhood 6 on the head of the largest Tonner Canyon landslide. The initial geological survey indicates that the land in this area does not meet the required minimum 1.5 factor of safety against failure. Additionally, the effects of development, including increased irrigation, would diminish the current stability of the slide. Landform modification to stabilize this slide would create significant impacts to biological resources. Conversely, the proposed project would not experience such adverse effects, as it is located south of the Tonner Canyon landslides.

In the City Alternative, development is not proposed for the impacted ridge west of Cable Canyon, in the vicinity of Neighborhood 7, unlike the proposed project, where development will require remedial grading and manufactured slopes to ensure that several small slides are secured. The City Alternative and the proposed project treat the north portion of Neighborhood 7 similarly, both requiring remediation measures to secure a small landslide in the northerly portion of the neighborhood.

Although both plans indicate that many ridgelines and canyons will remain as open space, the City Alternative places Neighborhood 4 close to the top of high and steep slopes and encroaches onto the easterly edge of Cable Canyon. Extreme remedial grading would almost certainly be required for the entire slope down to the canyon bottom. In contrast, the proposed project places the development farther to the east of Cable Canyon, allowing more room between building sites and additional room for any necessary grading, which would not permanently alter the canyon bottom.

(3) Grading

Implementation of the City of Brea recommended alternative would result in more significant grading and landform alteration impacts than the proposed project. Both the City Alternative and the proposed project include filling the canyon in Neighborhood 5; however, the proposed project calls for grading the slopes surrounding the area, reducing the risk of future slope failure.

The City Alternative elevation rises dramatically from Lambert Road with a fill slope that rises as much as 75 feet from the existing Lambert Road grades. Other slopes in the City Alternative are higher and more dramatic than in the proposed project. The tendency to embank up the hillsides has created a significant imbalance in import yardage with the City Alternative. Overall, the City Alternative will require the import of 1.988 million cubic yards of fill to achieve the grading plan. This alternative would also export over 200,000 cubic yards of fill material from the western neighborhood. This importation of fill will be addressed in other areas, as it creates significant impacts to the total project.

(4) Tar Seeps

Tar seeps were identified along the northern and north-central portions of the site, where sandstone and sandy conglomerate of Sycamore Canyon member of the Puente Formation crop out. This is the direct result of fault movement associated with the Whittier Fault. Tar seeps were also identified along the Tonner Fault, Fault B, and the Escondido Fault. The City Alternative and the proposed project will encounter areas where tar seeps have been previously mapped and where oil-stained soils have been exposed in exploratory trenches. The City Alternative would place portions of Neighborhoods 6 and 7, along with access roads, in areas of seeping oil and oil-bearing soils. Portions of the City Alternative development will encroach into oil seepage areas. Grading activities associated with this alternative have an equal or greater potential to produce additional oil-bearing fill soils and seepage areas as compared to the proposed project.

e. Hydrology and Drainage

Because of the considerable amount of fill required in the City Alternative, impacts to on-site drainage courses would be more significant than the proposed project.

f. Water Quality

Implementation of the City Alternative would result in significantly greater amounts of pollutant loads. This alternative requires the import of 1.988 million cubic yards of fill to achieve its grading plan. The significant increase in truck trips to and from the site would result in significantly greater pre-construction water quality impacts than the proposed project. A more extensive Stormwater Pollution Prevention Plan (SWPPP) along with the additional implementation of structural and non-structural Best Management Practices (BMPs) would be required for this alternative to reduce potentially significant water quality impacts to less than significant levels.

g. Transportation/Circulation

The City Alternative would generate an estimated range of 8,160 to 9,060 ADT based on the number of dwelling units constructed. The distribution of trips throughout the surrounding streets would be different from the proposed project, as the project access points vary considerably. There are existing deficient levels of service at six key intersections in the project vicinity, including Brea Boulevard at the Orange (SR 57) Freeway southbound on-ramp, Tonner Canyon Road, and Central Avenue, as well as the Orange (SR 57) Freeway southbound ramps at Lambert Road and Imperial Highway, and Orange (SR 57) Freeway northbound ramps at Imperial Highway. Similar to the proposed project, the additional traffic on these areas would trigger the need for traffic mitigation measures.

(1) Circulation

The proposed project seeks to follow the existing terrain and utilize the alignment and grade, wherever possible, of the existing oil field roads. The City Alternative pioneers two major roads through the eastern-northeastern portion of the property. This results in a collector road system that is more extensive than the proposed project, yet serves fewer dwelling units. The design also conflicts with contamination and tar seep areas that were previously isolated from development. A proposed east-west connector road that extends over the top of the Public Use area to Valencia Avenue will interact with contamination from an historical gun club. This area has been avoided in the proposed project.

(2) Access

The City Alternative proposes access via a roadway into the project approximately 1,800 feet north of Lambert Road on Valencia Avenue. The City Alternative also creates two access roads along Lambert Road. This ingress/egress proposal does not provide any relief to the traffic impact on Lambert Road. All project traffic must utilize existing City of Brea streets in order to travel north or access the Orange (SR 57) Freeway. Fire and medical emergency concerns are addressed via an emergency only connection from Neighborhood 7 to Wild Cat Way. Unlike the proposed project, the City Alternative does not propose a gated community to discourage pass-through traffic.

(3) Construction

A report prepared by Earth Consultants International, which is included in the Technical Appendices, details the impacts of the higher level of grading required by the City Alternative. The report points out that the proposed importation of nearly 2 million cubic yards of fill would require 153,000 truck trips to the site from where the fill can be found if, in fact, there is a borrow site or sites available to contribute fill. This translates into 200 to 300 trips per day for a 2-year period. For traffic count purposes, the 200 to 300 incoming trips per day would be doubled to reflect the return trip of the empty truck. In addition, 200,000 cubic yards of material would have to be exported from the western neighborhood anticipated by the City Alternative. This would require an additional 15,000 trips down residential Brea streets and through major intersections in the area. The proposed project, by contrast, anticipates fewer units on the west side and grading balances on-site, requiring no import or export.

The City Alternative would have a much greater impact on traffic over the life of the grading and site-preparation phase than the proposed plan and would have a similar effect on traffic at project build-out.

h. Air Quality

Short-term impacts would be significantly higher than the proposed project due to the increased amount of grading necessary to develop the site and the attendant emissions from heavy equipment and truck traffic to and from the development over a sustained period of grading activity of approximately two years. Long-term impacts would be the result of vehicle emissions for park and residential trips and would be less than the proposed project. Oil production related air quality impacts would remain the same.

i. Noise

Short-term impacts would be significantly higher than the proposed project due to the increased amount of grading and the truck traffic to and from the development. Noise related to oil production facilities would remain the same. Vehicular traffic is less than the proposed project, but the noise level will not be reduced perceptibly.

j. Biological Resources

The City Alternative impacts 41.8 fewer acres than the proposed project, including 28.1 fewer acres of coastal sage scrub and 2.4 fewer acres of annual grasslands. Comparatively, the proposed project will impact 0.4 fewer acres of undisturbed woodlands and 6.3 more acres of the ornamental, disturbed, and developed areas.

The City Alternative will impact 0.2 fewer acres of U.S. Army Corps of Engineers jurisdiction and 1.2 fewer acres of California Department of Fish & Game jurisdiction than the proposed plan.

The City Alternative will have a greater impact on Cable Canyon, which is almost completely avoided by the proposed project. The City Alternative would require extensive remedial grading in Neighborhood 4. This remedial grading, coupled with the required utility crossings and emergency access roads, provides greater impacts to Cable Canyon. USFWS, Corps, and CDG all expressed their desire to minimize impacts on the drainage area in Cable Canyon.

In addition, the City Alternative does not include any plans for the enhancement, revegetation, and restoration of Tonner Creek, which is proposed under the proposed project. This road, as proposed, will actually improve the creek crossing at Tonner Creek. This will be accomplished by removing the culverts currently in place and replacing them with open span bridges designed to provide an unrestricted wildlife passage. The riparian vegetation will be revegetated and restored to a more natural state and will increase the acreage of riparian habitat. The proposed project also calls for placement of barriers along the access road to keep pond turtles off the road. The City's plan could not include any of these benefits to wildlife, as it eliminates this road and its associated improvements.

The City Alternative and the proposed project will each impact nine pairs of California gnatcatchers. The proposed project will result in the enhancement and restoration of the riparian woodlands in the Tonner Creek and, thus, will likely result in more habitat being available for the gnatcatchers. The City Alternative proposes no such habitat restoration, and would have a more significant impact to biological resources.

k. Aesthetics

The City Alternative proposes development on the most prominent ridge on the property in Neighborhoods 6 and 7, contrary to the City's stated desire to preserve the visual ridges that serve as gateways to the City of Brea. This prominent landform, Tonner Ridge, is visible from Brea to the south and the Orange (SR 57) Freeway as it enters the City of Brea from the north. The proposed project respects the natural ridgelines that form the backdrop of the City of Brea. Exhibits 6-3 through 6-8 display various view simulation comparisons and differences of the City Alternative and the proposed project.

The City Alternative proposes estate housing on the higher elevations. Generally, estate lots mean bigger houses on lots with only slightly greater side yard setbacks. The visual presence of a much larger house is not significantly unlike the presence of smaller homes on smaller lots. This impact would be subjective to the extent that a person's reaction to residential units in a hillside setting is a personal matter.

The 75-foot-tall slopes along Lambert Road would have a significant visual impact over the proposed project. Conversely, the City Alternative proposes no development at Lambert Road and Wildcat Way, eliminating visual impacts there.

l. Cultural/Scientific Resources

Impacts are similar to the proposed project.

m. Recreation

The City Alternative value statement #9 suggests that Wildcatters Park is "a valuable community resource which should be preserved and augmented." However, the park is not public and is under private ownership. No access other than through the public use portion of the site is provided. This lack of direct access from the neighborhood will impact ease of use by Tonner Hills residents. Unlike the proposed project, the City Alternative removes the park from the community circulation system, thus negating the stated purpose to preserve and augment it as a "valuable community resource." The intended manufactured slope designed along the north boundary of this park further restricts access. No additional passive parks are defined within the City Alternative, whereas the proposed project includes small, passive park sites integrated into the neighborhoods. The City Alternative omits any discussion of pedestrian, equestrian, or bike trails and paths; therefore, these elements cannot be directly compared.

n. Mineral Resources

The City Alternative dismissed certain oil islands identified on the proposed plan, either running road improvements through the retained area or encompassing the area in a development area. This would reduce access to the minerals over a large area of the property. The elevation in Neighborhoods 1 through 4 and the large quantities of fill would require much deeper drilling and would further impede access to mineral resources.

o. Hazards

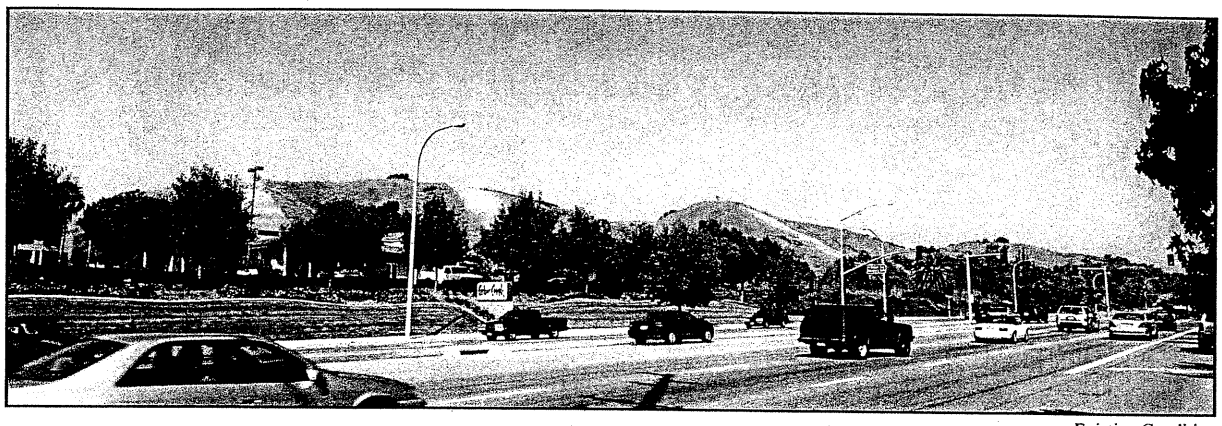
The City Alternative places homes and develops roads in close proximity and over known tar seep areas, thus exposing homes to known hazards to a greater extent than the proposed project.

p. Public Services

The City Alternative would result in fewer residential units constructed and the deletion of the 7.7-acre mixed use area within the planned community. This reduction would incrementally decrease the demand for law enforcement and fire protection services. This alternative is situated within the service areas of several public service agencies. The Orange County Fire Authority, the Orange County Sheriff's Department, and the Brea-Olinda Unified School District are agencies scheduled to provide public services to the project area in the immediate future. Based upon the Brea-Olinda Unified School District student generation rate of 0.56 per single-family dwelling, this alternative is estimated to generate 423 students, compared to 511 student for the proposed project. Public services impacts associated with the City Alternative would be potentially less significant than the proposed project.

q. Utilities and Service Systems

Implementation of the City Alternative would result in fewer residential units being constructed and the deletion of the 7.7-acre mixed use project component within the planned community. This project reduction would incrementally decrease the demand for utilities services. Utility providers of the proposed project would also be capable of serving this alternative. Utilities and service systems impacts associated with the City Alternative would be potentially less significant than with the proposed project.



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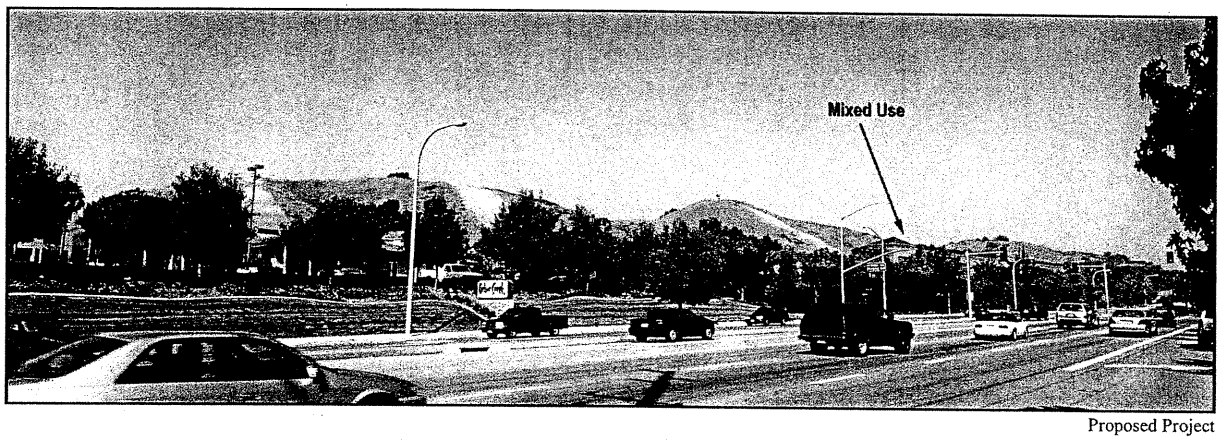

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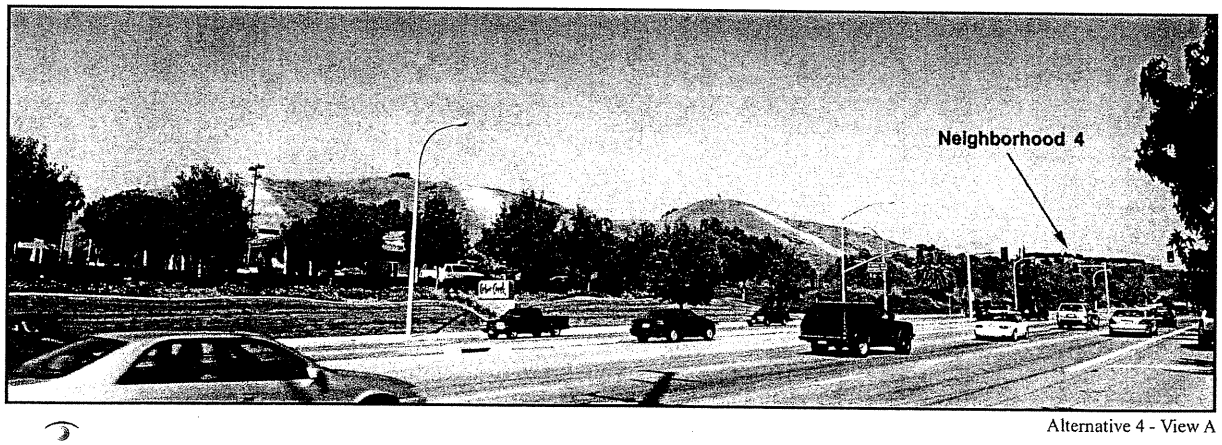

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Alternative 4 - View A

Exhibit 6-3

City of Brea Alternative - View A

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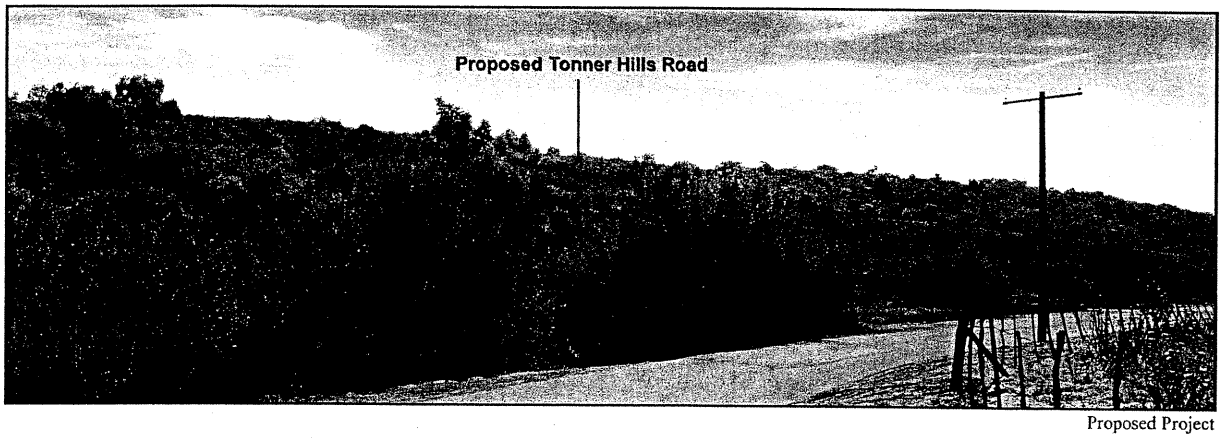

