VOLUME II

Coastal Permit No. 166, Conditional Use Permit Nos. 215 & 216,
Tentative Parcel Map No. 26073 and Grading Permit Nos. 2229 & 2230

Environmental Impact Report for the Long Point Resort Project

TECHNICAL APPENDICES

Prepared for:

City of Rancho Palos Verdes

Prepared by:

RBF Consulting

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***Note to Reviewers**: The Technical Appendices for the Biological Resources Assessment were previously included in this section for the Draft EIR Public Review. Publication of the Final EIR includes four (4) separate volumes which include:

1. Final EIR
2. Technical Appendices
3. Draft EIR Response to Comments
4. Biological Resources

The Biological Resources Assessment and supporting Technical Appendices are inclusive in Volume IV for the Final EIR.

15.0 APPENDICES

15.1 Initial Study/ Notice of Preparation/ Correspondence

INITIAL STUDY

NOTICE OF PREPARATION

To: Interested Agencies and Organizations
(Agency)

(Address)

Subject: **Notice of Preparation of a Draft Environmental Impact Report**

Lead Agency:

Agency Name: City of Rancho Palos Verdes
Street Address: 30940 Hawthorne Boulevard
City/State/Zip: Rancho Palos Verdes, California 90275

Contact: David Snow, AICP
E-Mail: davids@rpv.com

Consulting Firm:

Firm Name: RBF Consulting
Street Address: 14725 Alton Parkway
City/State/Zip: Irvine, California 92618

Contact: Glenn Lajoie, AICP

CITY OF RANCHO PALOS VERDES will be the Lead Agency and will prepare an environmental impact report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the project.

The project description, location, and the potential environmental effects are contained in the attached materials. A copy of the Initial Study (☒ is ☐ is not) attached.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but ***not later than 45 days*** after receipt of this notice.

Please send your response to David Snow, AICP at the address shown above. We will need the name of a contact person in your agency.

Project Title: Long Point Resort (Coastal Permit #166 & Conditional Use Permit #215 & 216 Tentative Parcel Map No. 26073 & Grading Permit Nos. 2229 & 2230)

Project Location: City of Rancho Palos Verdes (City (nearest)) Los Angeles (County)

Project Description: **(brief)** The Long Point Resort involves a full-service hotel providing approximately 582 guestrooms, restaurants/bars, and meeting/function spaces. Also proposed are approximately 31.6 acres of conserved/ enhanced habitat and approximately 81 acres of public open space/recreation facilities including public parking, shoreline access ramps, public parks/overlooks, public walking/hiking trails, a public golf practice facility, and a 9-hole public-use golf course.

Date: 7-18-00

Signature:
Joel Rojas

Title: Director of Planning
Building and Code Enforcement

Telephone: (310) 544-5228

Reference: California Code of Regulations, Title 14, (CEQA Guidelines) Sections 15082(a), 15103, 15375.

Revised October 1989

INITIAL STUDY/ENVIRONMENTAL CHECKLIST

Long Point Resort
(Coastal Permit No. 166, Conditional Use Permit Nos. 215 & 216, Tentative Parcel Map No. 26073, & Grading Permit Nos. 2229 & 2230)

LEAD AGENCY:

City of Rancho Palos Verdes
Department of Planning, Building and Code Enforcement
30940 Hawthorne Boulevard
Rancho Palos Verdes, California 90275
Contact: Mr. David Snow, AICP
310-544-5228
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PREPARED BY:

Robert Bein, William Frost & Associates
14725 Alton Parkway
Irvine, California 92718
Contact: Glenn Lajoie, AICP
949-472-3505

July 18, 2000

JN 10-034194

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1.0 INTRODUCTION

In October, 1998, the City of Rancho Palos Verdes received development applications for the Long Point Resort Specific Plan. The Specific Plan involved approximately 238.9 acres of private and publicly-owned property situated in the southwest portion of the City of Rancho Palos Verdes. The Specific Plan proposed amendments to the City's General Plan and Coastal Specific Plan, and was intended to establish zoning and development standards for the Long Point Resort. Upon review of the Long Point Resort application submittal, the City of Rancho Palos Verdes determined that the proposal was a project under the California Environmental Quality Act (CEQA) and City of Rancho Palos Verdes Environmental Guidelines and, therefore, was subject to environmental review. An Initial Study/ Environmental Analysis document that assessed the potential direct, indirect and cumulative environmental effects associated with construction and operation of the uses permitted under the proposed Long Point Specific Plan, was transmitted together with a Notice of Preparation, to the State Clearinghouse and other interested parties on December 22, 1998. A forty-five (45) day public review period was conducted for the Initial Study and Notice of Preparation starting December 22, 1998.

In the 16 months following submittal of the Long Point Specific Plan applications, the proposed project was revised by the project applicant. The applicant submitted a revised development application on April 27, 2000. The Long Point Resort project proposal has been reduced to approximately 168.4 acres excluding the use of two publicly-owned properties situated in the City's coastal zone. The revised project no longer proposes a Specific Plan, City General Plan Amendment or City Coastal Specific Plan Amendment. Additionally, private residential housing is no longer proposed. The revised project involves a mix of uses permitted by the City's General Plan and Coastal Specific Plan, including a 9-hole golf course, hotel, conference center, commercial uses, restaurants, a spa/athletic facility, wedding area, individually-owned/visitor-serving resort villa uses, and renovation/relocation of some existing structures and facilities (refer to Section 2.0, *Project Description*).

Following preliminary review of the revised project, the City of Rancho Palos Verdes has determined that the Long Point Resort project is subject to the guidelines and regulations of the California Environmental Quality Act (CEQA) and the City of Rancho Palos Verdes Environmental Guidelines. Thus the City has reinitiated the CEQA process and has reissued the NOP/Initial Study based upon the April 27, 2000 submittal. This Initial Study addresses the direct, indirect, and cumulative environmental effects associated with the Long Point Resort as proposed.

1.1 STATUTORY AUTHORITY AND REQUIREMENTS

In accordance with CEQA (Public Resources Code Section 21000 - 21178.1), this Initial Study has been prepared to analyze the proposed project in order to identify any potential significant impacts upon the environment that would result from construction and implementation of the project. In accordance with Section 15063 of the State CEQA Guidelines, this Initial Study is a preliminary analysis prepared by the Lead Agency, the City of Rancho Palos Verdes, in consultation with other jurisdictional agencies, to determine whether a Negative Declaration or Environmental Impact Report (EIR) would be required for the proposed Long Point Resort project. The purpose of this Initial Study is to inform the City of Rancho Palos Verdes decision-

makers, affected agencies, and the public of potential environmental impacts associated with construction and implementation of the proposed project.

Following completion of the Initial Study, the City of Rancho Palos Verdes will make a formal determination as to whether the project may or may not have significant environmental impacts. A determination that a project may have less than significant effects would result in the preparation of a Negative Declaration. A determination that a project may have significant impacts on the environment would require the preparation of an EIR to further evaluate issues identified in this Initial Study. Based upon the potential environmental effects, the City will require preparation of a Program EIR to further evaluate issues identified in this Initial Study. Therefore, this Initial Study and Notice of Preparation (NOP) serves as part of the scoping process to determine the appropriate environmental documentation for the project.