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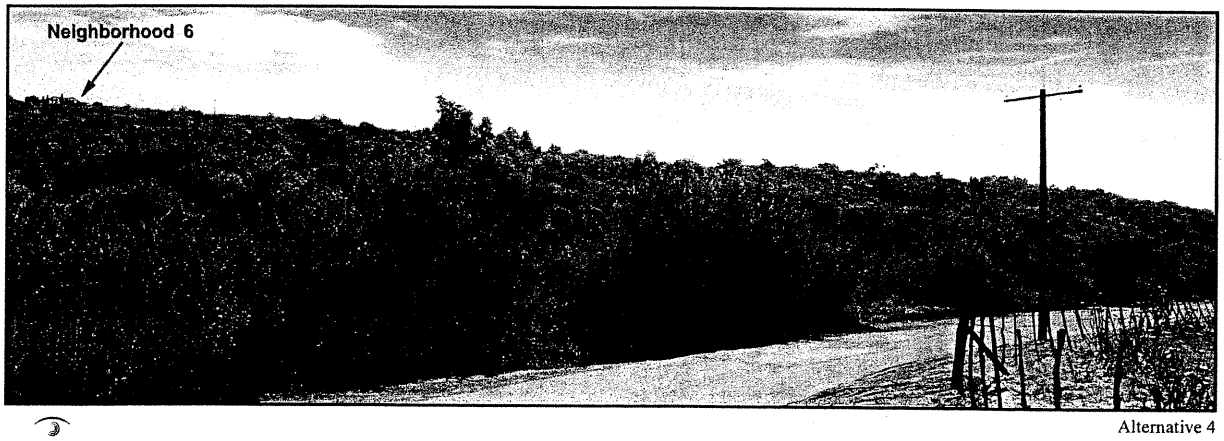

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Alternative 4

Exhibit 6-4

City of Brea Alternative - View G

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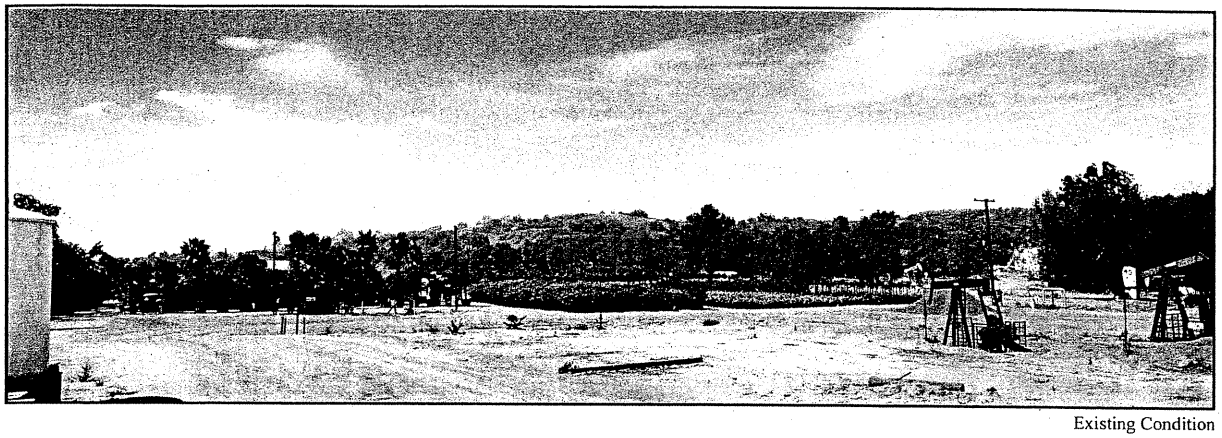

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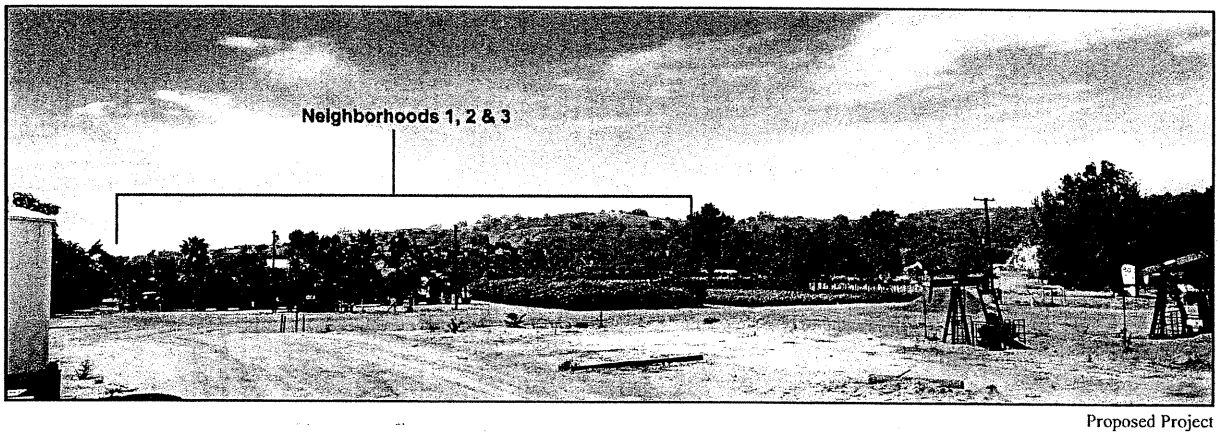

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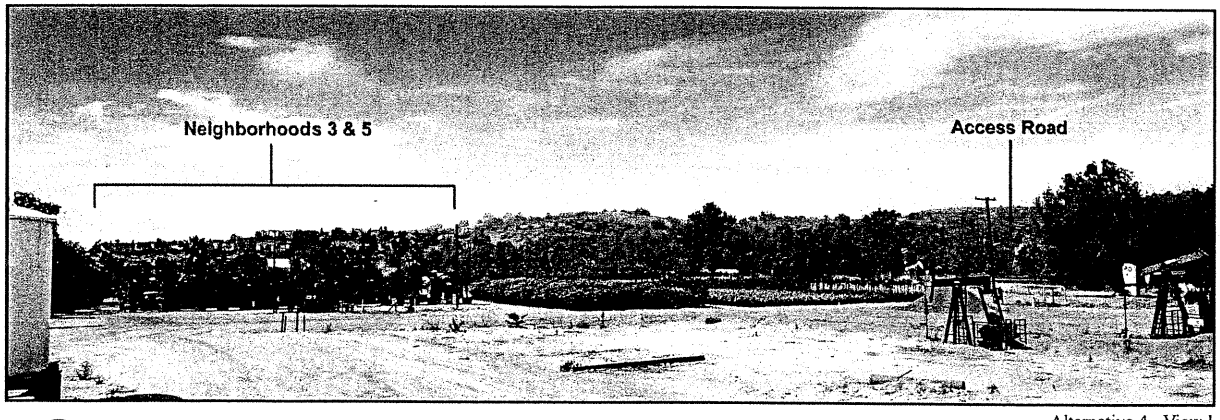

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Alternative 4 - View I

Exhibit 6-5

City of Brea Alternative - View I

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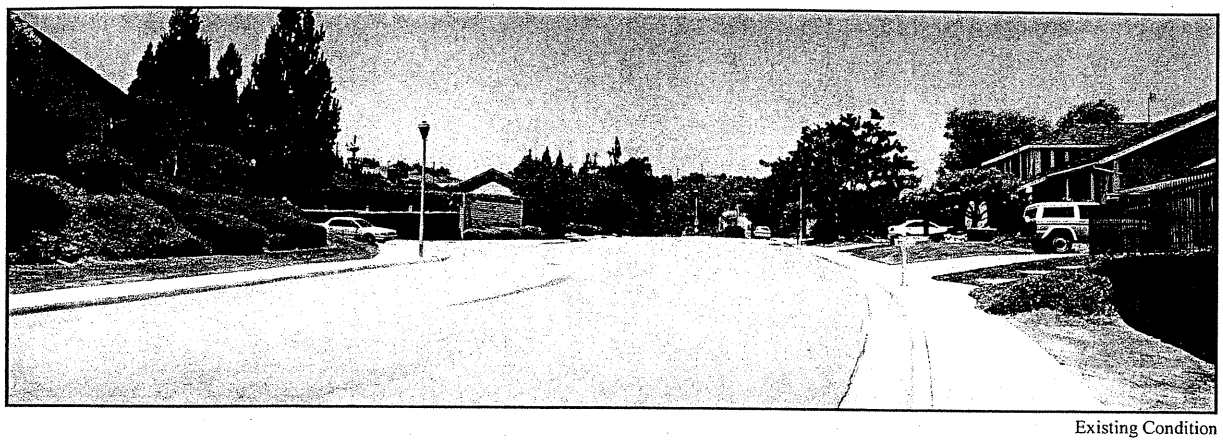

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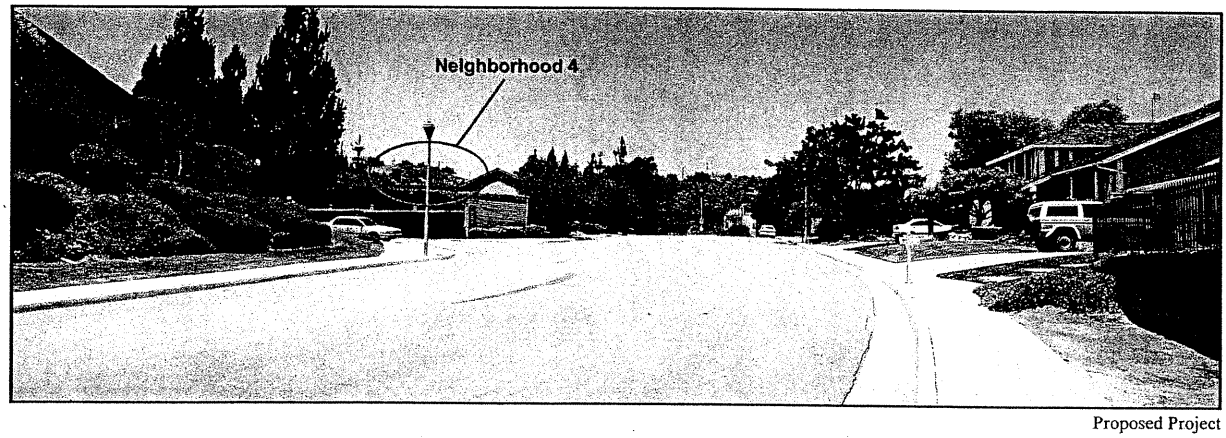

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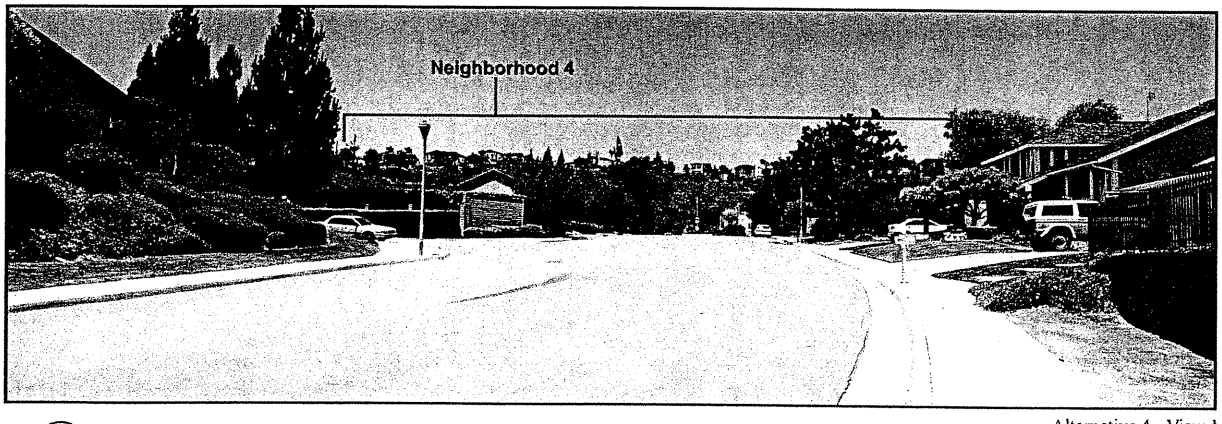

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Alternative 4 - View J

Exhibit 6-6

City of Brea Alternative - View J

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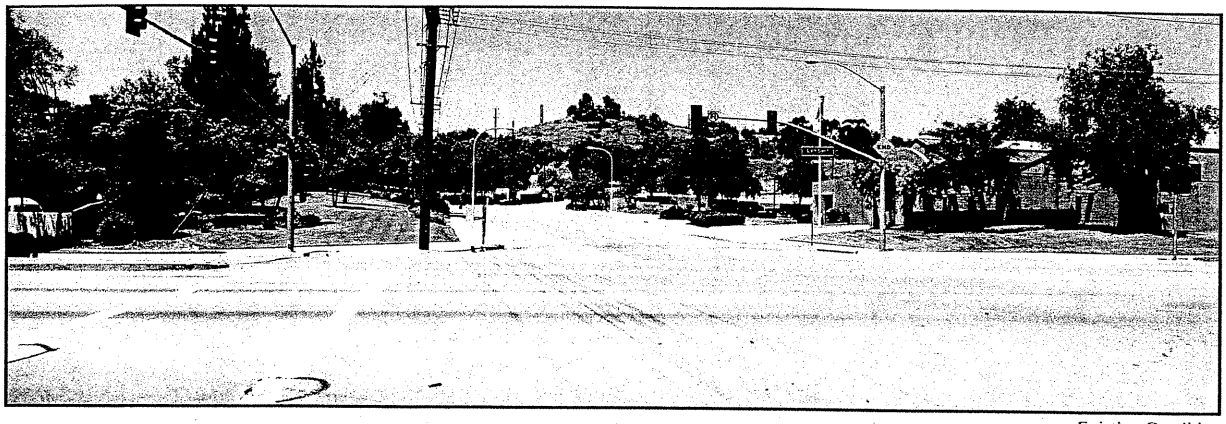

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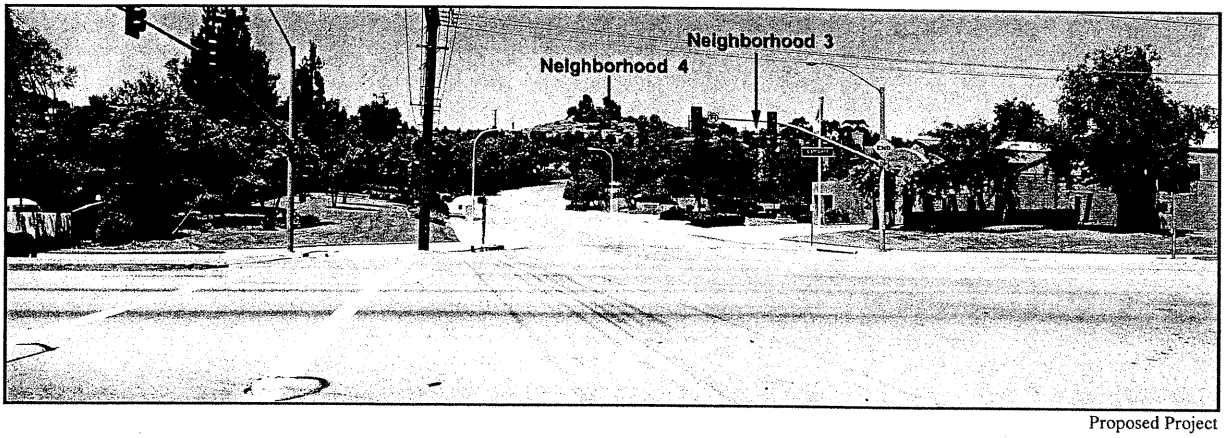

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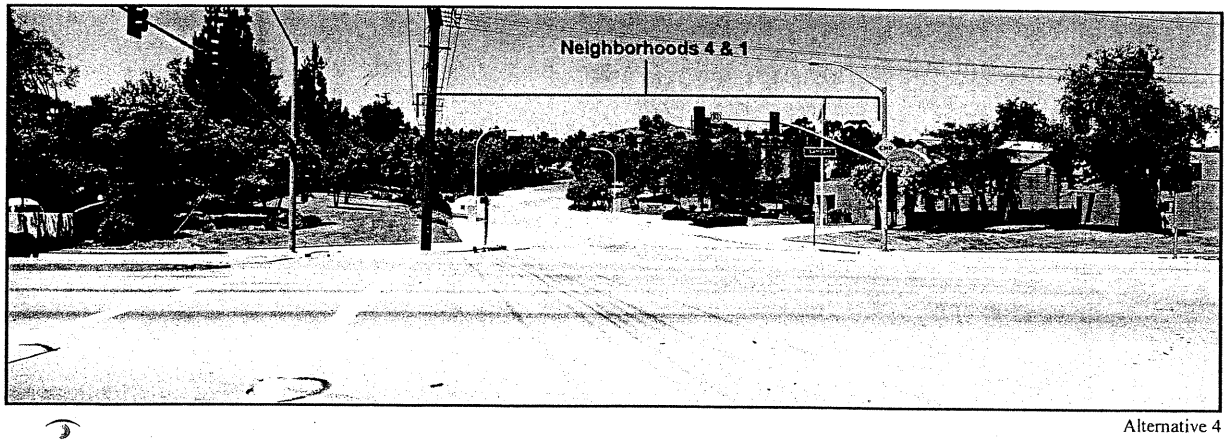

Alternative 4

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Exhibit 6-7
City of Brea Alternative - View K

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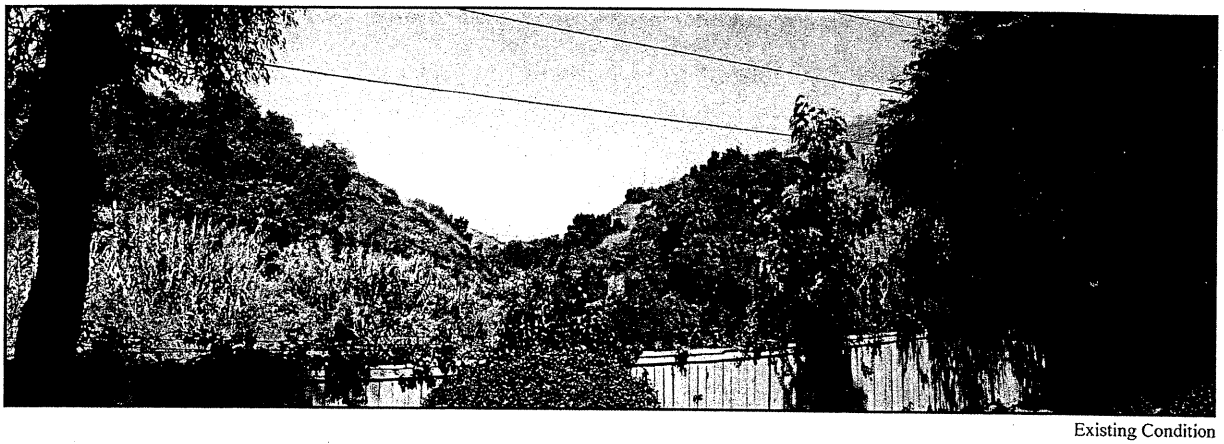

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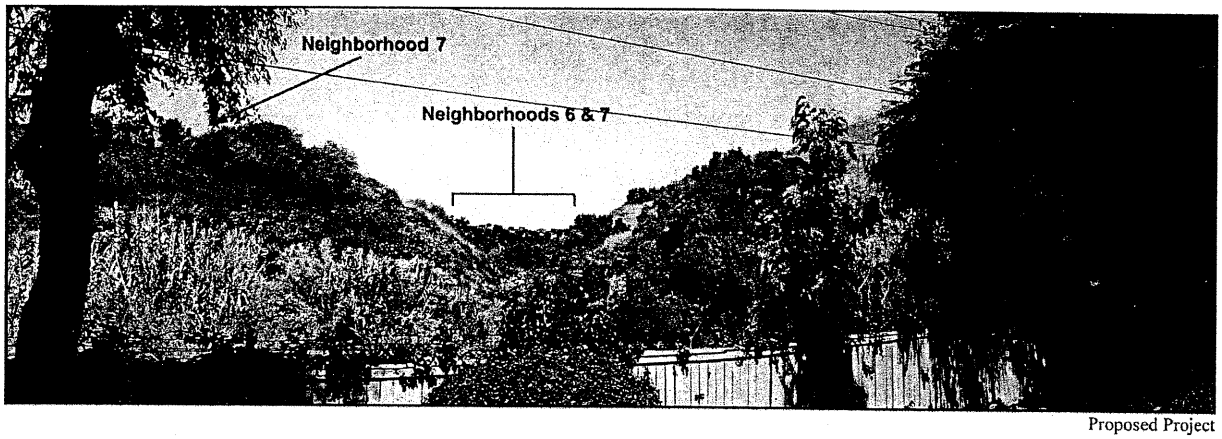