The Initial Study and NOP will undergo a 45-day public review period. During this review, comments by the public and responsible agencies on the project relative to environmental issues are to be submitted to the City of Rancho Palos Verdes. In addition, the City has scheduled a public scoping session on August 22, 2000 to provide a forum for comments by agencies and members of the community. The City will review and consider all comments as a part of the project's environmental analysis, using the comments to further determine the necessary environmental document, as required in Section 15082 of the CEQA Guidelines. The comments received with regard to this NOP and Initial Study will be included in the project environmental document, for consideration by the City of Rancho Palos Verdes.

1.2 CONSULTATION

As soon as the Lead Agency has determined that an Initial Study would be required for the project, the Lead Agency is directed to consult informally with all Responsible Agencies and Trustee Agencies that are responsible for resources affected by the project, in order to obtain the recommendations of those agencies on the environmental documentation to be prepared for the project. Following the City of Rancho Palos Verdes' receipt of any written comments from those agencies, the City of Rancho Palos Verdes would consider any recommendations of those agencies in the formulation of the City of Rancho Palos Verdes' preliminary findings. Following execution of this Initial Study, the City of Rancho Palos Verdes would initiate formal consultation with these and other governmental agencies as required under CEQA and its implementing guidelines.

1.3 INCORPORATION BY REFERENCE

Pertinent documents relating to this Initial Study have been cited and incorporated, in accordance with Sections 15148 and 15150 of the CEQA Guidelines, to eliminate the need for inclusion of voluminous engineering and technical reports within this environmental documentation. Of particular relevance are those previous EIRs or Negative Declarations that present information regarding descriptions of environmental settings, future development-related growth and cumulative impacts. This Initial Study incorporates the following studies, by reference which are available for review at the City of Rancho Palos Verdes:

- Coastal Specific Plan, April, 1981.

- City of Rancho Palos Verdes Municipal Code, Amended Through January 18, 2000.
- City of Rancho Palos Verdes General Plan/ Environmental Impact Report, June 26, 1975.
- Environmental Impact Report for the Long Point Master Plan Development (Conditional Use Permit No. 136) (Coastal Permit No. 52) (SCH No. 880 62211) (EIR No. 29), June 1989.

2.0 PROJECT DESCRIPTION

2.1 PROJECT LOCATION & SETTING

The proposed Long Point Resort project encompasses approximately 168.4 acres in the City of Rancho Palos Verdes, California. The City of Rancho Palos Verdes (City) is located in southwestern Los Angeles County, along the Palos Verdes Peninsula of the Southern California coastline and approximately 25 miles southwest of downtown Los Angeles (refer to Exhibit 2-1, *Regional Vicinity*).

As depicted on Exhibit 2-2, *Project Vicinity*, the proposed project generally involves two geographical areas including the Resort Hotel Area and the Upper Point Vicente Area. The following discussion details the location and setting for both of these project areas.

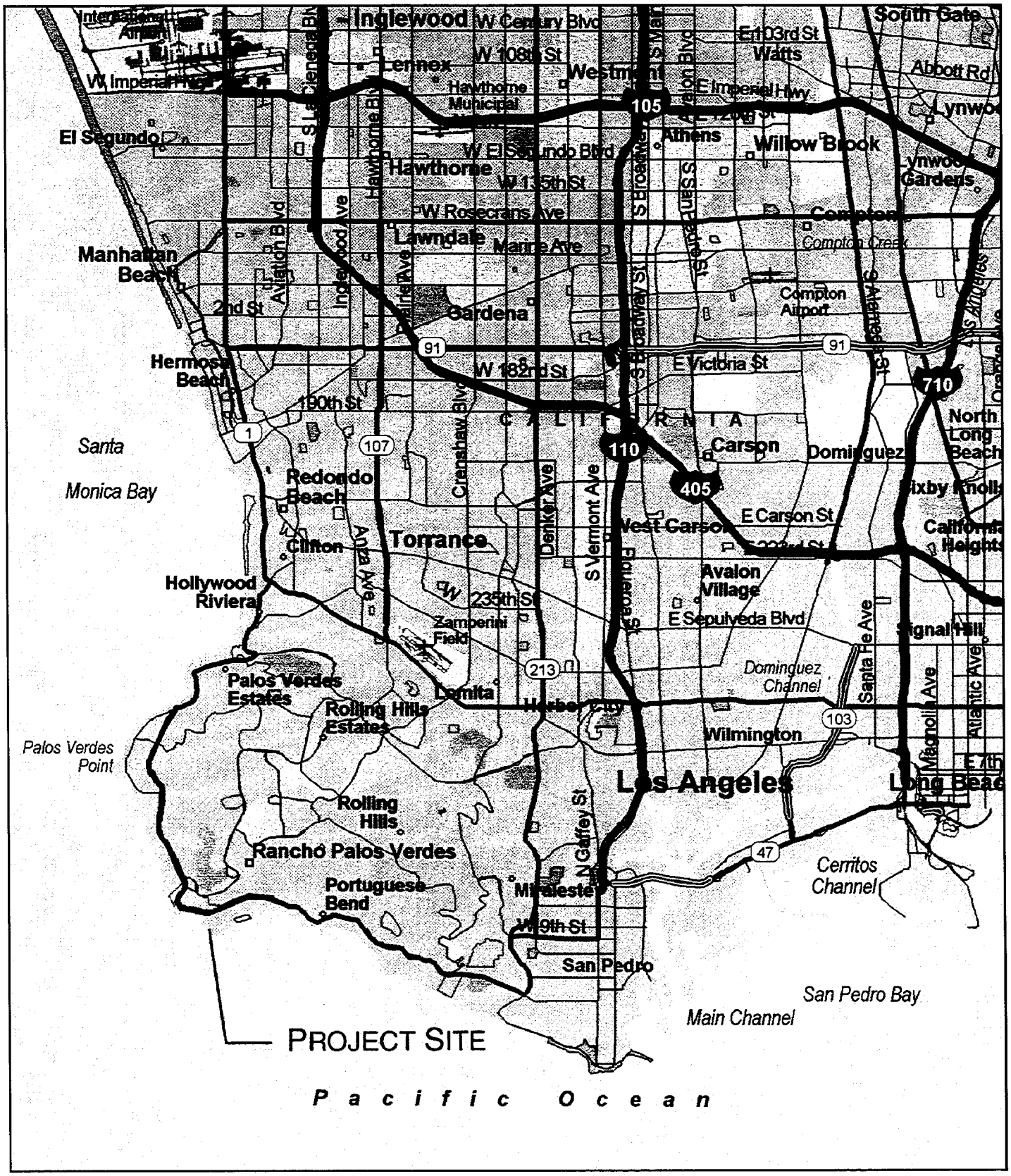
Resort Hotel Area

The Resort Hotel Area involves approximately 103.5 acres situated south of Palos Verdes Drive South, on the Long Point site within the Rancho Palos Verdes' Coastal Specific Plan area. This Area is the location of the former Marineland Aquatic Park. This Area is bounded Palos Verdes Drive South to the north, the Pacific Ocean to the south, residential areas to the east and the Pacific Ocean/open space to the west. Improvements associated with Marineland resulted in the disruption and grading of a vast majority of this site. Although the parking lots and roads associated with Marineland still exist today, the majority of the structures were demolished in 1988. Buildings which remain standing include, among others, the Galley West Restaurant and Bar, Pereira Motel, Lookout Point Bar, and the still-operating Catalina Room, a banquet facility. The Resort Hotel Area is currently used for several property offices (including those of the landowner, York Long Point Associates (YLPA)), weddings, and occasional movie shoots.

Upper Point Vicente Area

The inland component of the project is referred to as the Upper Point Vicente Area. This approximately 64.9-acre Area lies outside of the City's Coastal Specific Plan Area and the State's Coastal Zone. This Area is bounded by a neighborhood shopping center (Golden Cove), a church (St. Paul's Lutheran Church), and a residential condominium complex (Villa Capri) to the north, and by Palos Verdes Drive South and Palos Verdes Drive West to the south and west. Situated to the east of this Area are the Salvation Army's Regional Training Center and the City of Rancho Palos Verdes City Hall. A 3.9-acre U.S. Coast Guard site forms an island within this Area, west of the City Hall, however, is not a part of the project.

Overall, this Area has been extensively graded for military and agricultural uses. Situated south of the City Hall and within the limits of this Area is the City's Corporate Yard (approximately four acres) which includes outdoor storage and maintenance facilities. Situated within the City's Corporate Yard are bunkers which are remnants of the Area's past use as a missile facility. A fire access road traverses through this Area extending from the City Hall to the U.S. Coast Guard site. Existing uses on the U.S. Coast Guard site include governmental and commercial uses related to an onsite antenna. Situated along the Area's eastern boundary, adjacent to the Salvation Army's property, is an approximately nine-acre area presently used for agricultural purposes.



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LONG POINT RESORT
INITIAL STUDY/ENVIRONMENTAL CHECKLIST

Regional Vicinity

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Exhibit 2-1

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2.2 BACKGROUND

Land ownership within the Project Area is detailed in Table 2-1, *Property Ownership* and illustrated on Exhibit 2-3, *Property Ownership Map*. As indicated in Table 2-1 and Exhibit 2-3, York Long Point Associates is the primary private landowner; the City of Rancho Palos Verdes is the primary public landowner. Details regarding the ownership, as well as the jurisdictions pertaining to the two project areas, are provided in Table 2-1.

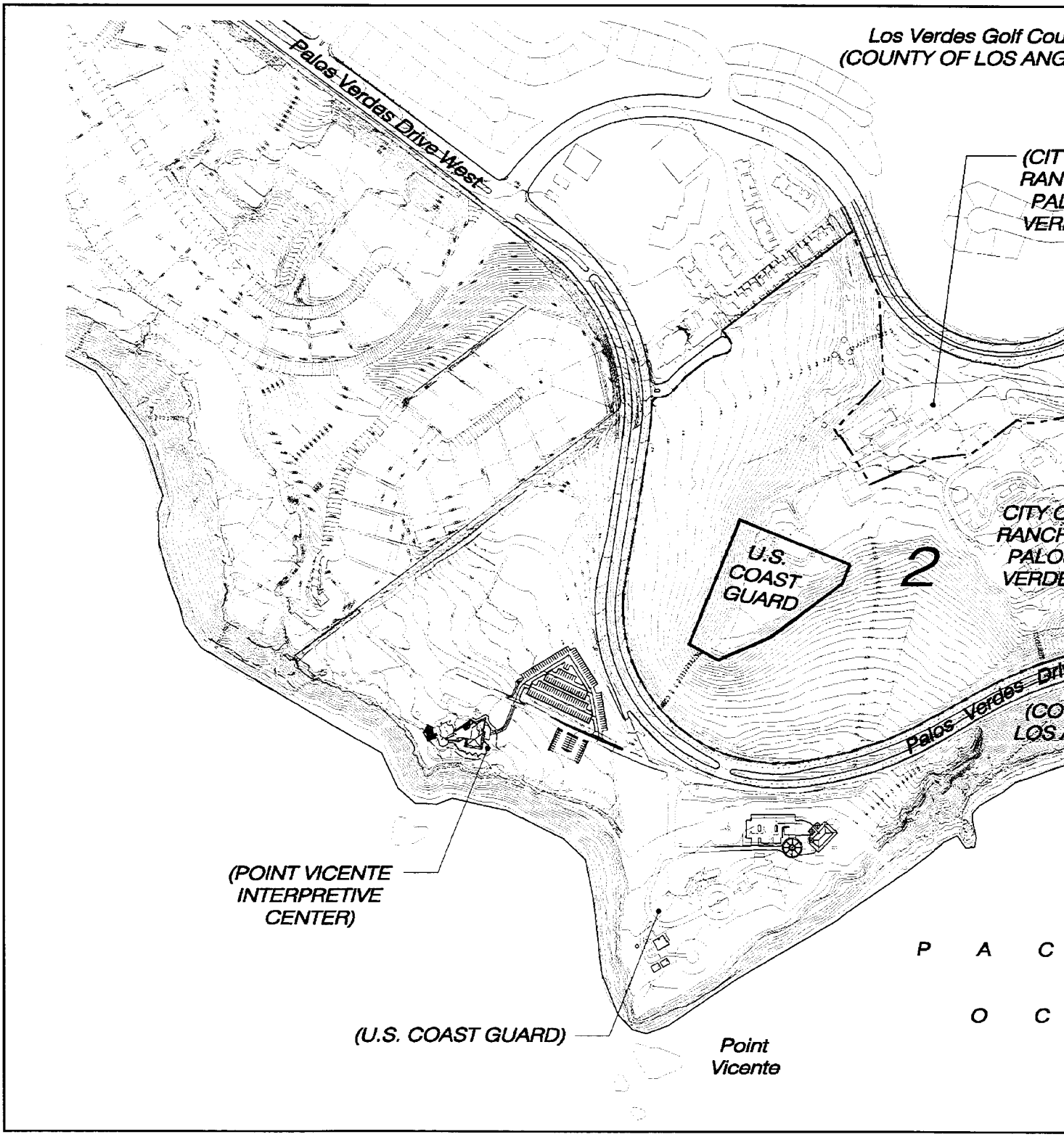
TABLE 2-1
PROPERTY OWNERSHIP

Geographical Area	York Long Point Assoc.	City of Rancho Palos Verdes	Cigna	Total	Within Coastal Zone
Resort Hotel Area	102.1	0.0	1.41	103.5	103.5
Upper Point Vicente Area	0.0	64.9	0.0	64.9	0.0
Total	102.1	64.9	1.4	168.4	103.5

Resort Hotel Area

This Area is owned by York Long Point Associates (YLPA) with the exception of an approximately 1.4-acre parcel owned by Cigna which extends along the eastern property line of the site, west of Nantasket Drive. Historically, the Long Point parcel remained undeveloped land until construction of the Marineland Aquatic Park was initiated in 1953. The Park opened on August 28, 1954, and occupied a unique niche in the Southern California attractions market for a number of years, with attendance peaking at over one million persons per year. In the early 1980's, attendance and revenue began to decline, operating losses mounted and the park was closed on March 1, 1987, shortly after its purchase by Harcourt, Brace & Jovanovich. Soon after, all of Marineland fish, animals, and equipment were transferred to Sea World in San Diego. Numerous facilities, including the majority of all aquatic tanks, were demolished in 1988. Remnants of Marineland's physical improvements continue to be utilized today. Buildings which remain on-site include, among others, the Galley West Restaurant and Bar, Pereira Motel, Lookout Point Bar, and the Catalina Room. No additional structures or facilities have been constructed or developed within the Resort Hotel Area. The northeast portion of the site was utilized in the past for agricultural production, however, it is currently fallow.