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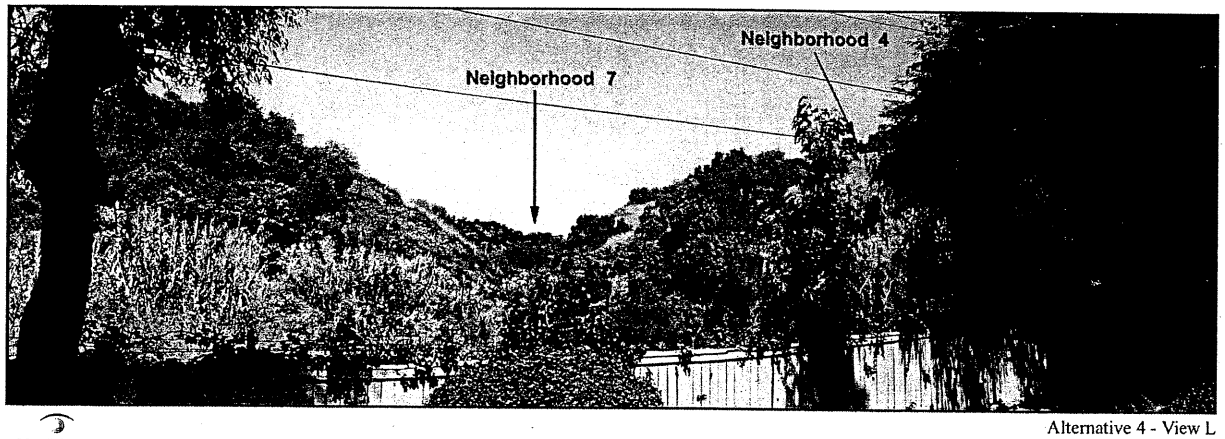

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Alternative 4 - View L

Exhibit 6-8

City of Brea Alternative - View L

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6.4.3 Attainment of Project Objectives

Many of the project objectives are not achieved under the City Alternative. The City plan conflicts with existing oil and gas production facilities, exposes houses to known hazards by locating development in close proximity to tar seeps and fault lines, and ignores the existing roadway alignment for internal circulation. Perhaps more importantly, the alternative calls for an import of fill of striking proportions that would be extremely disruptive to the community and the environment. The mere cost (approximately $8 per cubic yard) would be prohibitive. The overall financial burden of grading would make the project unfeasible.

Additionally, the City Alternative excludes recreational elements such as new trails and new local parks, and restricts community access to existing park facilities. Because of the lower number of dwelling units proposed with the City Alternative (680 to 755, including property beyond the purview of this project), the potential for the project to support a diversity of housing styles and provide additional dwelling units to influence the jobs/housing imbalance is significantly impacted.

For all of the foregoing reasons, the applicant has rejected the City Alternative.

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6.5 Project Alternative 5 - Golf Course and Large-Lot Residential (Reduced Density) Project

6.5.1 Description of Alternative

This project alternative provides for an 18-hole golf course and approximately 246 acres of residential uses in mini-ranchettes or estates with a minimum lot size of 10,000 square feet. This project alternative is graphically depicted in Exhibit 6-9. The residential acreage is assumed to be completely graded; therefore, the land area could alternatively accommodate approximately 1,400 residential units. Since a 1,445-unit alternative is already examined herein, attention will focus on the combination of the golf course and the 738-unit ranchette alternative.

This alternative is considered as a reduction in residential land use and a substantial increase in recreational land use.

6.5.2 Impacts of Alternative

a. Land Use and Planning

This alternative could be found consistent with the Orange County General Plan. This alternative produces approximately 3 units per net acre, resulting in a total of as many as 738 units. The County of Orange General Plan residential density range is fairly broad, and this alternative could be accommodated. The fact that fewer housing units would be produced further exacerbates the housing shortage in the county, and it is typical of lower densities to be considerably more expensive and accessible to fewer people than higher densities. This could potentially create impacts with the County's objectives in the Housing Element to achieve very low and low income housing.

b. Agricultural Resources

Impacts to agricultural resources are similar to the proposed project.

c. Population and Housing

This alternative may be similar to the proposed project in terms of persons per household, as larger homes tend to produce more children and other occupants (elderly parents, domestic help, etc.). Thus, although there are fewer homes, the total population may be similar to the proposed project. Therefore, no substantial difference in the alternative and the proposed project is perceived at this time.

The alternative does not propose on-site housing affordable to persons whose incomes fall in the very low to low income categories and, barring an off-site alternative, would not be consistent with the County General Plan.

d. Geophysical

Implementation of this alternative would result in a significantly greater amount of grading and landform alteration than the proposed project. The addition of an 18-hole golf course encompassing over 200 acres of the site would result in significantly greater amounts of grading and landform alteration despite the reduction of residential units. The topography of the site is steep and rugged and the landform alteration efforts involved in transforming the current hilly condition into flat, leveled golf course would be geologically impossible and infeasible. Approximately 5,991,410 additional cubic yards of grading would be required to establish this alternative. As the site is located in the seismically active region of Southern California, there would be fewer seismic-related impacts due to the increase in amount of open space and fewer structures. This alternative would expose fewer people and building structures in the immediate vicinity to potential impacts associated with seismic activity, slope stability, tar seeps, and methane gas than the proposed project. Overall, geological impacts associated with the Golf Course and Large-Lot Residential alternative would be potentially more significant than the proposed project.

e. Hydrology and Drainage

Implementation of this alternative would result in greater short-term peak runoff impacts than the proposed project, as the natural drainage areas are graded and filled for the golf course. Long-term peak runoff impacts would be significantly reduced for this alternative as a result of less impervious surface areas than the proposed project. This alternative would significantly impact on-site designated drainage tributaries, which the proposed project mitigates and avoids. Additional implementation of drainage facilities (e.g., detention basins) and project specific mitigation measures would be required for this alternative in order to reduce potentially significant hydrology and drainage impacts to below levels of significance. Hydrology and drainage impacts associated with this alternative would be potentially more significant than with the proposed project.

f. Water Quality

This alternative would result in a significantly greater amount of pollutant load as a direct result of development in previously identified oil-saturated areas of the site, which the proposed project would avoid. Additional water quality impacts associated with the extensive use of fertilizers and pesticides for the golf course operation would result in significantly greater impacts than the proposed project. This alternative would develop in geological constraint areas, such as tar seep areas, that would result in greater impacts to water quality than the proposed project. Additional implementation of structural and non-structural Best Management Practices (BMPs) would be required for this alternative to reduce potentially significant water quality impacts to less than significant levels. Water quality impacts associated with this alternative would be potentially more significant than with the proposed project.

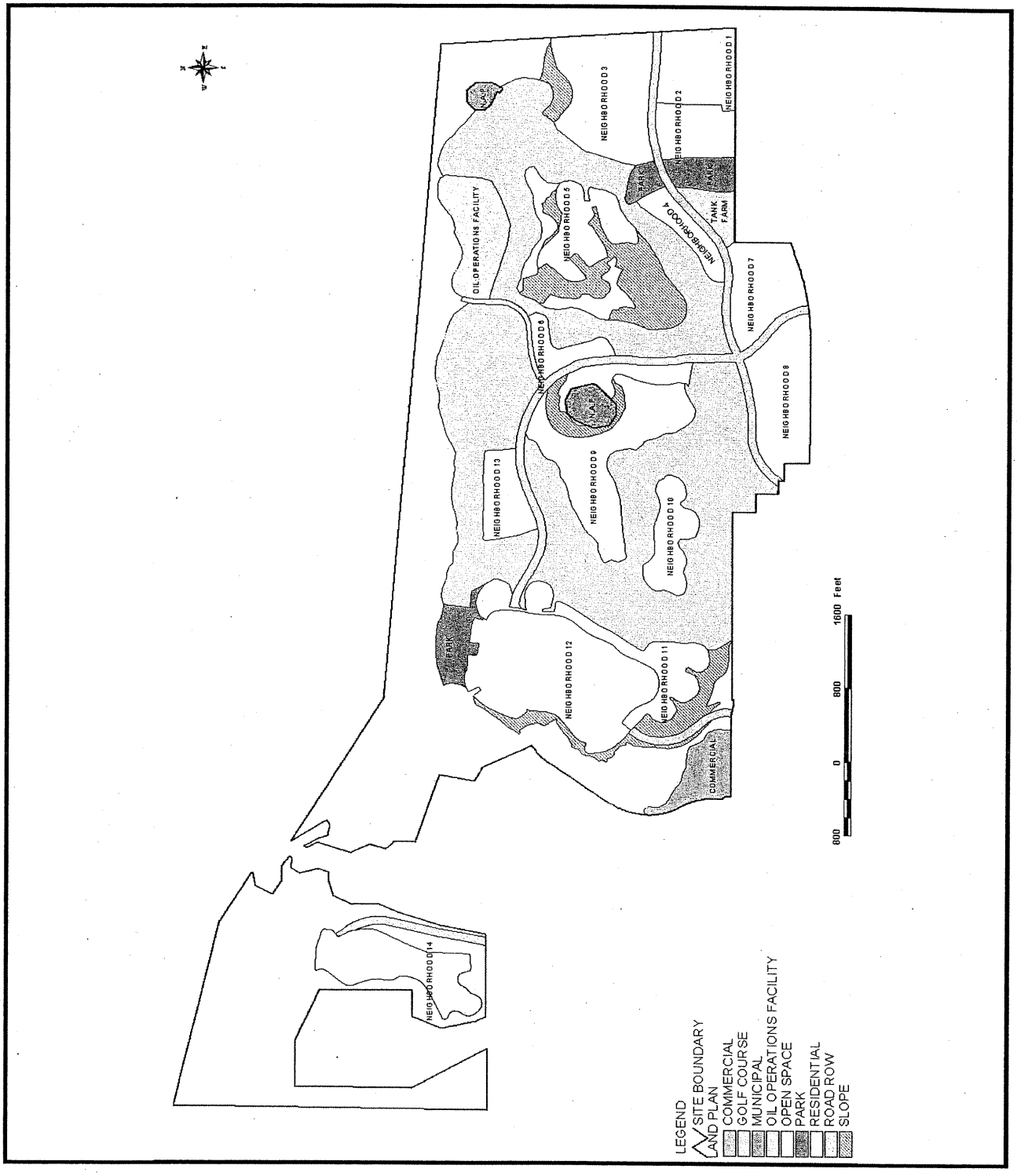

Exhibit 6-9

Golf Course and Large-Lot Residential (Reduced Density) Project Alternative

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g. Transportation/Circulation

While this alternative produces fewer units, the large-lot/lower-densities design can produce higher average daily trips per unit with such trips as domestic help, and gardener and other service oriented trips according to the Institute of Transportation Engineers *Trip Generation Tables, Sixth Edition.* The actual traffic impact is slightly less than the proposed project. The golf course can be expected to attract many users, particularly if it is public, which could approximate the traffic volumes generated by the public use site in the proposed project.

This alternative deletes Tonner Canyon Road and realigns Valencia Avenue to turn west along the ridgeline and connect to the existing Tonner Canyon Road at the Orange (SR 57) Freeway ramp. As a result of this realignment, project access would either be on Lambert Road or Valencia Avenue adjacent to the public use area.

h. Air Quality

Short-term impacts to air quality are expected to increase due to additional grading compared to the proposed project. Long-term air quality impacts would be similar to the proposed project.

i. Noise

Impacts are expected to be comparable to those of the proposed project.

j. Biological Resources

With respect to biological resources, this alternative will result in considerably more impacts than the proposed project for several reasons. First, Cable Canyon must be graded for the golf course, causing a permanent loss of this area for refuge and transition for wildlife. Second, because the golf course takes a considerable amount of land, the residential must be relocated to different parts of the site in some cases. This produces two effects – the occupation of open space land with residential to the detriment of species and resources there (including the California gnatcatcher), and the occupation of the site by the golf course. The cumulative effect virtually eliminates most, if not all, of the habitat values on-site. In terms of feasibility, it is questionable whether federal and state agencies would grant the habitat and species related permits necessary to implement this plan.

k. Aesthetics

From an aesthetics standpoint, this alternative may be superior because of the pleasant aspect of a golf course and lower density housing. However, to create this setting, considerable grading and revegetation would have to occur. Ridgeline development would be limited to parks and the golf course, but this would still result in substantial ridgeline alteration.

l. Cultural/Scientific Resources

Impacts would be the same as predicted for the proposed project.

m. Recreation

As with the 1,445-Unit Alternative, the public use area is replaced with residential. In terms of recreation, however, the golf course presents an amenity, if public. Currently, there is no evidence of sufficient public need or interest to financially support a public golf course. If the golf course were private, its value would be eliminated as a public recreational amenity. Any impacts to pedestrian, equestrian, or bike trails are unknown based on the information provided for this alternative.

n. Mineral Resources

This alternative preserves the existing oil operations. Impacts to mineral resources (petroleum and natural gas) would be comparable to the proposed project.

o. Hazards

Impacts relating to hazards are no different in this alternative than for the proposed project. The project is required to be built free of hazards that are avoidable. This is accomplished by observing the requirements of the Division of Oil and Gas for oil-related operations, observing the Alquist-Priolo Act, and using sound engineering practice with respect to geology. However, this alternative invades areas of tar seeps that will require remediation, increasing the amount and duration of landform modification.

p. Public Services

Implementation of this alternative would result in a decrease in demand and impacts on public services as compared with the proposed project. The 18-hole golf course along with larger residential pads would require less demand on fire and police protection as well as school services compared to the proposed

project. Public services impacts associated with this alternative would be potentially less significant than the proposed project.

q. Utilities and Service Systems

Implementation of this alternative would result in significantly greater demands on utilities and service systems than the proposed project. The water demands for an 18-hole golf course and large residential lots with the potential for swimming pools in backyards are significantly greater with regard to water services than the proposed project. This alternative would consume an estimated 822,800 gallons of water per day, an increase of 50% over the proposed project, and would have a greater impact on sewer capacity. This alternative would result in decreased consumption/contribution of electricity, gas, and telecommunication services as compared with the proposed project. Overall, utilities and service systems impacts associated with this alternative would be potentially more significant than with the proposed project.

6.5.3 Attainment of Project Objectives

Due to the substantial landform modifications required to build the golf course, this project alternative does not meet the following project objectives:

- Minimize the overall adverse environmental impacts throughout the project site.
- Preserve and enhance permanent open space and habitat.
- Provide a circulation network that ... maximizes the use of existing internal roadway alignments.
- Ensure that open space linkages for wildlife movement are preserved.

Additionally, with the reduced dwelling unit densities, the project's ability to provide additional housing to the north Orange County area to the maximum extent possible, is diminished. The impacts to oil operations access are also greater with this alternative than with the proposed project. For these reasons, the applicant has rejected this alternative.

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6.6 Project Alternative 6 – City of Brea General Plan

6.6.1 Description of Alternative

This alternative analyzes the City of Brea General Plan in place at the time the Tonner Hills project development application was submitted to the County (November 2000). This alternative evaluates development of land uses within all land use categories currently designated for the project site. Exhibit 6-10 (also provided as Exhibit 4.1-6 on page 4.1-15 of the Land Use and Planning section of this EIR) illustrates the areas designated for each land use category. The table below provides a summary of the land uses and intensity assumptions for this alternative. Section 4.1, Land Use and Planning, contains additional analysis of comparative land use intensities. The buildout portions of this alternative will be based primarily on the proposed project neighborhood configurations and evaluates the potential land use intensities over the 789.8-acre project site. This alternative evaluates 1,093 dwelling units distributed over the 746.5 acres of residential land uses. Regarding non-residential categories, the General Plan designates 9.2 acres for General Commercial uses and 30.5 acres for Public Facilities and Grounds, both located at the northern section of the site on either side of the Orange (SR 57) Freeway at Tonner Canyon Road. An additional 3.6 acres designated as Office Facilities is located at Wild Cat Way just north of Lambert Road. For purposes of this analysis, the 30.5-acre Public Facilities portion assumes the construction of a 60,000-sq.ft. regional postal facility.

Table 6-4 - City of Brea General Plan Land Use Summary

Land Use Designations (Allowable Density)	Acreage	Dwelling Units
General Commercial	9.2	
Hillside Residential (2 DU/AC)	53.4	107
Low Density Residential	146.1	877
Medium Density Residential (12 DU/AC)	0	0
Rural Residential (0.2 DU/AC)	547	109
Public Facilities and Grounds	30.5	
Office/Financial	3.6	
Total	789.8	1,093

For purposes of evaluation only, this alternative considers the City of Brea's governing plans and ordinances under which site development could occur. Although the project is outside the City boundaries, the City's 2000 General Plan included land use designations for this adjacent parcel, which are acknowledged here.

6.6.2 Impacts of Alternative

a. Land Use and Planning

This alternative encompasses several land use categories within the City of Brea General Plan. As reflected in the above Land Use Summary, the project site consists of General Commercial, Hillside, Low Density and Rural Residential, Public Facilities, and Office/Financial uses. Using the dwelling unit per acre ratios provided in the General Plan, 1,093 dwelling units would be potentially built on 789.8 usable acres, along with commercial, office, and public facilities uses. No inconsistencies would be found between the City of Brea General Plan and the County of Orange General Plan under this alternative, as the County General Plan allows Suburban Residential and Community commercial uses, which would accommodate all of the development proposed by this alternative.

b. Agricultural Resources

This alternative has the same impact on agricultural resources as the proposed project.

c. Population and Housing

Using the Center for Demographic Research population figures, the number of persons per household is projected at 2.49. By using that same figure, the population would be 2,722 persons. The City of Brea is currently working on the 2000-2005 update to their Housing Element, and current figures are not available to assess the impact of an additional 1,093 dwelling units. Using SCAG's 1999 RHNA, Brea's current fair share of housing over the next five years is projected at 1,052 units. This alternative falls within the City and County limits for population and housing over a 10-year projected buildout.

d. Geophysical

Implementation of the City of Brea General Plan Alternative would entail substantially greater amounts of grading and landform alterations as compared to the proposed project. This alternative proposes a total of 1,093 dwelling units. This addition of 179 residential units would result in an increase of 20% over the proposed project's 914 units. The commercial, office, and public facilities land uses would add substantially to the number of buildings within the project area, and additional grading along the northwestern portion of the site would be substantially greater. The site is located in the seismically active region of Southern California. There would be a geological impact similar to the proposed project. This alternative would expose additional people and building structures in the immediate vicinity to potential impacts associated with seismic activity, slope stability, tar seeps, and methane gas greater than the proposed project. Geological impacts associated with the City of Brea General Plan Alternative would be incrementally more significant than the proposed project.