Three months after Marineland closed, Harcourt, Brace & Jovanovich sold the land and assets to the Monaghan Company. It was the objective of the Monaghan company to develop a world class resort hotel and conference center with a full range of recreational amenities. On January 31, 1990, the Monaghan Company submitted to the City of Rancho Palos Verdes their application for development of a 531-room hotel, a 60,000-square foot conference center, 295 casita units, a 48,500-square foot athletic club, a 10,000-square foot café and flower market, a 200-room hotel, and a private heliport. On July 2, 1991, the City Council certified



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Environmental Impact Report No. 29 (State Clearinghouse No. 880-62211) which was prepared to assess the potential environmental impacts associated with the proposed development. Also in 1991, 102 acres of the Resort Development Area received City and Coastal Commission development entitlements, including a Conditional Use Permit (CUP) and Coastal Development Permit (CDP) to allow construction of a 400-room hotel, 50 casitas units, a 9-hole golf course, and various commercial and visitor-serving facilities. In 1995, York Long Point Associates, the current landowner, purchased the property. The CUP and CDP have been extended at the request of York Long Point Associates through September 11, 2000 and remain viable and independent of the current proposed project.

Upper Point Vicente Area

This approximately 64.9-acre Area is owned by the City of Rancho Palos Verdes.[1] The United States Army had occupied portions of this Area for use as coastal defense bunkers during World War II and as a Nike air-defense missile facility during the middle of the Cold War. The Army discontinued use of the NIKE missile sites on the Palos Verdes Peninsula in 1974. In 1978 the City acquired this Area (along with an additional 10.63, a 75.53-acre total) from the federal government. An approximately eight-acre portion of this Area is owned outright by the City. The remainder was transferred to the City under the Land to Parks Program, carrying a deed restriction requiring use of the land only for public recreation purposes. The approved Program of Utilization (POU) for the transferred deed restricted property includes an active recreation area, picnic/open space area with trails, and parking.[2] Additionally, the federal government transferred the Point Vicente Bunker site to the U.S. Coast Guard (approximately 3.9 acres). The approximately 3.9-acre property is owned by the U.S. Coast Guard. This site is presently not in active use by the Coast Guard, however, is passively used as the location of an antenna.

The Rancho Palos Verdes City Hall and Corporate Yard were relocated to the site in various buildings adapted from the missile facility in 1975. Remnants of the missile facility include two approximately 3,000 square foot underground bunkers situated behind the bluff, south of the City's existing corporate yard. Other military facilities include a World War II-era bunker at the front of the point on the U.S. Coast Guard property. An approximately nine-acre area in the lower portion of the City's property (adjacent to the Salvation Army's property) is presently used for agriculture.

2.3 PROJECT CHARACTERISTICS

Long Point is intended to be a multi-faceted destination Resort. The Resort is planned to provide approximately 31.6 acres of conserved and enhanced habitat and approximately 81 acres of public open space and recreation facilities including 100 general public parking spaces, two shoreline access ramps, seven public parks and overlooks, 11.1 miles of public walking/hiking trails, a public golf practice facility, and a 9-hole public-use golf course. These public trails link visitor-serving areas of the Resort with public facilities within the surrounding

[1] The U.S. Coast Guard owns approximately 3.9 acres which forms an island within the western portion of this Area.

[2] U.S. Department of the Interior National Park Service Correspondence of July 20, 1999.

area (i.e., Rancho Palos Verdes City Hall, Point Vicente Interpretive Center, and the County's Point Vicente Fishing Access).

The cornerstone of the Long Point Resort is a full-service hotel which would provide a main hotel building, bungalows, and casita accommodations, as well as indoor and outdoor restaurants and bars, flexible meeting and function spaces, and outdoor features including swimming pools, viewing decks, landscaped gardens, and other public areas.

Additionally, the proposed project involves improvements to the City-owned property situated off-site, between the Upper Point Vicente Area and Hawthorne Boulevard. Proposed improvements include reconfiguration of the Rancho Palos Verdes City Hall parking area and relocation of the City's existing Corporate Yard. The proposed Corporate Yard an approximately 3,150-square foot equipment storage building (with office space), outdoor bulk storage space, and a parking area.

LAND USE PLAN

The Land Use Plan for the Long Point Resort is illustrated on Exhibit 2-4, *Land Use Map*, and outlined in Table 2-2, *Land Use Summary*. As shown on Exhibit 2-4 and Table 2-2, the project is divided into three (3) distinct land use districts: the Conservation District; the Recreation District; and the Resort Development District. These Districts are divided into four (4) planning areas which in turn are divided into 12 project components.

Conservation District

The Conservation District involves the Habitat Conservation/Enhancement Planning Area as detailed in Table 2-2, *Land Use Summary,* and as described below:

Habitat Conservation/Enhancement (Planning Area 1). PA 1 contains two conservation components totaling approximately 31.6 acres. These conservation components are described as follows:

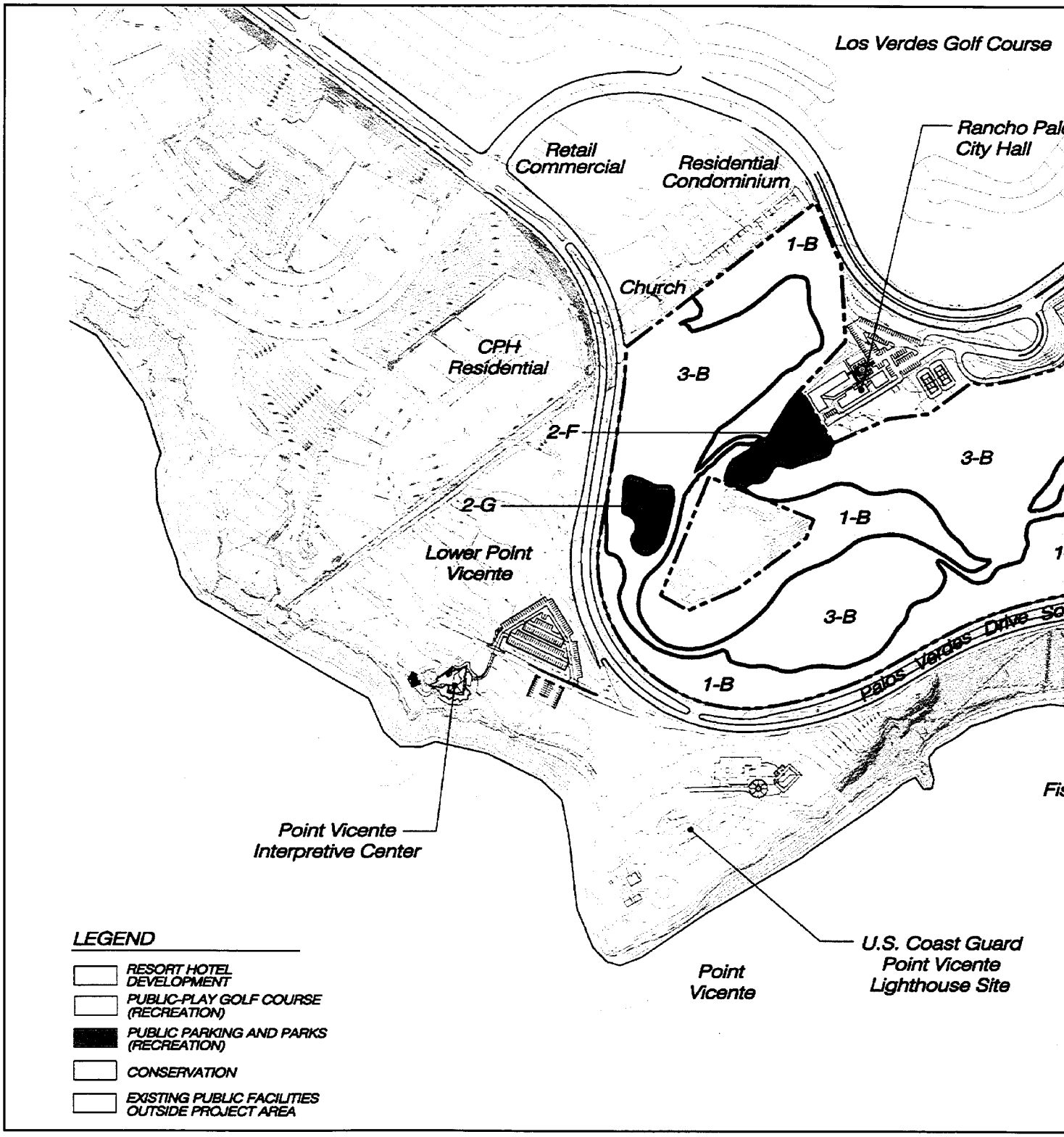
- *Bluff Face/Habitat Reserve Below Resort Hotel (PA 1-A)* - This component involves approximately 6.7 acres comprising the westerly bluffs and shoreline below the Resort Hotel. It encompasses approximately 5.3 acres of Southern Coastal Bluff Scrub along the bluff-face and approximately 1.4 acres of rocky shoreline above mean sea level.

- *Upper Point Vicente Coastal Sage Scrub Habitat (PA 1-B)* - This approximately 24.9-acre component would be conserved, enhanced and created as Coastal Sage Scrub habitat. The public trails, golf course and golf practice facility were designed around this habitat, although some public walking and interpretive trails would cross through this Planning Area.[3] The project involves the creation of an additional approximately nine acres of Coastal Sage Habitat within this Area and providing linkage to other habitat areas in the City.

[3] Where golf cart paths pass through these areas, they are not included as a part of the Conservation District acreage.

TABLE 2-2
LAND USE SUMMARY

Land Use Plan Category	Planning Area	Resort Component	Size		
			Gross Acres	Percent of Area	Overnight Accmmdtns. (rooms/units)
Conservation	**1**	**Habitat Conservation/Enhancement:**			
	1-A	Bluff-face/Habitat Reserve Below Resort Hotel	6.7	4%	0
	1-B	Upper Point Vicente Coastal Sage Scrub Habitat	24.9	15%	0
		Subtotal - Conservation	***31.6***	***19%***	***0***
Recreation	**2**	**Public Parking, Parks, Trails, Coastal Access, and Shore Area**			
	2-A	Fishing Access Parking Expansion	1.0	1%	0
	2-B	Bluff-Top Park	2.2	1%	0
	2-C	Palos Verdes Drive Trails Corridor/Flowerfield Trail Corridor	3.8	2%	0
	2-D	Resort Coastal Access Parking Area	0.4	0%	0
	2-E	Long Point Overlook	0.2	0%	0
	2-F	City Hall Park Expansion	1.6	1%	0
	2-G	Point Vicente Overlook	1.0	1%	0
	3	**Public Use Golf Course and Practice Facility**			
	3-A	Resort Development Area (Holes 1 and 6-9, Clubhouse, and Parking)	33.9	20%	0
	3-B	Upper Point Vicente (Holes 2-5, Public Golf Practice Facility, Maintenance Facility and Parking)	37.1	22%	0
		Subtotal - Recreation	***81.2***	***47%***	***0***
Resort Hotel Development	**4-A**	**Resort Hotel** (acres include accommodations, public areas, food and beverage areas, prefunction/function/meeting areas, spa/health center, back of house, pools and decks, landscaped grounds, and surface/underground parking facilities)	55.6	33%	
		Main Building Rooms/Bungalows (rooms/maximum keys)	–	–	400
		Resort Casitas (flexible accommodations/maximum keys)	–	–	50/150
		Resort Villas (units/maximum keys)	–	–	32
		Subtotal - Resort Hotel Development	***55.6***	***33%***	
TOTAL	**ALL**		**168.4**	**100%**	–



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Recreation District

The approximately 81.2-acre Recreation District is made up of two Planning Areas including the Public Parking, Parks, Trails, Coastal Access and Shore Area (PA 2), and the Public Use Golf Course and Public Golf Practice Facility (PA 3).

Public Parking, Parks, Trails, Coastal Access, and Shore Area (Planning Area 2). PA 2 contains general recreation facilities which include approximately 10.2 acres of general public parks, parking/trails staging areas, and trails/Coastal access ways.

It should be noted that public trails are also proposed within conservation areas (Conservation District) and the public play golf course (PA 3-A and PA 3-B).

- *Fishing Access Parking Expansion (Planning Area 2-A)*: This component involves an approximately 1.0-acre expansion of the existing Point Vicente Fishing Access. This parking area expansion would provide 50 additional public parking spaces directly accessible from Palos Verdes Drive South in the Resort Hotel Area and would be integrated into the existing Fishing Access parking lot.[4]

- *Bluff-Top Park (Planning Area 2-B)*: This component involves an approximately 2.2-acre park which would provide extensive viewing, passive recreation, and trails staging area in proximity to the Fishing Access Parking Expansion.

- *Palos Verdes Drive Trails Corridor and Flowerfield Trail Corridor (Planning Area 2-C)*: An approximately 3.8-acre open space and trail corridor would follow along Palos Verdes Drive South the length of the Resort Hotel Area, progressing toward the Ocean as the Flowerfield Trail, and connecting to Vanderlip Trail.

  These proposed trails would implement the City's Trail Master Plan in the vicinity of the Resort and would include pedestrian, multi-use (including bicycle) trails, and potentially an equestrian link. Refer to the discussion below for further details regarding the proposed public trail network.

- *Resort Hotel Coastal Access Parking Area (Planning Area 2-D)*: This 50-space, approximately 0.4-acre, public parking area would be developed in the interior of the Resort Hotel Area, directly accessible from the Resort Entry Drive and adjacent to the golf course parking area. This parking area would be signed along Palos Verdes Drive South and within the Resort as "public coastal access."

- *Long Point Overlook (Planning Area 2-E)*: This approximately 0.2-acre component, would involve an overlook situated approximately mid-way up the Upper Point Vicente slope and offering views of the Resort in the direction of Long Point. This overlook would serve as a resting place prior to climbing the steps and trails that lead up to higher elevations.

---

[4] The existing Point Vicente Fishing Access is owned and operated by the County of Los Angeles. This Fishing Access is a fully-developed and heavily-used approximately 10.5-acre site containing an estimated 46 public parking spaces and a restroom structure which sit on top of the bluff directly adjoining Palos Verdes Drive South. From there, a well-defined dirt ramp provides pedestrian access down the bluff to the nearby shoreline.

- *City Hall Park Expansion (Planning Area 2-F)*: This approximately 1.6-acre component would be handicapped accessible and would expand the City Hall Park in an easterly direction (on the Oceanside edge) from the City Hall area.

- *Point Vicente Overlook (Planning Area 2-G)*: This approximately 1.0 -acre component is a viewpoint adjacent to the Public Golf Practice Facility. This site would also serve as a trailed from which to access Upper Point Vicente and the City Hall.

Public-Use Golf Course and Public Golf Practice Facility (Planning Area 3). PA-3 encompasses the proposed Public-Use Golf Course and the Public Golf Practice Facility. The proposed 9-hole, approximately 71-acre golf course and golf practice facility would be operated as a public-play, non-membership, fee-per-round golf course, which would include use by Resort Hotel guests, residents and visitors. The golf course would extend across both of the project's geographic regions, beginning at the Resort Hotel Area, progressing to the Upper Point Vicente Area, and retracing it's route to finish play north/northeast of the Resort Hotel.

Maintenance facilities for the golf course may be dispersed between the Upper Point Vicente Area and the Hotel Development Area and may be combined with relocated City maintenance facilities (Upper Point Vicente Area).

- *Resort Development Area (Planning Area 3-A)*: This approximately 33.9-acre area includes initial Hole 1 and concluding Holes 6 through 9, as well as parking, public trails, golf cart staging facilities and clubhouse with limited food service, pro shop, restrooms, etc.. PA 3-A is connected to Planning Area 3-B via a golf cart under crossing (tunnel) of Palos Verdes Drive South.

- *Upper Point Vicente (Planning Area 3-B)*: This approximately 37.1-acre area includes Holes 2 through 5 and the Public Golf Practice Facility. Also proposed are the maintenance facilities, employee parking, public trails and public parks. Restrooms and a refreshment area would be developed to serve both those playing the golf course and those practicing at the golf practice facility.

  The Public Golf Practice Facility includes a public golf practice and learning facility that incorporates putting, chipping and pitching areas, and a driving facility. Public access for this area would be provided via the unnamed roadway between the proposed facility and St. Paul's Lutheran Church. The proposed facility would include one building with a small pro-shop, teaching studio, restrooms, and refreshment area that would be developed in conjunction with (and also serve) the 9-hole golf course.

Resort Development District

The Resort Development District is made up of Planning Area 4 (Resort Hotel) and encompasses approximately 55.6 acres of the 103.5-acre Resort Hotel Area. This area involves development of the Long Point Resort Hotel ("Resort Hotel") including a full-service Resort Hotel and related public facilities, and visitor-serving Resort Villas as described below:

- 400 guest rooms (400 keys) in the main building and bungalows;
- 50 resort casita units distributed in two villages: East Casita Village and West Casita Village. These casitas would be multiple-keyed (at up to 3 keys per casita), for a total of up to 150 overnight accommodations;
- 32 Resort Villas situated along Palos Verdes Drive South and designed architecturally similar to the Resort Hotel buildings. These individually-owned Resort Villas are proposed to be restricted such that visitor-serving accommodations would be provided

a minimum of 75 percent of the year. Recreational facilities and services offered to guests of the Resort Hotel would be offered to residents of the Villas;

- Resort Food and Beverage facilities would include a maximum of four restaurants/bars (400 seats), conferee dining (200 seats), lounges/beverage bars (150 seats) and a pool bar (2,000 square feet). Additionally, the existing Lockout Bar structure would be renovated;
- Banquet/Meeting Rooms and Retail facilities would include approximately 68,000 square feet of ballroom, banquet, meeting, community, prefunction, foyer, flow, convenience services and retail sales space. This space would be made available for conferences, social occasions, and community and public events;
- An approximately 25,000-square-foot full-service Health Spa/Fitness Center;
- A maximum of seven (7) swimming pools, spas and/or Jacuzzi spaced throughout the Resort (not including in-room amenities);
- A maximum of four (4) tennis courts;
- Parking to serve the Resort Hotel would be provided by both surface lots distributed throughout the Planning Area and a multi-level parking structure underneath the Hotel;
- Public areas and amenities within this Area would be linked by a system of public walkways, jogging paths, and bike trails. A range of passive recreation areas such as lawns, scenic overlooks, and seating areas would be provided throughout the Area as well as within the proposed Golf Course.

3.0 INITIAL STUDY CHECKLIST

3.1 BACKGROUND

1.	**Project Title:** Long Point Resort (Coastal Permit No. 166, Conditional Use Permit Nos. 215 & 216, Tentative Parcel Map No. 26073, and Grading Permit Nos. 2229 & 2230)
2.	**Lead Agency Name and Address:** City of Rancho Palos Verdes Department of Planning, Building and Code Enforcement 30940 Hawthorne Boulevard Rancho Palos Verdes, California 90275
3.	**Contact Person and Phone Number:** Mr. David Snow, AICP Tele: 310/544-5228 E-Mail: davids@rpv.com
4.	**Project Location:** Approximately 168.4 acres in the City of Rancho Palos Verdes, California. The City of Rancho Palos Verdes (City) is located in southwestern Los Angeles County, along the Palos Verdes Peninsula of the Southern California coastline and approximately 25 miles southwest of downtown Los Angeles.
5.	**Project Sponsor's Name and Address:** Destination Development Corporation 11777 San Vicente Boulevard, Suite 900 Los Angeles, CA 90049-5011 Mr. Robert Lowe, Jr. Mr. Michael Mahler
6.	**General Plan Designation:** Resort Hotel Area: Resort Hotel Area: Agricultural and Commercial-Recreational; Urban and Socio-Cultural Overlay Control Districts; and Specific Plan District. Upper Point Vicente Area: Recreational Passive; and Natural Overlay Control District.
7.	**Zoning:** Resort Hotel Area: Commercial Recreational (CR); Open Space-Hazard (OH); and Urban, Socio-Cultural, and Natural Overlay Control Districts. Upper Point Vicente Area: Open Space Recreational (OR); Institutional (I); and Natural and Urban Overlay Control Districts.