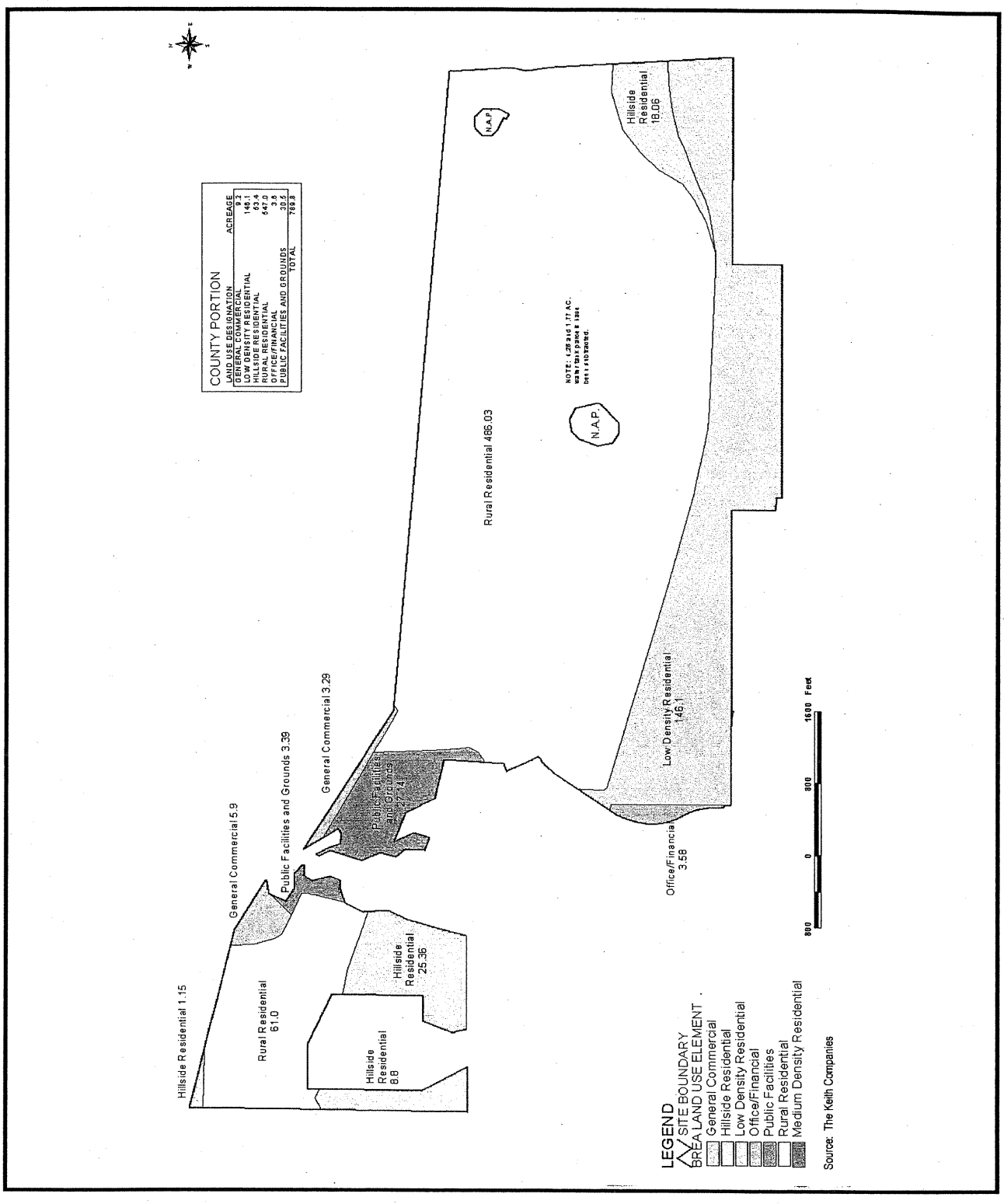

Exhibit 6-10

Existing City of Brea General Plan Land Use Designations with Acreages

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e. Hydrology and Drainage

Implementation of the City of Brea General Plan Alternative would result in significantly greater amounts of peak runoff as compared to the proposed project. The construction of 1,093 dwelling units, a 60,000-sq.ft. postal facility, and general commercial and office buildings would result in an increase of impervious surface areas. Additional drainage facilities (e.g., detention basins) and mitigation measures would be required to reduce potentially significant impacts to below levels of significance. Impacts associated with the City of Brea General Plan Alternative would be potentially more significant than the proposed project.

f. Water Quality

This alternative would result in a significantly greater amount of pollutant load as a direct result of the increase of 179 dwelling units, the addition of a postal facility and commercial and office buildings, and the increase of impervious surface area as compared to the proposed project. Additional implementation of structural and non-structural Best Management Practices (BMPs) would be required for this alternative to reduce potentially significant water quality impacts to less than significant levels. Impacts associated with this alternative would be potentially more significant than the proposed project.

g. Transportation/Circulation

Overall, this alternative would generate 27,157 new average daily trips through a combination of residential, public facilities, general commercial, and office/financial uses. A comparison of the traffic generation estimates for this alternative and the proposed project can be found on Exhibit 4.1-7, Equivalent Development Units. Overall, this alternative would generate 50% more average daily trips and have a greater impact on transportation and circulation than the proposed project.

(1) Residential

Assuming the internal circulation would remain consistent with the proposed project, this alternative would have an impact on the amount of traffic generated by the 1,093 homes, which would be an increase of 179 dwelling units over the proposed project. Using the trip generation factor of 12 average daily trips per dwelling unit, the residential portion would generate 13,116 ADT. This alternative also assumes the same ingress/egress points as the proposed project, so the benefits of access via Tonner Hills Road would remain the same. Attendant air quality considerations are discussed below.

(2) Public Facilities and Grounds

For purposes of analysis, the portion of the site assumes the construction of a 60,000-sq.ft. regional postal facility. Using Institute of Transportation Engineers (ITE) trip generation rates, the average daily counts at 108.17 per 1,000 sq.ft. result in additional traffic generation of 6,491 vehicles per day.

(3) General Commercial/Office

These two designations comprise 9.2 and 3.6 acres of the site, respectively. Traffic analysis based on ITE trip generation rates would result in an average daily traffic count of 6,884 for the commercial portion and 666 for the office portion, for a combined additional daily traffic generation of 7,550 vehicles.

h. Air Quality

Short-term impacts would be incrementally higher due to the additional construction necessary to accomplish the increase in housing units and non-residential development. Long-term impacts would be significantly higher under this alternative due to the addition of 9,032 average daily trips, with the bulk of the impact concentrated in one 39.7-acre portion of the site. Air quality in this area is already impacted by the presence of the Orange (SR 57) Freeway, which bisects the commercial/public facilities portion of the project. This alternative would result in greater long-term impacts than the proposed project.

i. Noise

Noise impacts would remain virtually the same in the residential areas. The incremental noise level for an additional 179 dwelling units is not substantial enough to be a significant impact. Noise generated by the public facilities and commercial uses can be assumed to create a greater impact due to increased traffic generation in a concentrated location.

j. Biological Resources

This alternative has the potential to create significant impacts to biological resources. Assuming development of the General Commercial, Public Facilities and Office land uses, the wildlife passage along Tonner Creek near the intersection of Tonner Canyon Road and the Orange (SR 57) Freeway in the northwestern portion of the site will be impacted by the grading and development to accommodate those land uses. The biological assessment identified the main habitat areas for the California gnatcatcher and the cactus wren on the portions of the project site east of the Orange (SR 57) Freeway where public facilities and commercial uses are located in this alternative. These two species have been designated as threatened and sensitive, respectively. This alternative would develop these areas and have a more significant impact on these species than the proposed project.

k. Aesthetics

The necessity for increased density to accommodate the additional dwelling units could have an aesthetics impact. Additionally, it would be necessary to utilize the higher densities allowed under the General Plan, resulting in more houses on smaller lots, although this impact would not be considered significant. There would be an aesthetics impact on the public facilities/commercial portion of the site by virtue of construction of buildings in an area that would remain natural under the proposed project.

l. Cultural/Scientific Resources

Impacts are similar to the proposed project.

m. Recreation

The City of Brea General Plan designates dedication of 5 acres of parkland for each 1,000 persons. Under this alternative, approximately 15 acres of parkland would have to be dedicated or fees paid pursuant to the Local Park Code. The proposed project has designated 7.6 acres for parkland uses in addition to 32.7 acres of public use area currently envisioned as a sports park. Pedestrian, equestrian, and bicycle trails would remain consistent with the proposed project and would be consistent with the City General Plan requirements.

n. Mineral Resources

The development footprint of the general/commercial land use would extend into some areas of oil production, thus reducing access to and extraction of on-site mineral resources.

o. Hazards

Impacts are similar to the proposed project.

p. Public Services

Implementation of this alternative would result in greater demand and impacts on public services than the proposed project. This alternative is proposing the addition of 179 residential dwelling units, which result in approximately 20% increase in public services to be provided compared to the proposed project of 914 units. The impact on fire and police protection services would be greater than with the proposed project. Approximately 100 additional students would be generated by this alternative for a total of 611 students compared to the 511 students generated by the proposed project. The proposal of additional residential units

in this alternative would allow the school district to collect additional developer fees to assist in mitigating school impacts. The additional developable acreage allowed for commercial, office and public facilities uses would also result in impacts on public services. Additional fees would be necessary to assist in mitigating these impacts. Impacts associated with this alternative would be potentially more significant than the proposed project.

q. Utilities and Service Systems

This alternative would result in greater demands on utilities and service systems than the proposed project. This alternative is proposing the addition of 179 residential units, resulting in approximately 20% increase in utilities services to be provided. Based on the sole increase of 179 residential dwelling units, the demand for additional water, sewer, electricity, solid waste, gas, and telecommunications services would increase. Approximately 71,600 additional gallons of water supply per day, 57,280 additional gallons of wastewater per day, 365 additional tons of solid waste per year, 1,074 kW of additional electricity per year, and 78,402 therms of additional natural gas consumption per year are estimated for this alternative compared to the proposed project. The 12.8 acres of commercial/office and the 30.5 acres of public facilities uses can be assumed to further impact utilities and service systems. Utilities service providers would remain unchanged as depicted in Section 4.17 of this EIR. Public services impacts associated with this alternative would be more significant than the proposed project.

6.6.3 Attainment of Project Objectives

This alternative fails to meet the objective of minimizing overall adverse environmental impacts throughout the project site unless additional mitigation measures are identified. This alternative also does not preserve open space linkages for wildlife movement. The impact of an additional 179 housing units, as well as 12.8 acres of commercial/office uses and 30.5 acres of public facilities uses, would affect transportation, air quality, public services, and utilities. Further study in these areas would be necessary to determine the best methods of mitigating the associated impacts. This alternative would make the retention of oil operations difficult, as the site plans impede access and do not consider existing facilities. As a result, the applicant has rejected this alternative.

6.7 Project Alternative 7 – City of Brea Revised General Plan (30% Reduction)

6.7.1 Description of Alternative

On July 17, 2001, the Brea City Council approved a 30% reduction in intensity of certain land areas within the General Plan as well as reclassifications of several roadways. At the Council meeting, City staff stated that the project area (defined as 823.7 acres) would support 1,252 dwelling units under a General Plan buildout, or 881 dwelling units with a 30% reduction. The final reading of the ordinance amending the General Plan was adopted on August 7,2001. This alternative analyzes the City of Brea General Plan as revised in July 2001. The Revised General Plan became effective subsequent to the submittal of the Tonner Hills project development application which was submitted to the County of Orange (November 2000).

This alternative evaluates development of land uses within all land use categories currently designated for the project site and excludes property outside the project boundary. Exhibit 6-11 (also provided as Exhibit 4.1-6 on page 4.1-15 of the Land Use and Planning section of this EIR) illustrates the areas designated for each land use category. The table below provides a summary of the land uses and intensity assumptions for this alternative. To provide a more equitable comparison between the City's Revised General Plan and the proposed project, the land use summary has been adjusted to reflect only the project area. As a result, the total number of dwelling units is less than the 881 dwelling units mentioned at the City Council meeting. However, the buildout portions of this alternative will be based primarily on the proposed project neighborhood configurations. Regarding non-residential categories, the General Plan designated 9.2 acres for general commercial uses and 30.5 acres for Public Facilities and Grounds, both located at the northern section of the site on either side of the Orange (SR 57) Freeway at Tonner Canyon Road. An additional 3.6 acres designated Office Facilities is located at Wild Cat Way just north of Lambert Road. For purposes of analysis, the 30.5-acre Public Facilities portion assumes the construction of a 60,000-sq.ft. regional postal facility

Table 6-5 - City of Brea Revised General Plan Land Use Summary

Land Use Designations (Allowable Density)	Acreage	Dwelling Units
General Commercial	9.2	
Hillside Residential (2 DU/acre)	53.4	75
Low Density Residential (6 DU/acre)	146.1	614
Medium Density Residential (12 DU/acre)	0	0
Rural Residential (0.2 DU/acre)	547.0	77
Public Facilities and Grounds	30.5	
Office/Financial	3.6	
Total	789.8	766

This alternative addresses the City of Brea's sphere of influence relationship (which is discussed in Chapter 4.1) to the project and the relevant City of Brea governing plans and ordinances under which site development could occur.

6.7.2 Impacts of Alternative

a. Land Use and Planning

As in the City of Brea General Plan Alternative, this alternative encompasses several land use categories within the City of Brea General Plan. However, based on the August 7, 2001 adoption of a 30% reduction in intensity for certain land areas, this alternative provides an analysis reflecting the lower density/intensity figures. A 30% reduction in density results in a total allowable dwelling unit figure of 766. This reduction brings the dwelling unit figure in closer proximity to the figure in the City of Brea Recommended Project Alternative. The land form would remain basically the same as in the proposed project, with a lower density per acre factor. These uses would remain consistent with the City of Brea General Plan and the County of Orange General Plan. The commercial, office and public facilities use designations and their attendant impacts are analyzed and discussed below. Additional discussion regarding land use designations and equivalent development units is provided in Section 4.1, Land Use and Planning.

b. Agricultural Resources

Impacts would be similar to the proposed project.

c. Population and Housing

Using the calculation from Center for Demographic Research of 2.49 people per household, the population of this alternative would be 1,907. This increase in population and new housing is within the City and County projections over a 10-year buildout.

d. Geophysical

This alternative would result in a slight reduction of grading and landform alterations in residential areas as compared to the proposed project. This alternative proposes a total of 766 dwelling units. The deletion of 148 residential units would result in a decrease of 16% compared to the proposed project's 914 units. The site is located in the seismically active region of Southern California. There would be a geological impact similar to the proposed project. This alternative would expose fewer people and structures in the immediate residential area to potential impacts associated with seismic activity. However, the commercial, office and public facilities uses would add substantially to the number of buildings within the project area, with attendant potential for seismic impacts. In addition, a greater amount of grading would be required to develop these areas, creating a significantly greater impact than the proposed project.

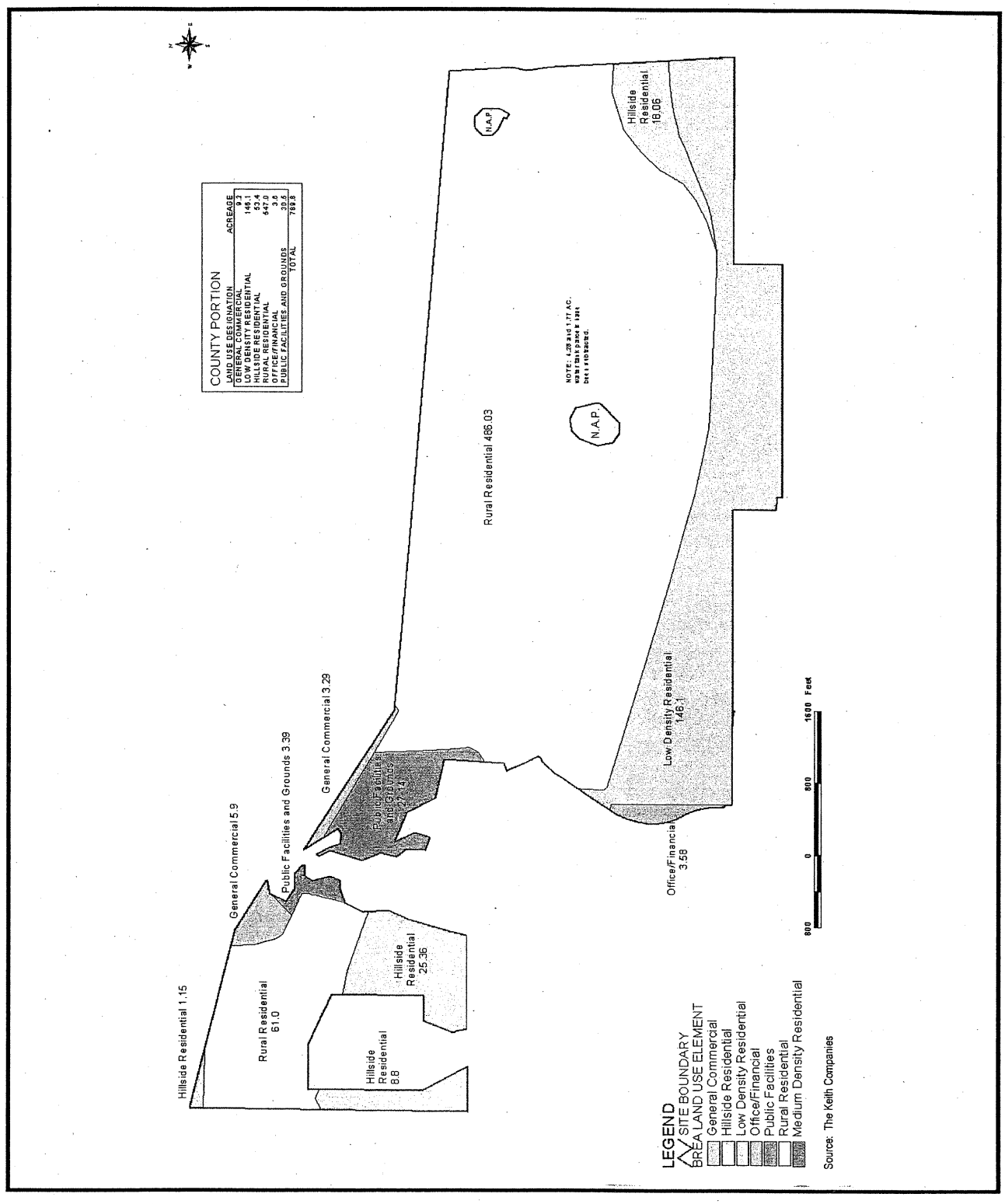

Exhibit 6-11

Existing City of Brea General Plan Land Use Designations with Acreages

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e. Hydrology and Drainage

Implementation of this alternative would result in greater peak runoff as compared to the proposed project. Drainage facilities (e.g., detention basins) and mitigation measures analyzed by the proposed project would also be implemented in this alternative to reduce potentially significant impacts to below levels of significance. Impacts associated with this alternative would be more significant than the proposed project due to the additional construction in the commercial, office and public facilities areas of the project.

f. Water Quality

This alternative would result in a higher amount of pollutant load. The decrease of 148 residential dwelling units results in the reduction of water quality impacts as compared to the proposed project. However, the additional construction and development related to the commercial, office and public facilities uses would create a greater impact on water quality. Implementation of structural and non-structural Best Management Practices (BMPs) analyzed in the proposed project would be required for this alternative to reduce potentially significant water quality impacts to less than significant. Impacts associated with this alternative would be potentially more significant than the proposed project.

g. Transportation/Circulation

Overall, this alternative would generate 23,233 average daily trips through a combination of residential, public facilities, general commercial, and office/financial uses. A comparison of the traffic generation estimates for this alternative and the proposed project can be found on Exhibit 4.1-7, Equivalent Development Units. Overall, this alternative would generate 28% more average daily trips and have a greater impact on transportation and circulation than the proposed project.

(1) Residential

This alternative would have a less severe impact from residential uses on traffic than the proposed project. The 30% General Plan reduction in housing would mean that 766 dwelling units would generate 9,192 ADT. Again this assumes the internal circulation pattern would remain as proposed, with Tonner Hills Road and Lambert Avenue providing the ingress and egress points.

(2) Public Facilities and Grounds

For purposes of analysis, the portion of the site assumes the construction of a 60,000-sq.ft. regional postal facility. Using ITE trip generation rates, the average daily counts at 108.17 per 1,000 sq.ft. result in additional traffic generation of 6,491 vehicles per day.

(3) General Commercial/Office

These two designations comprise 9.2 and 3.6 acres of the site, respectively. Traffic analysis based on ITE trip generation rates would result in an average daily traffic count of 6,884 for the commercial portion and 666 for the office portion, for a combined additional daily traffic generation of 7,550 vehicles.

h. Air Quality

The reduction of dwelling units does not present a measurable enough quantity to create a significant decrease in impact. However, long-term impacts would be significantly higher under this alternative due to additional average daily trips and vehicle miles traveled, with the bulk of the impact concentrated in one 39.7-acre portion of the site. Air quality in this area is already impacted by the presence of the Orange (SR 57) Freeway, which bisects the commercial/public facilities portion of the project. This alternative would result in greater long-term impacts than the proposed project.

i. Noise

Noise impacts would remain virtually the same in the residential areas. The incremental noise level for the decrease in units would not present a measurable difference. Noise generated by the public facilities and commercial uses can be assumed to create a significant impact due to increased traffic generation in a concentrated location.

j. Biological Resources

This alternative has the potential to create significant impacts to biological resources. Assuming development of the General Commercial, Public Facilities and Office land uses, the wildlife passage along Tonner Creek near the intersection of Tonner Canyon Road and the Orange (SR 57) Freeway in the northwestern portion of the site will be impacted by the grading and development to accommodate those land uses. The biological assessment identified the main habitat areas for the California gnatcatcher and the cactus wren on the portions of the project site east of the Orange (SR 57) Freeway where public facilities and commercial uses are located in this alternative. These two species have been designated as threatened and sensitive, respectively. This alternative would develop these areas and have a more significant impact on these species than the proposed project.

k. Aesthetics

Lower densities could provide a more aesthetically appealing view. However, the relatively insignificant number of fewer houses would have a less than dramatic effect. There would be an aesthetics impact on

the public facilities/commercial portion of the site by virtue of construction of buildings in an area that would remain natural under the proposed project.

l. Cultural/Scientific Resources

Impacts are similar to the proposed project.

m. Recreation

The City of Brea General Plan designates the dedication of 5 acres of parkland for each 1,000 persons. Under this alternative, 9.5 acres of parkland would be required to support the population of 1907. The proposed project configuration designates 7.6 acres of parkland plus 32.7 acres of public use area envisioned to be a sports park. The proposed pedestrian, equestrian, and bicycle trails would remain consistent with the proposed project, and the alternative would meet the General Plan park requirements.

n. Mineral Resources

The development footprint of the general commercial land use would extend into some areas of oil production, thus reducing access to and extraction of mineral resources.

o. Hazards

Impacts are similar to the proposed project.

p. Public Services

Implementation of this alternative would result in a slightly higher demand and impacts on public services. This alternative is proposing the deletion of residential dwelling units from the proposed project which would result in approximately 16% decrease in demand for public services. However, the additional development of commercial, office and public facilities use areas would result in an increased demand for fire and police services. Impacts on fire and police protection services would be greater than the proposed project. Approximately 83 fewer students would be generated by this alternative for a total of 428 students compared to 511 students using the proposed project. This alternative would slightly reduce the school district's ability to collect additional developer fees to assist in mitigating school impacts. Public Services impacts under this alternative potentially would be of greater significance than those of the proposed project.

q. Utilities and Service Systems

This alternative would result in greater demands on utilities and service systems over the proposed project. The deletion of dwelling units would result in approximately 16% decrease of utilities services to be provided. Based on this decrease in dwelling units, the demand for additional water, sewer, electricity, solid waste, gas, and telecommunications services would decrease incrementally. A reduction of approximately 59,200 gallons of water per day, 47,360 gallons of wastewater per day, 303 tons of solid waste per year, 88 kW of electricity per year and 64,824 therms of natural gas per year are estimated for this alternative. However, the 12.8 acres of commercial/office and the 30.5 acres of public facilities uses can be assumed to further impact utilities and service systems. Utilities service providers would remain unchanged as depicted in Chapter 4 of the proposed project EIR. Impacts under this area would be more significant than the proposed project.

6.7.3 Attainment of Project Objectives

This alternative fails to meet three of the project objectives as identified in the EIR:

- Provide additional housing in the north Orange County area to the maximum extent possible in an effort to reduce the jobs/housing imbalance.
- Create a variety of lot sizes and configurations which support a diversity of housing styles throughout the planned community.
- Ensure that open space linkages for wildlife movement are preserved.

The lower density, fewer dwelling unit alternative reduces the opportunity to provide needed housing. Fewer dwelling units also fail to provide for a wider variety of housing styles and prices, reducing the opportunity to meet the County's affordable housing requirements. Additionally, the expenses associated with developing the site and the reduced number of dwelling units make this alternative economically infeasible. Because of these reasons, the applicant has rejected this alternative.

6.8 Project Alternative 8 – 624-699 Dwelling Units Using Project Configuration

6.8.1 Description of Alternative

This alternative incorporates the number of dwelling units in the City of Brea Alternative onto the development footprint defined in the proposed project. This alternative takes advantage of the balanced grading in the proposed project, as well as the other opportunities for reduced impacts related to most of the topical issues presented in each alternative. This alternative eliminates the 56 dwelling units on the City of Brea's Recommended Project which were located on the parcel that is no longer owned by the applicant.

This alternative is considered in order to address the sphere of influence considerations for the City of Brea, and to evaluate a much lower density alternative.

A variant to this alternative is considered herein, as shown on Exhibit 6-12. Briefly, the alternative would be as stated above, but no development would occur on ridgelines as identified by the City of Brea in its Ridgeline Ordinance, resulting in a modified project footprint. This would have the effect of reducing total development area by an estimated 16 acres, and reducing units by 100. There would be no grading of Park Ridge in Neighborhoods 1 and 2, and a pullback from the ridgeline in Neighborhood 6.

6.8.2 Impacts of Alternative

a. Land Use and Planning

(1) 624-699 Alternative

The Land Use Element of the County's General Plan establishes land use designations of Suburban Residential and Community Commercial for the Tonner Hills Planned Community. This alternative would provide for the construction of a maximum of 699 dwelling units on the project site. This represents a reduction of 215 dwelling units from the proposed project. These lower densities would result in less diversity in types of housing.

(2) No Ridgeline Development Variant

This variation would also reduce the number of dwelling units (between 215 and 290), but targets specific reductions in Neighborhood 6 (10 units), Neighborhood 1 (16 units) and Neighborhood 2 (74 units). the remaining reductions would be distributed across the project site, and would also result in less diversity in housing types.

b. Agricultural Resources

Impacts are similar to the proposed project.

c. Population and Housing

(1) 624-699 Alternative

Using the Center for Demographic Research figures relating to County unincorporated areas, this alternative would project a population of 1,740 persons. SCAG's RHNA has projected a housing total for the Brea area of 1,052 units between 1999 and 2004. The area could support this level of development and maintain consistency with the SCAG projections. However, the reduction in number of dwelling units diminishes the efforts to address the acute jobs-to-housing imbalance in the county.

(2) No Ridgeline Development Variant

This alternative would further reduce satisfaction of housing projections.

d. Geophysical

(1) 624-699 Alternative

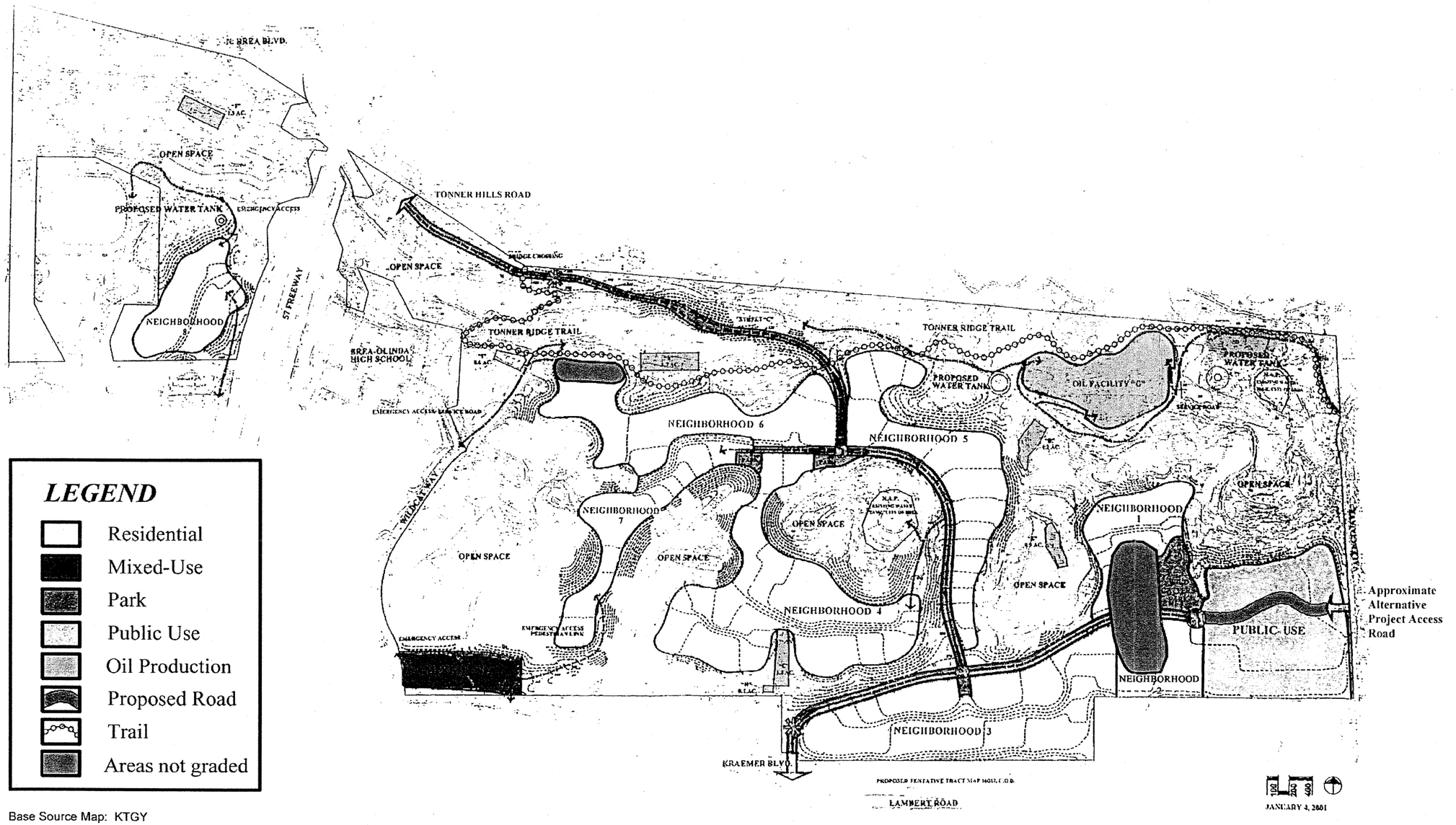
Impacts are similar to the proposed project.

(2) No Ridgeline Development Variant

This variant would reduce the amount of grading by approximately 16 acres and 500,000 cubic yards of material. Since the project's grading plan is balanced on-site, the reduction of this cut, which would be used as fill throughout the site, will result in the need to import fill.

e. Hydrology and Drainage

Impacts are similar to the proposed project.



LEGEND

- Residential
- Mixed-Use
- Park
- Public Use
- Oil Production
- Proposed Road
- Trail
- Areas not graded

Base Source Map: KTGY

Exhibit 6-12
No Ridgeline Development Variant

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f. Water Quality

Impacts would be somewhat reduced by the reduction in the amount of dwelling units and the attendant reduction in the amount of impervious surface impacting peak runoff. Drainage facilities (e.g., detention basins) and mitigation measures analyzed by the proposed project would also be implemented in this alternative to reduce potentially significant impacts to below levels of significance. This alternative would be slightly less significant than the proposed project.

g. Transportation/Circulation

(1) 624-699 Alternative

Implementation of this alternative would result in a less severe impact on traffic. Utilizing the 12 average trips per day figure per dwelling unit, this alternative would produce 15,632 trips per day, or about 2,500 trips fewer than the proposed project. The roadway system proposed by the project would remain the same for this alternative. This alternative would have a less significant impact on traffic than the proposed project.

(2) No Ridgeline Development Variant

While also reducing the number of average daily trips due to the reduction in dwelling units, this variant would add construction-related trips for fill import. An estimated additional 38,000 truck trips would be added onto the site during construction.

h. Air Quality

(1) 624-699 Alternative

Short-term and long-term impacts would be somewhat reduced with this alternative. The reduction in housing development and the attendant reduction in traffic would result in a less significant impact than the proposed project.

(2) No Ridgeline Development Variant

Short-term construction-related vehicle emissions would be greater than the proposed project, resulting from the need to import fill; however, air quality impacts from site grading (primarily PM10) would be reduced.

i. Noise

Noise impacts would remain virtually the same. The incremental noise level for the decrease in dwelling units would not present a measurable difference.

j. Biological Resources

(1) 624-699 Alternative

As this alternative places the 699 dwelling units on the same footprint as the proposed project, the biological impacts would be similar to the proposed project.

(2) No Ridgeline Development Variant

There are no species of concern identified in Neighborhood 1, 2, or the north section of Neighborhood 6, but there would be a reduced level of habitat disturbance. The biological impacts will be less than the proposed project.

k. Aesthetics

(1) 624-699 Alternative

Lower densities could provide a more aesthetically appealing view. However, using the same land form configuration as identified in the proposed project could result in larger homes on larger lots. Lower densities could provide more appealing aesthetics, as there generally is more open space. However, this is not identified as a significant project impact.

(2) No Ridgeline Development Variant

The Park Ridge knoll would not be graded in this alternative. The exterior views into the project would not be changed, as this land formation is not prominent; however, interior views would remain as existing. Additional roadways around the hillock for access into Neighborhoods 1 and 2 would be required. Overall, the impacts would be the same as the proposed project.

l. Cultural/Scientific Resources

Impacts are similar to the proposed project.

m. Recreation

(1) 624-699 Alternative

Utilizing the previous 2.49 persons per dwelling unit figure, there would be a required parkland dedication of 3.85 acres of parkland. The proposed park, pedestrian, equestrian, and bicycle trails would remain consistent with the proposed project and would meet the County requirement.

(2) No Ridgeline Development Variant

In addition to reducing the required park acreage, this alternative would also slightly change the configuration of Wildcatters Park, as the adjacent area would not be graded. This would not result in an impact to recreation.

n. Mineral Resources

Impacts are similar to the proposed project.

o. Hazards

Impacts are similar to the proposed project.

p. Public Services

Implementation of this alternative would result in a significant reduction of demand and impacts on public services. This alternative is proposing a total reduction of dwelling units, which would result in a decrease in demand for public services such as fire and police protection. Approximately 39 fewer students would impact the school system. Impacts under this alternative would be significantly less than the proposed project.

q. Utilities and Service Systems

This alternative proposes fewer dwelling units, which results in a decrease in demand for utilities and service systems. These services include water, sewer, electricity, solid waste, gas, and telecommunications. Utilities services providers would remain unchanged as depicted in Section 4.17 of the proposed project EIR. Impacts under this area would be less significant than the proposed project.

6.8.3 Attainment of Project Objectives

These alternatives fail to meet the following project objectives as identified in the EIR.

- Provide additional housing in the north Orange County area to the maximum extent possible in an effort to reduce the jobs/housing imbalance.
- Create a variety of lot sizes and configurations which support a diversity of housing styles throughout the planned community.
- Balance grading quantities on-site (No Ridgeline Development Variant).

The lower density, fewer dwelling unit alternative reduces the opportunity to provide needed housing. Fewer dwelling units also fail to provide for wider variety of housing styles and prices, reducing the opportunity to meet the County's affordable housing requirements.

The No Ridgeline Development Variant will require the relocation of the collector road providing access to Wildcatters Park and would reconfigure Neighborhood 2 such that it would cease to have sufficient development to serve as a stand-alone community. The reduced densities of this alternative do not provide the economic basis for balancing open space, oil operations, and development. For these reasons, the applicant has rejected this alternative.

6.9 Project Alternative 9 - Very Low Density/Estate Alternative

In close proximity to the date of publication of this Draft EIR, it was learned that the City of Brea General Plan Advisory Committee (GPAC) had engaged in a discussion regarding Tonner Hills project and other properties during which a "1 unit per 5 acres" density alternative was suggested for consideration. No details regarding this alternative were available (e.g., mapping, character, developable area). The City of Brea had not requested that this alternative be considered in the past, and has not requested that it be considered now. The existence of discussion regarding this alternative was learned at the GPAC meeting of March 27, 2002.

In the interests of completeness, the County has elected to give this alternative consideration in this EIR. However, inasmuch as the County requested that the City identify alternatives for consideration in both the NOP process and the separate City Alternative process, this alternative arrives late in the analytical approach. Necessarily, therefore, this alternative is presented with a brief analysis only, as opposed to the more lengthy analysis prepared for the other eight alternatives in this EIR.

Literally, there are numerous alternatives for every project that can be constructed from the data in the EIR. It has long been held that slight variations on alternatives may be discussed in the deliberation process so long as they build on the data in the EIR. In this case, ample data is presented in the EIR to understand a low density alterative without a specific discussion of the alternative itself. Nonetheless, the County is presenting this alternative for the reader's convenience.

6.9.1 Description and Analysis of Alternative

Since no specific details of the alternative were available at the time of this writing, the County has speculated regarding the specifics of this alternative. Basically, there are two ways to look at this alternative – placement of five-acre lots over the entire property, and placement of all the units that could be generated for this property on the development area that is shown on the proposed plan. In both scenarios, it is assumed that the project continues oil operations, and does not include a commercial center or a public use space.

a. One DU per Five Acres over Entire Property

This alternative would generate approximately 158 units. This would represent a "true" 1 DU/5 acre alternative. Distribution of the units would be over the entire property, with home sites being situated where possible, and the remainder of property not devoted to the home sites encompassed within private property ownership, with the exception of ongoing oil operations. Due to the short time period, no specific engineering evaluation of this alternative has been accomplished, and no design is available. However, certain conclusions can be drawn from the data in this EIR and knowledge regarding development to evaluate the environmental impacts of a very low density alternative.

The principal drawback to an alternative such as this is damage to resources. Because five-acre lots are being created, a majority of the site has to be devoted to the subdivision. While the density is arithmetically lower, the impacts are much higher in terms of resource destruction. Clearly, regardless of the restrictions put on land within a private ownership, natural resources are commonly lost due to a property owner's use of the lot. Therefore, in this context, impacts to natural resources would be increased over the proposed project, even though impacts to other areas (e.g, traffic) would be reduced.