8.	**Description of the Project:** (Describe the whole action involved, including but not limited to, later phases of the project, and any secondary, support or off-site features necessary for its implementation.) Refer to Section 2.0, *Project Description*.
9.	**Surrounding Land Uses and Setting:** Resort Hotel Area: Approximately 103.5 acres situated south of Palos Verdes Drive South, on the Long Point site within the Rancho Palos Verdes' Coastal Specific Plan area. This Area is bounded Palos Verdes Drive South to the north, the Pacific Ocean to the south, residential areas to the east and the Pacific Ocean/open space to the west. This Area is the location of the former Marineland Aquatic Park which resulted in the disruption and grading of a vast majority of this site. Parking lots and roads associated with Marineland still exist today. Situated immediately adjacent to the Resort Hotel Area's northwest corner is the existing Point Vicente Fishing Access, a fully-developed and heavily-used approximately 10.5-acre site containing an estimated 46 public parking spaces and a restroom structure. Upper Point Vicente Area: The approximately 64.9-acre Upper Point Vicente Area lies outside of the City's Coastal Specific Plan Area and the State's Coastal Zone. This Area is bounded by a neighborhood shopping center, church, and residential condominium complex to the north, and by Palos Verdes Drive South and Palos Verdes Drive West to the south and west. Situated to the east of this Area are the Salvation Army's Regional Training Center and the City of Rancho Palos Verdes City Hall. An approximately 3.9-acre U.S. Coast Guard site is situated within this Area, west of the City Hall. Overall, this Area has been extensively graded for military and agricultural uses. Situated south of the City Hall and within the limits of this Area is the City's Corporate Yard. Situated within the City's Corporate Yard are concrete bunkers which are remnants of the Area's past use as a missile facility. A fire access road traverses through this Area extending from the City Hall to the approximately 3.9-acre U.S. Coast Guard site which is not a part of the project. Existing uses on the U.S. Coast Guard site include governmental and commercial uses related to an onsite antenna. Situated along the Area's eastern boundary, adjacent to the Salvation Army's property, is an area presently used for agricultural purposes.
10.	**Other public agencies whose approval is required (e.g., permits, financing approval or participation agreement).** To be determined as a part of further review in the Program EIR.

3.2 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" or "Potentially Significant Unless Mitigated," as indicated by the checklist on the following pages.

X	Aesthetics	X	Land Use and Planning
X	Agriculture Resources		Mineral Resources
X	Air Quality	X	Noise
X	Biological Resources		Population and Housing
X	Cultural Resources	X	Public Services
X	Geology and Soils	X	Recreation
X	Hazards & Hazardous Materials	X	Transportation/Traffic
X	Hydrology & Water Quality	X	Utilities & Service Systems
X	Mandatory Findings of Significance		

3.3 LEAD AGENCY DETERMINATION

On the basis of this initial evaluation:

I find that the proposed use COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared. _____

I find that although the proposal could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described in Section 3.5 have been added. A NEGATIVE DECLARATION will be prepared. _____

I find that the proposal MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required. X

I find that the proposal MAY have a significant effect(s) on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets, if the effect is a "potentially significant impact" or "potentially significant unless mitigated." An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed. _____

Signature

City of Rancho Palos Verdes
Agency

Joel Rojas, Director of Planning, Building and Code Enforcement
Printed Name

July 18, 2000
Date

3.4 EVALUATION OF ENVIRONMENTAL IMPACTS

This section analyzes the potential environmental impacts associated with the proposed project. The issue areas evaluated in this Initial Study include:

- Aesthetics
- Agriculture Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation/Traffic
- Utilities & Service Systems

The environmental analysis in this section is patterned after the Initial Study Checklist recommended by the CEQA Guidelines and used by the City of Rancho Palos Verdes in its environmental review process. For the preliminary environmental assessment undertaken as part of this Initial Study's preparation, a determination that there is a potential for significant effects indicates the need to more fully analyze the development's impacts and to identify mitigation.

For the evaluation of potential impacts, the questions in the Initial Study Checklist are stated and an answer is provided according to the analysis undertaken as part of the Initial Study. The analysis considers the long-term, direct, indirect, and cumulative impacts of the development. To each question, there are four possible responses:

- **No Impact.** The development will not have any measurable environmental impact on the environment.

- **Less Than Significant Impact.** The development will have the potential for impacting the environment, although this impact will be below established thresholds that are considered to be significant.

- **Potentially Significant Impact Unless Mitigation Incorporated.** The development will have the potential to generate impacts which may be considered as a significant effect on the environment, although mitigation measures or changes to the development's physical or operational characteristics can reduce these impacts to levels that are less than significant.

- **Potentially Significant Impact.** The development will have impacts which are considered significant, and additional analysis is required to identify mitigation measures that could reduce these impacts to less than significant levels.

Where potential impacts are anticipated to be significant, mitigation measures will be required, so that impacts may be avoided or reduced to insignificant levels.

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
1. AESTHETICS. *Would the project:*				
a. Have a substantial adverse effect on a scenic vista?	✓			
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	✓			
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	✓			
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	✓			
2. AGRICULTURE RESOURCES. *In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:*				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				✓
b. Conflict with existing zoning for agricultural use, or a Williamson act contract?				✓
c. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	✓			
3. AIR QUALITY. *Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:*				
a. Conflict with or obstruct implementation of the applicable air quality plan?	✓			
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	✓			
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	✓			
d. Expose sensitive receptors to substantial pollutant concentrations?	✓			

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
e. Create objectionable odors affecting a substantial number of people?	✓			
4. BIOLOGICAL RESOURCES. *Would the project:*				
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	✓			
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?				✓
c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?			✓	
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	✓			
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	✓			
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	✓			
5. CULTURAL RESOURCES. *Would the project:*				
a. Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5?	✓			
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines §15064.5?	✓			
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	✓			

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
d. Disturb any human remains, including those interred outside of formal cemeteries?			✓	
6. GEOLOGY AND SOILS. *Would the project:*				
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
1) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			✓	
2) Strong seismic ground shaking?	✓			
3) Seismic-related ground failure, including liquefaction?			✓	
4) Landslides?	✓			
b. Result in substantial soil erosion or the loss of topsoil?	✓			
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	✓			
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	✓			
e. Have 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?				✓
7. HAZARDS AND HAZARDOUS MATERIALS: *Would the project:*				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	✓			
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			✓	

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				✓
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				✓
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				✓
f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				✓
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	✓			
h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	✓			
8. HYDROLOGY AND WATER QUALITY. *Would the project:*				
a. Violate any water quality standards or waste discharge requirements?	✓			
b. 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 level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			✓	
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	✓			

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	✓			
e. 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?	✓			
f. Otherwise substantially degrade water quality?	✓			
g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				✓
h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				✓
i. 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?				✓
j. Inundation by seiche, tsunami, or mudflow?	✓			
k. Changes in absorption rates?	✓			
l. Changes in the amount of surface water in any water body?	✓			
m. Changes in the currents, or the course of direction of water movements?	✓			
n. Altered direction or rate of flow of groundwater?			✓	
o. Stormwater discharges that would significantly impair the beneficial uses of receiving waters or areas that provide water quality benefits (e.g., riparian corridors, wetlands, etc.)?	✓			
p. Harm to the biological integrity of drainage systems and water bodies?	✓			
9. LAND USE AND PLANNING. *Would the project:*				
a. Physically divide an established community?	✓			

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	✓			
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	✓			
10. MINERAL RESOURCES. *Would the project:*				
a. 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?			✓	
b. 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?				✓
11. NOISE. *Would the project result in:*				
a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	✓			
b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	✓			
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	✓			
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	✓			
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				✓
f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				✓

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
12. POPULATION AND HOUSING. *Would the project:*				
a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			✓	
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?			✓	
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?			✓	
13. PUBLIC SERVICES.				
a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, 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:				
1) Fire protection?	✓			
2) Police protection?	✓			
3) Schools?	✓			
4) Parks?	✓			
5) Other public facilities?	✓			
14. RECREATION.				
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	✓			
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	✓			

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
15. TRANSPORTATION/TRAFFIC. *Would the project:*				
a. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	✓			
b. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	✓			
c. 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?			✓	
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	✓			
e. Result in inadequate emergency access?	✓			
f. Result in inadequate parking capacity?	✓			
g. Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	✓			
16. UTILITIES AND SERVICE SYSTEMS. *Would the project:*				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	✓			
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	✓			
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	✓			
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	✓			

	Potentially Significant Impact	Potentially Significant Unless Mitigated	Less Than Significant Impact	No Impact
e. Result in a determination by the wastewater treatment provider which 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?	✓			
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	✓			
g. Comply with federal, state, and local statutes and regulations related to solid waste?	✓			
17. MANDATORY FINDINGS OF SIGNIFICANCE.				
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	✓			
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	✓			
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			✓	

4.0 ENVIRONMENTAL ANALYSIS

The following is a discussion of potential project impacts as identified in the Initial Study. Explanations are provided for each item.