Another drawback is in the area of aesthetics. Large lot subdivisions in Orange County typically feature an element of individuality in the design of the buildings. In many cases, this results in a non-uniform, and to some an unpleasant, appearance. Due to the high cost of these lots, from a marketing standpoint the restrictions on design must give way to the individual expression of the property owner. This can result in a variety of styles that are not all compatible with one another. While it is true that there are other areas of Orange County with strict design controls (e.g., Newport Coast, Coto de Caza, South Ranch) that mitigate the design incompatibility problems, these are areas with significantly better views and amenities as compared with the Tonner Hills site. Therefore, the same types of design restrictions would not be financially feasible.

The utility extension issues must also be considered. The compact urban form of the proposed project lends itself to an efficient utility extension plan. In other areas of the County where these densities and lot plans are used (like San Juan Capistrano) utility trenching through open land is necessary to reach the building site created. This results in greater impacts than would be immediately apparent from a schematic layout.

Another consideration is fuel modification. The random nature of building site locations in such a development results in a non-uniform fuel modification area. Often, because these areas are not linear and involve reliance on individual property owners for maintenance of the fuel modification (as opposed to a homeowners association), the fuel modification must extend further and be more comprehensive than that of a standard development, resulting in a significant loss of resources.

Traffic could be reduced by this alternative. Because of the lower number of units, trips would be reduced. However, trips are not reduced as significantly as might be first assumed. First, the lower the density, the higher the trip generation. Second, estates typically have larger families, resulting in more trips per unit. Finally, estates usually have support staff living on-site, which also contributes to traffic impacts and school impacts. Although no specific analysis of traffic has been made at this time, the variance in traffic impacts is not as significant as would first appear.

In conclusion, as the consultant to City staff and the GPAC observed on March 27, there are many problems associated with this type of development, including but not limited to the ones enumerated above. This type of development represents an antiquated subdivision approach that would impact a considerable amount of land rather than respecting ridges, steams, canyons, and vegetation. In terms of design and financial feasibility, the applicant has rejected this alternative.

b. Estate Alternative at 1 DU/5 Acres within Proposed Development Area

Although not raised by the Committee at public meetings, another approach to lower density could be accomplished by computing the total number of units at a rate of 1 DU/5 acres, and locating those units within the 228-acre development area. This approach would result in approximately 46 total units in the project site.

While this alternative would resolve some of the concerns of the previous alternative regarding utility extensions and resource loss, and may result in a lower trip generation per unit than five-acre lots, it still has significant detriments. The aesthetics aspect is still unresolved, as the resulting density is still not compatible with a standard subdivision approach, which results in economies of scale and design. Therefore, impacts can be expected to be roughly the same for this design approach as for the preceding design approach.

Furthermore, the same grading and geotechnical remediation – as well as oil operations remediation – would have to be spread over a much lower number of units. This is a significant cost that the applicant does not believe would be achievable[52]. Plainly stated, the same amount of grading and remediation must be performed for this alternative as for the proposed project. The absorption of cost by the lower number of units is prohibitive, and not attainable in this area, based on marketing information.

The selection of densities for a property in many cases turns on what is desired in the area. A review of the surrounding residential areas in the City of Brea reveals that even where there are views and no oil operations, very low densities are not present. This may turn on many factors, including but not limited to the cost/revenue of such developments, the absence of equestrian-related activities, and the desire to exchange more limited development areas for large open space dedications. In a post-Proposition 13 environment, costs of infrastructure and land dedications can only be passed on to the home buyer. This results in a very close relationship between what a home will cost, and the market for the area. Even in an area such as Newport Coast, with dramatic ocean views and a setting in one of the most affluent areas of Orange County, very few custom homes are observed, given the size of the community. There are many reasons to reject such an alternative for this area, but the applicant has rejected this alternative as infeasible for economic reasons.

[52] Pers. comm., John Ullom and Andi Culbertson

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6.10 Design Alternative 1 - Delete Tonner Hills Road

6.10.1 Description of Alternative

This alternative proposes the deletion of Tonner Hills Road from the planned community and analyzes the impact of eliminating the access point to the larger portion of the project (east of the Orange Freeway), while retaining access from Lambert Road. A second project access point is proposed to connect at Valencia Avenue aligned with the existing Olinda Ranch entry intersection. Exhibit 6-13 depicts this alternative. This alternative is considered as a way to reduce the impacts to the Puente-Chino Hills wildlife corridor, which is at its narrowest point where Tonner Creek passes under the Orange (SR 57) Freeway on the project site. A report titled "Missing Linkages: Restoring Connectivity to the California Landscape," dated April 2001, notes that the Puente-Chino Hills wildlife corridor is at a choke point at this location and gives this corridor a rank of medium-high importance. Unmitigated construction of the proposed Tonner Hills Road might impact this wildlife corridor.

6.10.2 Impacts of Alternative

a. Land Use and Planning

With respect to this topical area, there is virtually no difference between this alternative and the proposed project.

b. Agricultural Resources

With respect to this topical area, there is virtually no difference between this alternative and the proposed project.

c. Population and Housing

With respect to this topical area, there is virtually no difference between this alternative and the proposed project.

d. Geophysical

Implementation of the Delete Tonner Hills Road Alternative would result in a reduction in the amount of grading and landform alterations of the road, compared to the proposed project, although a significant reduction is not expected because a road already exists. Geological impacts associated with the Delete Tonner Hills Road Alternative would be potentially less significant than the proposed project, as a portion of the road crosses an area within the Alquist-Priolo earthquake fault zone.

e. Hydrology and Drainage

Implementation of the Delete Tonner Hills Road alternative would result in a slight increase of hydrological and drainage impacts compared to the proposed project. On-site hydrology and drainage have impacted portions of Tonner Creek over numerous years of oil operation. The existing road crosses Tonner Creek in two locations; one with a bridge that has abutments into the creek bed. The second crossing dams the creek with two 60-inch culverts. This alternative would eliminate the replacement of the two crossings and the installation of a clear span crossing that would provide greater set back from the creek bed and a minimum of 14 feet clearance above the creek bed, providing an enhanced wildlife corridor. None of these proposed project improvements would occur in this alternative, thereby allowing the current conditions to continue with current impacts to hydrology and drainage. Hydrology and drainage impacts associated with the Delete Tonner Hills Road Alternative would be potentially more significant than the proposed project but are also offset by the implementation of improved creek crossings.

f. Water Quality

Implementation of the Delete Tonner Hills Road Alternative would result in an increase in water quality impacts compared to the proposed project. Under this alternative, natural runoff from the undisturbed portion of the site will continue to flow unobstructed. Runoff from the developed portion will be collected and conveyed off-site similarly to the proposed project. The deletion of Tonner Hills Road would not provide the improvements to water quality impacts in Tonner Creek. This alternative would hinder mitigation measures incorporated in the proposed project to mitigate the numerous pipeline impacts within the vicinity of Tonner Hills Road and Tonner Creek areas. The proposed project consists of the clean up of Tonner Creek and the remediation of pipeline along Tonner Hills Road. Water quality impacts associated with the Delete Tonner Hills Road Alternative would be potentially more significant than the proposed project.

g. Transportation/Circulation

A complete traffic analysis prepared by Urban Crossroads dated February 14, 2002 for this alternative is included in the Technical Appendices. This discussion summarizes the traffic impacts of this design alternative. Under this alternative, access from the north on Tonner Hills Road will be eliminated. This alternative proposes adding an access to the project along Valencia Avenue through the proposed public use area to align with the existing Olinda Ranch entry intersection. There will be additional traffic along Valencia Avenue and Lambert Road as the project circulation plan changes.

Deleting Tonner Hills Road impacts the traffic circulation patterns in the project vicinity and changes which intersections require mitigation. Overall, the proposed project takes advantage of a somewhat under-utilized Orange (SR 57) Freeway ramp configuration at Tonner Canyon Road and disperses the total project traffic impact better than the alternative.

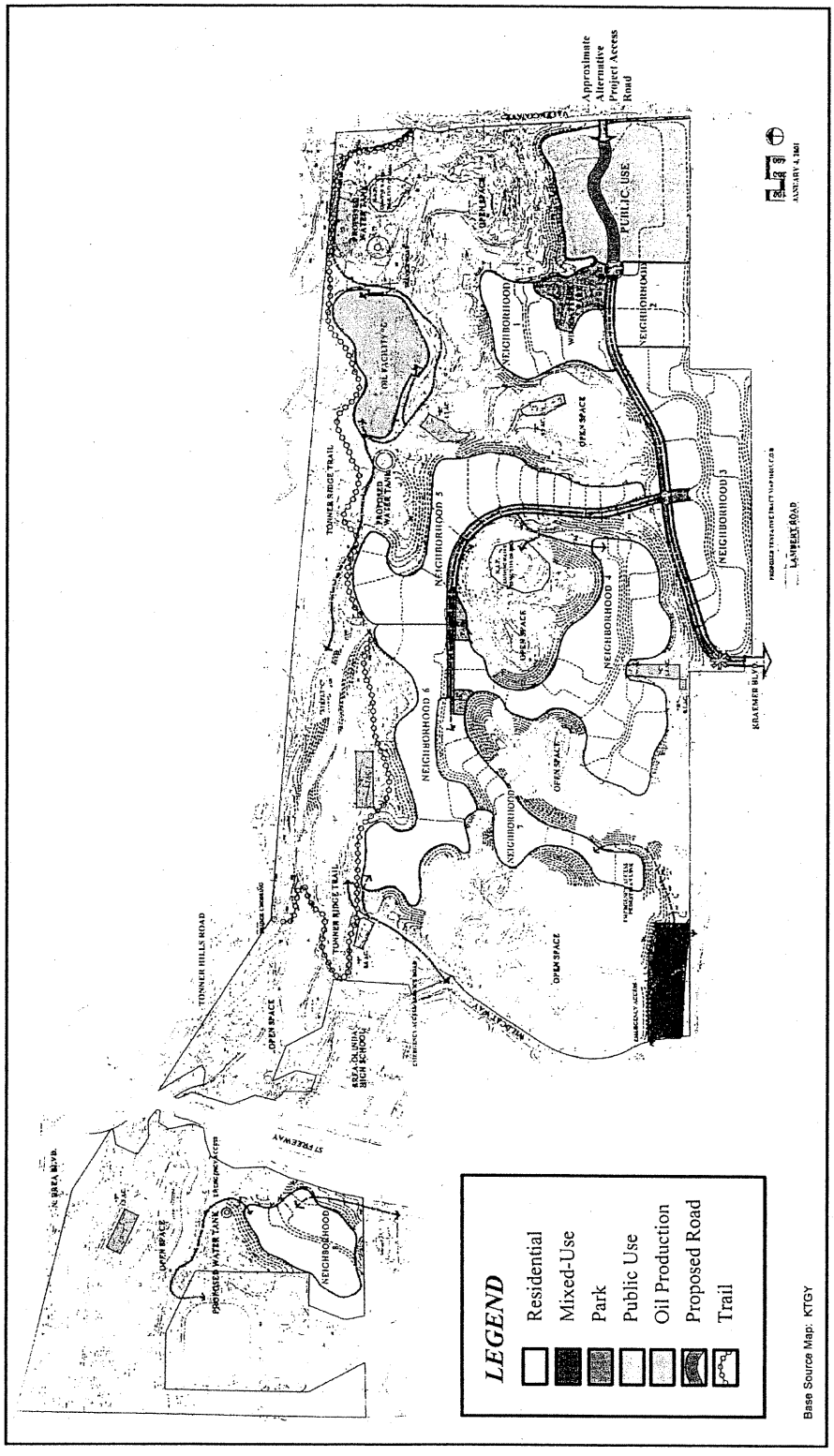

Exhibit 6-13
Deletion of Tonner Hills Road Alternative

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Comparatively, this design alternative forces all of the Tonner Hills Planned Community traffic onto Valencia Avenue and Lambert Road. The traffic study analyzed two scenarios under this design alternative: "With Tonner Canyon Road Connection" (per the Master Plan of Arterial Highways) and "Without the Tonner Canyon Road Connection." All affected intersections can be mitigated to less than significant levels under either scenario.

(1) Impacts of Deleting Tonner Hills Road with a Tonner Canyon Road Connection

Seven intersections are projected to experience deficient traffic operations for the year 2025 under this scenario and are also expected to experience an increase in ICU (Intersection Capacity Utilization) of 0.01 compared to the No Project conditions. These seven locations are significantly impacted by the project. The improvements necessary and the project responsibility for each improvement/mitigation are summarized for each intersection.

1. **Brea Boulevard (NS) at Central Avenue (EW)** - Compared to the proposed project, this is a new impact. The southbound approach should be restriped from two exclusive thru lanes and one exclusive right turn lane to provide one exclusive thru lane, one shared thru-right turn lane, and an exclusive right turn lane. This location is projected to experience deficient operations under Without Project conditions. Therefore, the project is only responsible for a fair share contribution at this location, which is estimated to be 5.9%.

2. **State College Boulevard (NS) at Lambert Road (EW)** - The impacts to this intersection are the same as the proposed project. The project impact at this location can be mitigated by constructing an additional (second) left turn lane and converting the current shared left turn-through lane to an exclusive through lane. The proposed improvement will not provide acceptable traffic operations. For the Without Tonner Canyon Road Connection scenario, this location is also projected to experience deficient operations under Without Project conditions. Therefore, the project is only responsible for a fair share contribution towards this improvement under these conditions. At the same time, the proposed improvement only improves operations to the No Project level of service/ICU value. This means that the fair share would still calculate to 100% of the mitigation cost. The feasibility of this improvement has been reviewed based on field reconnaissance and aerial photographs. Based on this review, it appears that this improvement can be implemented.

3. **SR 57 Southbound Off-Ramp (NS) at Brea Canyon Road (EW)** - The impacts here are the same as the proposed project. The traffic at this location is heavily influenced by freeway (and other) traffic congestion in the study area. Due to heavy traffic movements that divert from the Orange (SR 57) Freeway to utilize Brea Canyon Road as an alternate travel route, PM peak hour traffic operations are projected to in the LOS E range, with or without the proposed project. The primary conflicting movements are the eastbound through movement on Brea Canyon Road and the southbound right turn movement from the Orange (SR 57) southbound off-ramp. A review of the existing traffic count data indicates that only a very limited number of off-ramp vehicles

turn left and back track in the direction of Diamond Bar (1 vehicle in the PM peak hour and 14 vehicles in the AM peak hour). Eliminating this left turn movement would allow channelization of the extremely heavy eastbound through movement on Brea Canyon Road (2,737 vehicles per hour in the PM peak hour) to eliminate the need to stop at this intersection. The remaining conflicting movements would experience LOS A traffic operations, while the eastbound through movement would exhibit a volume/capacity ratio (ICU) of 0.81, or LOS D conditions. An alternate approach would allow southbound left turns and would only channelize one eastbound travel lane for free flow travel. This would also result in acceptable traffic operations at this location. A third possibility would be to construct a separate slip ramp for traffic wishing to exit the southbound Orange (SR 57) Freeway and proceed east (north) on Brea Canyon Road. It would be necessary to provide an acceleration lane/merging section to achieve acceptable traffic operations for this alternative. This location is projected to experience deficient operations under Without Project conditions. Therefore, the project is only responsible for a fair share contribution towards the preferred improvement, which is estimated to be 7.1%.

4. **SR 57 Southbound Ramps (NS) at Lambert Road (EW)** - Compared to the proposed project, this is a new impact. The eastbound approach should be restriped to provide two exclusive through lanes, a shared through-right turn lane, and an exclusive right turn lane (this location is planned to include three exclusive through lanes and an exclusive right turn lane). This will provide acceptable PM peak hour operations (there is no AM peak hour deficiency). This location is also projected to experience deficient operations under Without Project conditions. Therefore, the project is only responsible for a fair share contribution towards the recommended improvement, which is estimated to be 3.3%. If this improvement is constructed by the project, a credit against other fees/obligations should be considered.

5. **Kraemer Boulevard (NS) at Lambert Road (EW)** - This has the same impact as the proposed project. The eastbound approach should be restriped to provide two exclusive through lanes, a shared through-right turn lane, and an exclusive right turn lane (this location is planned to include three exclusive through lanes and an exclusive right turn lane). This will provide acceptable AM peak hour operations (there is no PM peak hour deficiency). Therefore, the project is responsible for the recommended improvement.

6. **Valencia Avenue (NS) at Birch Street (EW)** - The impacts to this intersection are similar to the proposed project. Deficiencies are projected for AM and PM peak hour traffic operations and for Without Project and With Project conditions. The southbound approach should be restriped to add a second left turn lane, an exclusive thru lane and a shared thru-right turn lane. This improvement will provide acceptable AM peak hour traffic operations and will mitigate the project PM peak hour impact. As this location is also projected to experience deficient operations under Without Project conditions, the project is only responsible for a fair share contribution towards the recommended improvement of 8.7%.

7. **Imperial Highway (NS) at Bastanchury Road (EW)** - Like the proposed project, under this scenario deficiencies are projected for both AM and PM peak hour conditions, although the project contributes to a significant impact only during the PM peak hour. The southbound approach should be restriped to eliminate the exclusive right turn lane and provide a second southbound left turn lane instead. This improvement will more than mitigate the project impact at this location. This location experiences deficient operations under Without Project conditions. The project is therefore only responsible for a fair share contribution towards the recommended improvement.

(2) Impacts of Deleting Tonner Hills Road Without a Tonner Canyon Road Connection

While the County's Master Plan of arterial Highways includes the extension of Tonner Canyon Road from the Orange (SR 57) Freeway to Valencia Avenue, there is currently an effort underway to delete the proposed connection. The traffic analysis, therefore, models the scenario of No Tonner Hills Road/No Tonner Canyon Road.

Four intersections are projected to experience deficient traffic operations for 2025 With No Tonner Hills Drive Alternative Project Without Tonner Canyon Road Connection conditions and are also expected to experience an increase in ICU of 0.01 compared to Without Project conditions. These four locations are therefore significantly impacted by the project:

The improvements necessary and project responsibility for each improvement/mitigation are summarized for each individual intersection.

1. **Brea Boulevard (NS) at Central Avenue (EW)** - While this intersection is also impacted under the proposed project roadway configuration, the mitigation measure varies slightly. The southbound lane has to be restriped to add a third thru lane, an exclusive left turn lane and an exclusive right turn lane. In addition, a southbound right turn arrow (overlap) is required at this intersection. This will provide acceptable AM peak hour operations. This location is also projected to experience deficient operations under Without Project conditions (PM peak hour). Therefore, the project is only responsible for a fair share contribution towards this improvement.

2. **Kraemer Boulevard (NS) at Lambert Road (EW)** - This intersection is also impacted in the proposed project. The mitigation required under this scenario includes an additional right turn lane. The eastbound approach should be restriped to provide two exclusive through lanes, a shared through-right turn lane, and an exclusive right turn lane (this location is planned to include three exclusive through lanes and an exclusive right turn lane). This will provide acceptable AM peak hour operations (there is no PM peak hour deficiency). This location is also projected to experience deficient operations under Without Project conditions. Therefore, the project is only responsible for a fair share contribution towards the recommended improvement of 27.3%

3. **Rose Drive (NS) at Imperial Highway (EW)** - Compared to the proposed project, this is a new impact. The eastbound approach should be restriped to provide two exclusive through lanes, a shared through-right turn lane, and an exclusive left turn lane (this location is planned to include two exclusive through lanes and an exclusive left turn lane and an exclusive right turn lane). This location is also projected to experience deficient operations under Without Project conditions. Therefore, the project is only responsible for a fair share contribution of 16.7% towards the recommended improvement.

4. **Imperial Highway (NS) at Bastanchury Road (EW)** - Compared to the proposed project, this is a new impact. Deficiencies are projected for AM and PM peak hour conditions, although the project contributes to a significant impact only during the PM peak hour. The southbound approach should be restriped to eliminate the exclusive right turn lane and provide a second southbound left turn lane instead. This improvement will more than mitigate the project impact at this location. This location experiences deficient operations under Without Project conditions. The project is therefore only responsible for a fair share contribution towards the recommended improvement.

h. Air Quality

With respect to this topical area, there is virtually no difference between this alternative and the proposed project.

i. Noise

With respect to this topical area, there may be slight changes in the traffic noise patterns between this alternative and the proposed project, but the impacts are not considered significant.

j. Biological Resources

In the proposed project, the two roads and culverts crossing Tonner Creek currently used for oil operations would be replaced with two span bridges, resulting in the removal of an existing barrier to wildlife moving through the wildlife corridor. This improvement would include the removal of non-native vegetation from the area around the bridges, which could open the creek to improve wildlife passage. It would also require revegetation of any disturbed areas with native riparian vegetation. Impacts to areas under the California Department of Fish & Game jurisdiction include 0.17 acres and would be temporary.

Without Tonner Hills Road in place, wildlife traversing the Puente-Chino Hills wildlife corridor would not be exposed to traffic on the road or crossing the creek on the new bridge span.

k. Aesthetics

Deletion of Tonner Hills Road from the proposed project would result in no changes in current views from the Tonner Creek area, including the public recreation trail. Temporary grading and long-term views of the road improvements would be eliminated. It should be noted that the view impact from Tonner Hills Road was not classified as a significant impact based on the view simulations and discussion provided in Section 4.11, Aesthetics.

l. Cultural/Scientific Resources

With respect to this topical area, there is virtually no difference between this alternative and the proposed project.

m. Recreation

This alternative will divide the public use area with the proposed access road off Valencia and consume an estimated two acres of the public use site. Since no specific site plan is proposed at this time, the potential impacts are dependent on the final design and uses for the public use site.

n. Mineral Resources

With respect to this topical area, there is virtually no difference between this alternative and the proposed project. The existing oil field operation service road along Tonner Creek would remain to facilitate oil production.

o. Hazards

With respect to this topical area, there is virtually no difference between this alternative and the proposed project.

p. Public Services

Implementation of the Delete Tonner Hills Road Alternative would result in a significant increase in public service impacts compared to the proposed project. This alternative would result in the elimination of a strategically located alternative emergency access point to the planned community. Response times for police and fire services would be significantly increased compared to the proposed project. Impacted to public services associated with the Delete Tonner Hills Road Alternative would be potentially more significant than the proposed project.

q. Utilities and Service Systems

Implementation of the Delete Tonner Hills Road Alternative would result in a similar impact to utilities service with the proposed project. Utility systems for this alternative and the proposed project are primarily located along Lambert Road and Wildcat Way. Utilities and service systems impacts associated with the Delete Tonner Hills Road Alternative would be similar in significance to the proposed project.

6.10.3 Attainment of Project Objectives

This alternative is consistent with and achieves all but one of the stated project objectives. The proposed new road access point at Valencia Avenue does not optimize the use of existing roadway alignments for internal circulation. This access proposes a new roadway through the public use area. However, the impacts are not considered significant or detrimental to the project as a whole.

6.11 Design Alternative 2 - 150 Affordable Housing Units on Mixed Use Site

6.11.1 Description of Alternative

This alternative would replace the commercial site of 7.7. acres (located at the southwest corner of the site) with 150 affordable housing units. This would bring the total dwelling units for the project to 1,064. While the County does not have mandatory affordable housing goals in the Housing Element of its General Plan for this area, the County and the developer, through a development agreement, could discuss opportunities for affordable housing in the project area. This alternative is included to analyze such an affordable housing scenario.

6.11.2 Impacts of Alternative

a. Land Use and Planning

This alternative would greatly advance the County Housing Element of offering low and very low income requirement on-site. The 150 units represent 16% of the total units to be built on-site in the proposed project. Therefore, this alternative is superior in this respect.

b. Agricultural Resources

Impacts are substantially equal for this alternative and the proposed project.

c. Population and Housing

As stated above, this alternative is capable of meeting a housing need more fully than the proposed project. It would bring an additional 373 people to the area to further balance the job projections. However, the elimination of the commercial use of this parcel would conversely result in a loss of jobs.

d. Geophysical

Implementation of this alternative would result in a similar amount of grading and landform alterations as compared to the proposed project. Approximately similar amounts of grading and landform alteration would occur for residential or commercial uses. The impacts would be similar to the proposed project.

e. Hydrology and Drainage

Implementation of this alternative would result in similar amount of peak runoff impacts as compared to the proposed project. This alternative would occupy the same amount of development area of 7.7 acres as in the proposed project designation for mixed uses. No additional hydrological and/or drainage areas are impacted by this alternative. Mitigation measures identified in the proposed project would be required for this alternative. Impacts to hydrology and drainage associated with this alternative would be similar in significance as the proposed project.

f. Water Quality

Implementation of this alternative would result in similar impacts to water quality as compared to the proposed project. Under this alternative, peak runoff from the150 multi-family units portion of the site would be collected and conveyed off-site in similar fashion to the proposed project. Mitigation measures identified in the proposed project would be required for this alternative. Impacts to water quality associated with this alternative would be similar in significance as the proposed project.

g. Transportation/Circulation

This design alternative evaluates 150 multi-family dwelling units on the 7.7-acre commercial site. The trip generation rates, traffic distribution, and average trip lengths differ in this design alternative from the proposed project. As a result, the traffic impacts vary. A complete traffic analysis was conducted by Urban Crossroads dated February 14, 2002 and is included in the Technical Appendices.

This section summarizes the overall traffic impacts. All affected intersections can be mitigated to a less than significant level.

(1) Average Daily Trips

This project design alternative will generate an estimated 13,420 average daily trips. Tables 6-6 and 6-7 summarize the trip generation calculations and provide a comparison to the proposed project.

Table 6-6 - Tonner Hills Residential Project Alternative Trip Generation Rates[1]

Land Use Category	Units[2]	Peak Hour				Daily
		AM		PM		
		In	Out	In	Out	
Multi-Family Residential[3]	DU	0.100	0.500	0.500	0.200	7.000
Park	AC	0.100	0.100	0.200	0.200	5.000
Single-Family Residential	DU	0.240	0.650	0.760	0.440	12.000
Sports Park	AC	0.880	0.740	2.350	2.350	41.760

1 Sources: Institute of Transportation Engineers (ITE), *Trip Generation*, Sixth Edition Update, 1997, Land Use Categories 411, 820, county of Orange approved SFDU and MFDU rates (1982) and Laguna Hills Community Center Park Growth Management/CMP Traffic Analysis (Revised) (1997, RKJK and Associates, Inc.)
2 TSF = thousand square feet; AC = acres; DU = dwelling units
3 Multi-family residential replaces commercial site uses

Table 6-7 - Tonner Hills Residential Project Alternative Trip Generation

Land Use Category	Quantity	Units[1]	Peak Hour				Daily
			AM		PM		
			In	Out	In	Out	
Multi-Family Residential[2]	150	DU	15	75	75	30	1,050
Park	7.1	AC	1	1	1	1	36
Single-Family Residential	914	DU	219	594	695	402	10,968
Sports Park	32.7	AC	29	24	77	77	1,366
Residential Alternative Total Trips			264	694	848	510	13,420
Change in Trips from Preferred Alternative			(68)	22	(178)	(245)	(4,713)
% Change from Preferred Alternative			-26%	3%	-21%	-48%	-35%

1 TSF = thousand square feet; AC = acres; DU = dwelling units
2 Multi-family residential replaces commercial site uses

(2) Project Traffic Distribution

The revised traffic distribution and assignment process was accomplished using the OCTAM 3.1 traffic model version that incorporates additional detail related to the project site and adjacent areas within the same OCTAM traffic analysis zones (TAZs). The primary effect of the change in land use on trip distribution and traffic assignment is to change the direction of trips by time of day. The alternative residential uses will generate trips that are distributed outward in the morning and are proportionately greater in the inbound direction in the evening. The average length of the multi-family residential trips is also likely to be slightly longer than the trip lengths of the commercial use traffic. This will partially offset the decrease in the absolute number of trips.

(3) Impacts

Future 2025 conditions have been analyzed using the same methodology used to analyze the proposed project. This design alternative impacts were evaluated under two scenarios: "With Tonner Canyon Road Connection" and "Without Tonner Canyon Road Connection." This extension is currently in the Master Plan of Arterial Highways.

The 2025 Without Project With Tonner Canyon Road Connection conditions ICU calculation results are compared to the 2025 With Alternative Apartment Project With Tonner Canyon Road Connection conditions ICU calculation results to determine project impacts Both sets of calculations assume that both the currently adopted and proposed City of Brea traffic fee program improvements have been implemented. Five intersections are projected to experience deficient traffic operations for 2025 With Alternative Apartment Project With Tonner Canyon Road Connection conditions and are also expected to experience an increase in ICU of 0.01 compared to without project conditions. These five locations are therefore significantly impacted by the design alternative.

The improvements necessary and project responsibility for each improvement/mitigation are summarized for each individual intersection.

1. **Brea Boulevard (NS) at Tonner Canyon Road (EW)** - This intersection is also impacted in the proposed project. The westbound approach should be restriped from an exclusive left turn lane and an exclusive right turn lane to provide a shared left-right turn lane and an exclusive right turn lane. This improvement will provide acceptable PM peak hour intersection operations (there was no AM peak hour deficiency projected at this location). This location is projected to experience deficient operations under Without Project conditions. Therefore, the project is only responsible for a fair share contribution of 11.1% at this location. If this improvement is constructed by the project, a credit against other fees/obligations should be considered.

2. **SR 57 Southbound Off-Ramp (NS) at Brea Canyon Road (EW)** - The impacts to this intersection are the same in the proposed project. The traffic at this location is heavily influenced by freeway (and other) traffic congestion in the study area. Due to heavy traffic movements that divert from the Orange (SR 57) Freeway to utilize Brea Canyon Road as an alternate travel route, PM peak hour traffic operations are projected to in the LOS E range, with or without the proposed project. The primary conflicting movements are the eastbound through movement on Brea Canyon Road and the southbound right turn movement from the Orange (SR 57) Freeway southbound off-ramp. A review of the existing traffic count data indicates that only a very limited number of off-ramp vehicles turn left and back track in the direction of Diamond Bar (1 vehicle in the PM peak hour and 14 vehicles in the AM peak hour). Eliminating this left turn movement would allow channelization of the extremely heavy eastbound through movement on Brea Canyon Road (2,734 vehicles per hour in the PM peak hour) to eliminate the need to stop at this intersection. The remaining conflicting movements would experience LOS A traffic operations, while the eastbound through movement would exhibit a volume/capacity ratio (ICU) of 0.80, or LOS D conditions. An alternate approach would allow southbound left turns and would only channelize one eastbound travel lane for free flow travel. This would also result in acceptable

traffic operations at this location. A third possibility would be to construct a separate slip ramp for traffic wishing to exit the southbound Orange (SR 57) Freeway and proceed east (north) on Brea Canyon Road. It would be necessary to provide an acceleration lane/merging section to achieve acceptable traffic operations for this alternative. This location is projected to experience deficient operations under Without Project conditions. Therefore, the project is only responsible for a fair share contribution towards the preferred improvement of 7.1%.

3. **Kraemer Boulevard (NS) at Lambert Road (EW)** - While this intersection is also impacted in the proposed project, the mitigation is slightly different. The eastbound approach should be restriped to provide two exclusive through lanes, a shared through-right turn lane, and an exclusive right turn lane (this location is planned to include three exclusive through lanes and an exclusive right turn lane). In addition, the traffic signal should be modified to provide a northbound right turn arrow (overlap). This will provide acceptable AM peak hour operations (there is no PM peak hour deficiency). This location is also projected to experience deficient operations under Without Project conditions. Therefore, the project is only responsible for a fair share contribution towards the recommended improvement. If this improvement is constructed by the project, a credit against other fees/obligations should be considered.

4. **Valencia Avenue (NS) at Birch Street (EW)** - The mitigations under the 150 Dwelling Units Design Alternative differ slightly from the proposed project. Deficiencies are projected for both AM and PM peak hour traffic operations and for both Without Project and With Project conditions. The westbound approach should be restriped to add a right turn lane. This improvement will provide acceptable PM peak hour traffic operations and will more than mitigate the project AM peak hour impact. As this location is also projected to experience deficient operations under Without Project conditions, the project is only responsible for a fair share contribution of 28.6% for the AM and 8.5% for the PM changes. towards the recommended improvement.

5. **Imperial Highway (NS) at Bastanchury Road (EW)** - The impacts to this intersection are the same as the proposed project. Deficiencies are projected for both AM and PM peak hour conditions, although the project contributes a significant impact only during the PM peak hour. The southbound approach should be restriped to eliminate the exclusive right turn lane and provide a second southbound left turn lane instead. This improvement will more than mitigate the project impact at this location. This location experiences deficient operations under Without Project conditions. The project is therefore only responsible for a fair share contribution towards the recommended improvement.

The 2025 Without Project Without Tonner Canyon Road Connection conditions ICU calculation results are compared to the 2025 With Alternative Apartment Project Without Tonner Canyon Road Connection conditions ICU calculation results. Both sets of calculations assume that both the currently adopted and the proposed City of Brea traffic fee program improvements have been implemented. Four intersections are projected to experience deficient traffic operations for 2025 With Alternative Apartment Project With Tonner Canyon Road Connection conditions and are also expected to experience an increase in ICU of 0.01 compared to without project conditions. These four locations are therefore significantly impacted by the

project. The improvements necessary and project responsibility for each improvement/mitigation are summarized for each intersection.

1. **Brea Boulevard (NS) at Central Avenue (EW)** - The impact is the same as the proposed project. A southbound right turn arrow (overlap) is required at this intersection. This location is also projected to experience deficient operations under Without Project conditions. Therefore, the project is only responsible for a fair share contribution towards this improvement of 5.9%.

2. **State College Boulevard (NS) at Lambert Road (EW)** - The impact is the same as the proposed project. The project impact at this location can be mitigated by constructing an additional (second) left turn lane and converting the current shared left turn-through lane to an exclusive through lane. This improvement will fully mitigate the project AM and PM peak hour impacts at this location. The proposed improvement will not provide acceptable traffic operations. For the Without Tonner Canyon Road Connection scenario, this location is also projected to experience deficient operations under Without Project conditions. Therefore, the project is only responsible for a fair share contribution towards this improvement under these conditions. At the same time, the proposed improvement only improves operations to the No Project level of service/ICU value. This means that the fair share would still calculate to 100% of the mitigation cost. The feasibility of this improvement has been reviewed based on field reconnaissance and aerial photographs. Based upon this review, it appears that this improvement can be implemented.

3. **SR 57 Southbound Ramps (NS) at Lambert Road (EW)** - Compared to the proposed project, this is a new impacted intersection. The eastbound approach should be restriped to provide two exclusive through lanes, a shared through-right turn lane, and an exclusive right turn lane (this location is planned to include three exclusive through lanes and an exclusive right turn lane). This will provide acceptable PM peak hour operations (there is no AM peak hour deficiency). This location is also projected to experience deficient operations under Without Project conditions. Therefore, the project is only responsible for a fair share contribution of 2.3% towards the recommended improvement. If this improvement is constructed by the project, a credit against other fees/obligations should be considered.

4. **Kraemer Boulevard (NS) at Lambert Road (EW)** - This impact is the same as the proposed project. The eastbound approach should be restriped to provide two exclusive through lanes, a shared through-right turn lane, and an exclusive right turn lane (this location is planned to include three exclusive through lanes and an exclusive right turn lane). This will provide acceptable AM peak hour operations (there is no PM peak hour deficiency). This location is also projected to experience deficient operations under Without Project conditions. Therefore, the project is only responsible for a fair share contribution towards the recommended improvement.

h. Air Quality

With respect to this topical area, there is a reduction in air quality impacts due to the reduction in average daily vehicle trips between this alternative and the proposed project of approximately 4,700 ADT. However, the average trip length of the multi-family residential trips is modeled to be slightly longer than the trip lengths of the commercial use traffic. This will partially offset the reduced air quality impacts..

i. Noise

With respect to this topical area, there is a reduction in the traffic noise impact as a result of fewer average daily trips when compared to the proposed project.

j. Biological Resources

This design alternative's impacts to biological resources are similar to the proposed project. The mixed use site at the corner of Lambert Road and Wild Cat Way will be separated from the natural area vertically by a minimum distance of 300 feet upon completion of grading activities. It is proposed that this separation will be further enhanced by providing a 75-foot buffer on a radius from the northeast corner of the mixed use site. This 75-foot wildlife buffer zone will be revegetated with plant material consistent with the adjacent natural area.

k. Aesthetics

Impacts to aesthetics are substantially equal for this alternative and the proposed project.

l. Cultural/Scientific Resources

Impacts are substantially equal for this alternative and the proposed project.

m. Recreation

Impacts are substantially equal for this alternative and the proposed project.

n. Mineral Resources

Impacts are substantially equal for this alternative and the proposed project.

o. Hazards

Impacts are substantially equal for this alternative and the proposed project.

p. Public Services

Implementation of this design element would result in greater demand and impacts on public services than the proposed project. This alternative proposes the addition to the proposed project of 914 units, the development of 150 multi-family residential units. This alternative would result in an increase of additional public services to be provided compared to the proposed project's 914 single-family dwelling units. Demand for additional fire and police protection and school services would increase. Approximately 40 additional students would be generated by this alternative compared to the proposed project. Most of the schools in the Brea Unified School District are at or near capacity. Some elementary and middle schools are over capacity. These additional students, in combination with those with the 914 dwelling units in the proposed project, will have an impact on the school system. However, the proposal of 150 additional multi-family residential units in this alternative would allow the school district to collect additional developer fees to assist in mitigating school impacts to a less than significant level. Overall, impacts to public services associated with this alternative would be potentially more significant than the proposed project.

q. Utilities and Service Systems

Implementation of this alternative would result in greater demands on utilities and service systems than the proposed project. This alternative is proposing the addition of 150 multi-family residential units to the proposed project. Demand for additional water, sewer, electricity, solid waste, gas, and telecommunications services would increase over the proposed project. Utilities services providers would remain unchanged as depicted in Section 4.17 of the proposed project EIR. Impacts to utilities and service systems associated with this alternative would be potentially more significant than the proposed project.

6.11.3 Attainment of Project Objectives

This project alternative furthers the project objectives to support a diversity of housing styles and provide additional housing to address the area's jobs-to-housing imbalance. Conversely, with the loss of the commercial center, the objective to create a viable master planned community that balances multiple uses such as residential and commercial development is not met.

6.12 Design Alternative 3 - Wildlife Passage

6.12.1 Description of Alternative

This alternative proposes a pullback of Neighborhood 7 in order to increase the size of the passageway for wildlife moving from Cable Canyon to Tonner Canyon and adjacent parts of the project site. As part of this alternative, four dwelling units within Neighborhood 7 will be removed. This will increase the distance between the neighborhood and the mixed-use site on Lambert Road from 300 feet to nearly 450 feet (Exhibit 6.14). Additionally, the northeast corner of the mixed-use site will be set aside as non-developed and will be landscaped in a manner consistent with the natural area. This corner will be set back a distance of 75 feet. This setback, along with the vertical separation from the mixed-use site to the natural area, will further serve to buffer the development from the wildlife using Cable Canyon and the surrounding undeveloped area.

The EIR identifies the current design of the project as causing the possible discouragement of Cable canyon by mule deer due to the small passageway for deer into and out of Cable Canyon. The primary access for the deer to pass into and out of the canyon is around the bottom of Neighborhood 7. The size of this passage is further compromised by the conversion of the slope and vegetation to a manufactured state and the presence of an emergency access road/public foot and bicycle path through the middle of the passage. This alternative is proposed to mitigate any potential impacts to deer movement.

6.12.2 Impacts of Alternative

a. Land Use and Planning

Based on a preliminary grading analysis, this alternative would reduce the number of dwelling units by four. This is still within the acceptable range of dwelling units for the project. This alternative and proposed project are virtually the same with the exception of these four units in Neighborhood 7.

b. Agricultural Resources

With respect to this topical area, there is virtually no difference between this alternative and the proposed project.

c. Population and Housing

This alternative will have a slightly decreased build-out population – decreased by 10 persons to 2,265 – by eliminating 4 residential units.

d. Geophysical

Implementation of the Wildlife Passage Alternative would entail negligibly smaller amounts of grading and landform alterations than the proposed project. The site is located in the seismically active region of Southern California, and there would be a potentially significant geological impact similar to the proposed project. This alternative would expose slightly fewer people and four fewer building structures in Neighborhood 7 to the potential impacts associated with seismic activity, slope stability, tar seeps, and methane gas as compared to the proposed project. Geological impacts associated with the Wildlife Passage Alternative would be slightly less significant than the proposed project.

e. Hydrology and Drainage

Implementation of the Wildlife Passage Alternative would result in a minute reduction in the amount of peak runoff impacts as compared to the proposed project. Mitigation measures identified in the proposed project would be required for this alternative. Impacts to hydrology and drainage associated with the Wildlife Passage Alternative would be similar to less significant than the proposed project.

f. Water Quality

Implementation of the Wildlife Passage Alternative would result in similar impacts to water quality as compared to the proposed project. Under this alternative, peak runoff from the 910 single-family residential units would be collected and conveyed off-site in similar fashion to the proposed project. The elimination of four dwelling units would result in negligible reduction of impervious surface areas. Mitigation measures identified in the proposed project would be required for this alternative. Impacts to water quality associated with the Wildlife Passage Alternative would be slightly less significant than the proposed project.

g. Transportation/Circulation

Because of the reduction in number of proposed dwelling units, this alternative would reduce the average daily trips from the development by 48, reducing the average daily trips to18,084.

h. Air Quality

Impacts to air quality would be substantially the same as the proposed project.

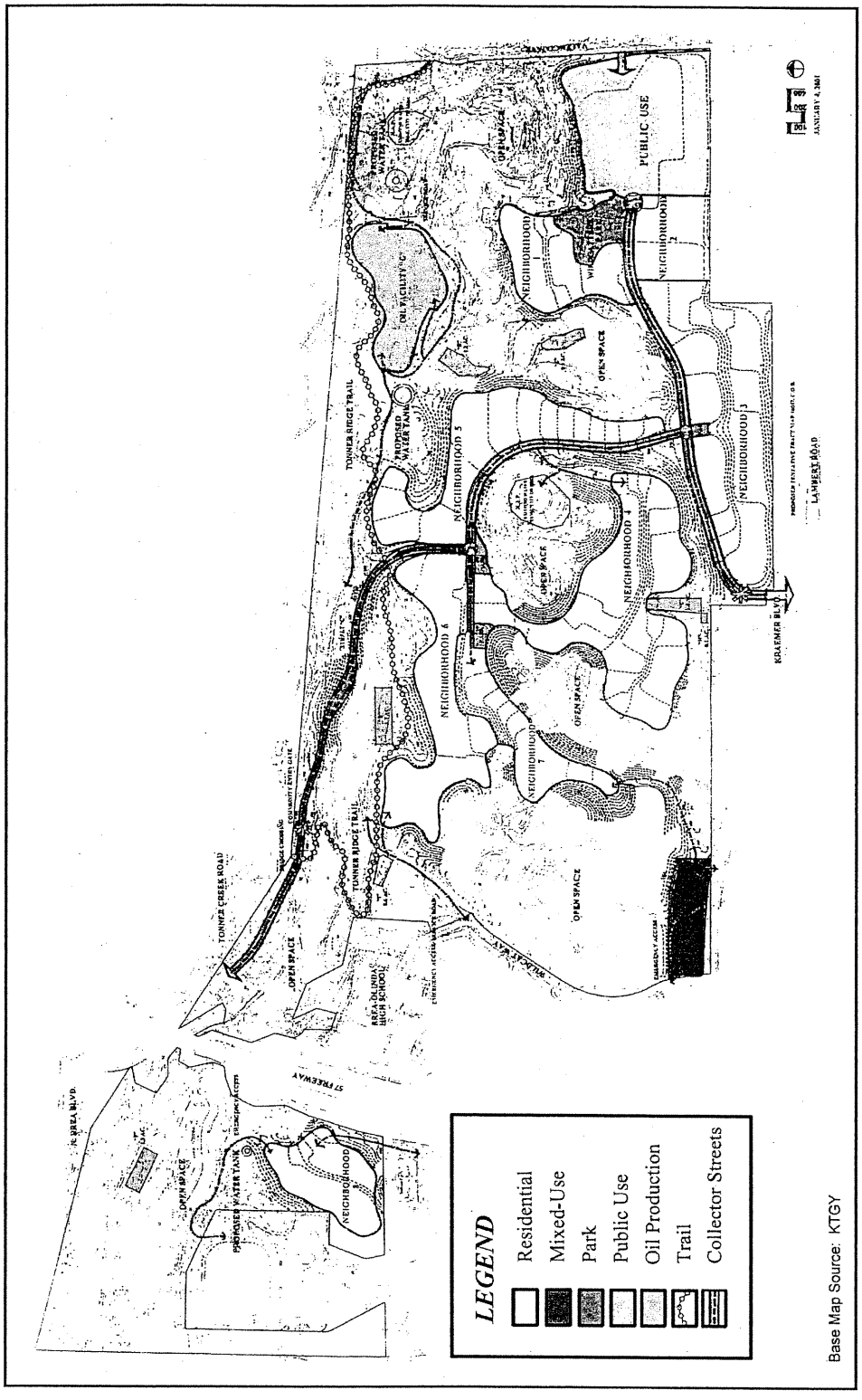

Exhibit 6-14

Wildlife Passage Project Alternative

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i. Noise

This alternative would have a minutely reduced noise impact, as the reduction of dwelling units reduces the average daily trips from the development by 48, reducing the average daily trips to18,084.

j. Biological Resources

This alternative proposes preserving Cable Canyon as a wildlife passage zone. Cable Canyon is the widest drainage on the project site, excluding Tonner Creek, and it supports a relatively dense cover of trees and other shrub species. It is currently utilized by mule deer, cactus wren, and other resident birds and small mammals. From Cable Canyon, wildlife species can easily move into and out of adjacent habitats to forage, raise young, and seek shelter. Wildlife can move up Cable Canyon to gain access to the top of the major east-west ridgeline and can then move down into Tonner Canyon or into other areas on the site. If properly designed, the wildlife now using Cable Canyon can be expected to continue to use this area after development. This alternative would also provide an avenue for migratory and non-migratory wildlife to move about the site. Preservation of Cable Canyon would contribute to the maintenance of biological diversity on the site.

The project, as proposed, shows Neighborhood 7 extending south so it nearly touches the commercial development at the corner of Lambert Road and Wild Cat Way. Approximately 300 feet separates the end of Neighborhood 7 and the proposed commercial development. This creates a very narrow passageway for wildlife movement. An emergency access road/foot and bicycle path that connects the commercial development to Neighborhood 7 further compromises this small space. By their very nature, deer are secretive animals. They prefer passages that are wider and more open. Their movements are usually restricted to the early morning and early evening hours. They avoid any contact with humans and domestic animals. This public footpath is likely to be used by joggers, walkers, and domestic dogs during the hours of travel by mule deer.

This alternative proposes approximately 150 feet from the southern end of Neighborhood 7. This adjustment in project design would increase the size of the passage between Neighborhood 7 and the commercial development from 300 feet to nearly 450 feet. This area would be further enhanced with suitable vegetation for travel by large mammals. Signs would be posted to prohibit access to the passageway from the access road/bike path. Dogs would be required to be leashed in this area. The substrate for the road would be decomposed granite only. This substrate provides for a more sure footing for the deer crossing the road.

The mixed-use site at the corner of Lambert Road and Wild Cat Way will be separated from the natural area vertically by a minimum distance of 30 feet upon completion of grading activities. This separation will be further enhanced by providing a 75-foot buffer on a radius from the northeast corner of the mixed-use site. This 75-foot buffer zone will be revegetated with plant material consistent with the adjacent natural area.

k. Aesthetics

Reducing the size of Neighborhood 7 by 4 dwelling units would not have a significant impact on the quality of project aesthetics as depicted in View L of the view simulation study completed for the Aesthetics section of this report.

l. Cultural/Scientific Resources

With respect to this topical area, there is virtually no difference between this alternative and the proposed project.

m. Recreation

This alternative specifies that dogs be leashed when using the emergency access road/foot and bicycle path. This requirement may have a small impact on residents using the foot path.

n. Mineral Resources

With respect to this topical area, there is virtually no difference between this alternative and the proposed project.

o. Hazards

With respect to this topical area, there is virtually no difference between this alternative and the proposed project.

p. Public Services

Implementation of the Wildlife Passage Alternative would result in a slight decrease in the demand for public service compared to the proposed project. This alternative would result in the elimination of four dwelling units from the proposed project. Response times for police and fire services would remain consistent with the proposed project. School services would decrease by a mere two students compared to the proposed project. Mitigation measures identified in the proposed project would be required for this alternative. Impacts to public services associated with the Wildlife Passage Alternative would be slightly less significant than the proposed project.

q. Utilities and Service Systems

Implementation of the Wildlife Passage Alternative would result in a very slight reduction in the demand on utilities and service systems compared to the proposed project. This alternative is proposes the elimination of four single-family residential dwelling units from the proposed project of 914 units. Demand for additional water, sewer, electricity, solid waste, gas, and telecommunications services would slightly decrease over the proposed project. Utilities services providers would remain unchanged as depicted in Section 4.17 of the proposed project EIR. Mitigation measures identified in the proposed project would be required for this alternative. Utilities Services impacts associated with the Wildlife Passage Alternative would be slightly less significant than the proposed project.

6.12.3 Attainment of Project Objectives

The Wildlife Passage Alternative is consistent with and achieves all of the stated project objectives. However, because this alternative decreases the number of housing units, attainment of the objective to reduce the jobs/housing imbalance and maximize the number of dwelling units to achieve an adequate product mix is slightly affected. The impact will not be significant.

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6.13 Design Alternative 4 - Relocate Dwelling Units from Neighborhoods 5 and 6 to Public Use Site

6.13.1 Description of Alternative

One of the stated values of the citizens of the City of Brea has been to maintain their ridgeline views. While the proposed project has successfully accomplished that goal, this alternative considers the potential to further reduce ridgeline impacts by relocating several dwelling units in Neighborhoods 5 and 6 to the proposed Public Use Site.

6.13.2 Impacts of Alternative

a. Land Use and Planning

This land use encompasses the already identified categories within the County of Orange General Plan. No zone changes would occur, and the alternative would conform to all land use regulations under the County's Land Use Element. Ten acres of the Public Use Site would be used to accommodate the relocation of the following dwelling units:

- Neighborhood 5 – 35 dwelling units from the westerly portion of that neighborhood
- Neighborhood 6 – 40 dwelling units from the westerly portion of that neighborhood

The remaining 20 acres of the Public Use Site would be available for uses previously discussed in other alternatives.

b. Agricultural Resources

Impacts would be similar to the proposed project.

c. Population and Housing

Impacts would be similar to the proposed project, as the relocation of these units does not increase the total estimated number of dwelling units.

d. Geophysical

Grading impacts would be reduced by this alternative due to the elimination of houses from two neighborhoods. Since the proposed project already analyzed the grading necessary for the Public Use Site, there would be no additional impact in order to build dwelling units on this portion of the property. Most of the neighborhood placement for the remaining portions of Neighborhoods 5 and 6 is on land that has already been graded and otherwise compromised by oil operations. This would result in a neutral impact.

e. Hydrology and Drainage

There would be no significant impact to hydrology or drainage under this alternative. The landforms would remain substantially the same as for the proposed project. An equal amount of impervious surface would result since dwelling units would merely be moved to another area of the project. No significant impact would result in this area.

f. Water Quality

Impacts would be substantially the same as in the proposed project.

g. Transportation/Circulation

No additional traffic would result from this alternative. One of the internal roads would be extended to reach the northern portion of the Public Use Site as an access for the relocated dwelling units. This alternative would anticipate access to the Public Use Site via Valencia or Lambert.

h. Air Quality

Impacts would be substantially the same as in the proposed project.

i. Noise

Impacts would be substantially the same as in the proposed project.

j. Biological Resources

There were no sensitive wildlife species observed utilizing the Public Use Site. Disturbed coastal sage scrub is found in this area. The loss of coastal sage scrub habitat will be mitigated in the mitigation and monitoring plan being prepared for the development. Therefore, no significant impacts would be incurred.

k. Aesthetics

Because the proposed project respects the existing ridgelines, this alternative would not significantly reduce visible development. Additionally, because the existing ridgelines through Neighborhoods 5 and 6 have already been compromised, there is no overall improvement to the aesthetic vistas of ridgelines in this alternative. The relocation of 75 dwelling units to the public use site would have no significant impact.

l. Cultural/Scientific Resources

Impacts are similar to the proposed project.

m. Recreation

This alternative would reduce the available acreage on the public use site to 20 acres. It is the applicant's intent to make this acreage available to a public or private entity for possible development into a sports park or school site. The remaining acreage would accommodate either use, but on a more limited basis. No other dedicated parkland would be affected by this alternative. The loss of the additional 10 acres in the public use area would have a significant impact if the ultimate use would be for recreational purposes. Otherwise, there would be no significant impact on recreation.

n. Mineral Resources

Impacts are similar to the proposed project.

o. Hazards

Impacts are similar to the proposed project.

p. Public Services

As no additional housing is anticipated by this alternative, impacts would be the same as the proposed project regarding fire and police support. However, reducing the size of the available public use site would restrict development by the Brea Unified School District to an elementary or middle school, should such use be considered.

q. Utilities and Service Systems

As no additional housing is anticipated by this alternative, impacts would be the same as the proposed project.

6.13.3 Attainment of Project Objectives

This alternative has a minimal positive impact of removing housing from the areas closest to the existing ridgelines. However, the necessity to reduce the public use site would have a negative effect on additional recreational and school site uses. Recreation and adequate school facilities are stated project objectives, and attainment of these objectives could be compromised with this alternative.

6.14 Environmentally Superior Alternative

The CEQA Guidelines require an EIR to identify the alternative(s) that are environmentally superior to the proposed project. This determination is based primarily on the ability of a project alternative to reduce or eliminate the significant unavoidable adverse impacts associated with the proposed project. Furthermore, the CEQA Guidelines (§15126.6 e(2)) state that: "If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives."

Based on these considerations and the analysis of each alternative contained in this chapter, the No Project Alternative is the environmentally superior alternative. Although the No Project Alternative has a greater impact to water quality than the proposed project, overall, most of the environmental impacts are avoided with the No Project Alternative.

Pursuant to the CEQA Guidelines, the EIR shall also identify an environmentally superior alternative among the other alternatives. Accordingly, the environmentally superior alternative is the 624-699 Dwelling Unit Alternative. The impacts of this alternative are similar to the proposed project, but with the reduced number of dwelling units, the overall traffic impact and air quality impacts related to vehicle emissions are reduced.

These proposed alternatives must also be considered and evaluated in terms of their ability to feasibly meet as many of the project objectives as possible.

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6.15 Alternatives Eliminated From Further Consideration

At the outset of this project, and after the Initial Study, it was decided that two project alternatives would be eliminated from further consideration: an alternative site, and cessation of oil operations. One further alternative was eliminated from considering during EIR preparation.

Alternative Site

As to the alternative site, there are no other sites in the vicinity that possess similar topographic, access, and oil operation characteristics. Residential development is not sufficiently unique to dictate one site over another in this area. The applicant does not own other sites in the vicinity on which to situate residential development, and even if it did, this would still have the effect of simply shifting the development potential to another jurisdiction as opposed to eliminating impacts overall.

Cessation of Oil Operations

No legal authority exists for cessation of oil operations at this time on the part of the County or the City so long as permits to operate the facilities remain in good standing. It is conceivable that a public entity could condemn the site and purchase it for public use, but that same entity would also be responsible for remediation, a significant cost. Ceasing the oil operations would have an incremental effect on power provided to the ISO which is a by-product of the oil operations (see Section 4.17, Utilities and Service Systems). In addition, ceasing oilfield operations would have a significant impact on the production and use of mineral resources (see Section 4.14, Mineral Resources). Therefore, there are significant legal and practical obstacles to this alternative.

Alternatives Rejected During the EIR Preparation as Infeasible

During the preparation process for this EIR, clustering of units in higher densities over the site was initially considered. From a historical perspective, planners have often looked at clustering as a means to minimize impacts to important environmental resources. However, clustering also typically produces considerably higher residential densities.

In gauging the direction of land use in the SOI area, it has been clear for some time that neither the County nor the City is interested in higher densities in this area, whether economical of land or not. In fact, the trend has been consistently *decreasing* densities. To the extent that a slight increase would be appropriate, the reader is referred to the 1,445-Unit Alternative, which was disfavored by the City. The City's continuing reduction in densities on this site is ample indication of the infeasibility of this alternative.

Finally, the arrangement of land uses on the site is, for the most part, itself "clustering." Each development area is surrounded by undeveloped area. Further the elimination of any development at the Tonner Canyon Road interchange (as is permitted by the City's General Plan) and the concentration of land uses on the

Lambert Road side of the ridgeline is itself a clustering concept. Therefore, in relation to the City's move away from higher densities, and the fact that the development is clustered already, further consideration of this alterative was abandoned as either legally infeasible or already accomplished in the proposed project and other project alternatives.

7. Organizations and Persons Consulted

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Barbara Ott, Facilities Planner

Brea, City of
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Brea Police Department
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- Jeff Dickman, Chief, Trail Planning and Implementation
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- Kathy Nakase, County Manager

Orange County Fire Authority (OCFA)
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Orange County Produce
- A.G. Kawamura

Orange County Sheriff's Department
- Dennis J. DeMaio, Lieutenant

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- Michelle Landrith, Design Service Representative
- Julie Highland, Planner

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- Bill Mashburn

Southern California Water Company (SCWC)
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Marlie Whiteman

U.S. Army Corps of Engineers
Jae Chung

U.S. Fish and Wildlife Service
Will Miller
Jonathan Snyder

8. References

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