4.1 AESTHETICS. *Would the proposal:*

a) *Have a substantial adverse effect on a scenic vista?*

Potentially Significant Impact. According to Figure 41, *Visual Aspects*, of the Rancho Palos Verdes General Plan, project implementation has the potential to impact both views and vistas which exist on the project site or in the immediate vicinity. Views across the site from adjacent nearby uses may be impacted by structures proposed on-site. Additional analysis is necessary with regard to building heights, setbacks and lot coverage to assess visual impacts associated with the project from both private and public properties.

b) *Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*

Potentially Significant Impact. Palos Verdes Drive South is not a designated state scenic highway. However, project implementation may damage scenic resources which exist onsite including rock outcroppings. Additional analysis is necessary with regard to the project's impact upon scenic resources.

It should be noted that while historic buildings/facilities exist on the project site, including a number of military fortifications and the former Marineland facility, these are not considered scenic resources. Therefore, project implementation would not result in a significant impact in this regard. Refer to Response 4.5(a) for a discussion of the project's potential impact with respect to the historic significance of these buildings/facilities.

c) *Substantially degrade the existing visual character or quality of the site and its surroundings?*

Potentially Significant Impact. Surrounding uses which may be affected by changes to the subject property include single- and multi-family residents as well as motorists utilizing Hawthorne Boulevard and Palos Verdes Drive South. Although the site is surrounded with urban development, it continues to maintain a rural character. Implementation of the proposed improvements would transform the characters of both the Resort Hotel Area and the Upper Point Vicente Area. In the Resort Hotel Area, project implementation would create an urban environment as a result of the proposed buildings (i.e., heights and masses), ornamental landscaping (i.e., golf course), and paved surfaces. In the Upper Point Vicente Area, the rural character would be partially retained in that project implementation would involve significant revegetation with native species and landscaping. Additional analysis is required to determine if the project's impacts upon the character and quality of the site.

d) *Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?*

Potentially Significant Impact. Currently, a limited amount of light and glare is generated on-site. The proposed project would include lighting for activity areas involving nighttime uses, parking, lighting around the structures (security lighting, walkways) and lighting for interiors of buildings. On-site lighting may create spillover impacts to surrounding uses. Potential impacts related to light and glare require further analysis.

4.2 AGRICULTURE RESOURCES. ***In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:***

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

No Impact. Pursuant to the Farmland Mapping and Monitoring Program for the California Resources Agency, the subject site is not identified as an agricultural resource and is not designated as Prime Farmland, Unique Farmland, or Farmland of Statewide importance.

b) *Conflict with existing zoning for agricultural use, or a Williamson act contract?*

No Impact. Implementation of the project would not result in any conflicts with existing zoning for agricultural use or a Williamson Act Contract. The Resort Development Area is zoned Commercial Recreational and the Upper Point Vicente Area is zoned Open Space-Recreational.

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

Potentially Significant Impact. Portions of the project site are currently or have been in the past used for agricultural purposes. Situated along the Area's eastern boundary, adjacent to the Salvation Army's property, is an approximately nine-acre area presently used for agricultural purposes. Thus, implementation of the proposed project may result in changes to the environment that would result in the conversion of farmland to a non-agricultural use. Further analysis is necessary to determine impacts associated with the conversion of farmland to non-agricultural use.

4.3 AIR QUALITY. ***Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:***

a) *Conflict with or obstruct implementation of the applicable air quality plan?*

Potentially Significant Impact. The project site is located within the South Coast Air Basin (SoCAB), an area monitored by the South Coast Air Quality Management District (SCAQMD). SoCAB was identified as non-attainment for Ozone (O_3), Carbon Monoxide (CO) and Suspended Particulate Matter (PM_{10}). Further review is necessary to confirm the project's status in terms of compliance/conflict with current SCAQMD guidelines.

b) *Violate any air quality standard or contribute substantially to an existing or projected air quality violation?*

Potentially Significant Impact. Development and operation of the Long Point Resort project would result in pollutant emissions from three different sources, including: (1) short-term construction emissions, (2) long-term mobile emissions from trucks and vehicles traveling to and from the site once the project is operational, and (3) long-term stationary emissions from power and gas consumption and machinery and equipment on-site.

The greatest potential for air quality impacts from the project would be attributed to mobile emissions. The project's potential air quality impacts on a local and regional level requires an evaluation pursuant to the SCAQMD and California Air Resources Board (CARB) requirements and methodology. Additional analysis is necessary to quantify potential project-related air quality impacts (both short-term and long-term) and identify appropriate mitigation that would be effective in reducing pollutant emissions.

c) *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?*

Potentially Significant Impact. Refer to Responses 4.3(a) and 4.3(b).

d) *Expose sensitive receptors to substantial pollutant concentrations?*

Potentially Significant Impact. Sensitive populations (i.e., children, senior citizens and acutely or chronically ill people) are more susceptible to the effects of air pollution than are the general population. Land uses considered sensitive receptors typically include residences, schools, playgrounds, child care centers, hospitals, convalescent homes and retirement homes. Sensitive receptors in proximity to the project site include existing residences. Construction and operation of the project would increase vehicle trips on area roadways and result in associated air pollutants. Grading and excavation operations may also have air quality impacts in the absence of mitigation. These impacts require additional analysis to assess their level of significance and to identify appropriate mitigation measures.

e) *Create objectionable odors affecting a substantial number of people?*

Potentially Significant Impact. The proposed Resort/restaurant uses have the potential for creating objectionable odors. These emissions would be comparable to those anticipated with any type of commercial activity (e.g., food service activities). Some businesses, such as restaurants with exhaust vents, are considered "stationary point sources" and may be subject to further regulatory requirements above and beyond any requisite CEQA mitigation. While the emissions from these activities are common and not identified as being particularly hazardous, they may be subject to permitting requirements that call for the use of "best available control technology" in order to eliminate or reduce the levels of emissions. Any potential nuisance related to odor that may occur with these activities would be mitigated under the SCAQMD's permitting requirements.

4.4 BIOLOGICAL RESOURCES. *Would the project:*

a) *Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?*

Potentially Significant Impact. A Biological Resources Report and Impact Assessment was prepared by Dudek & Associates, Inc. for the site, dated September 1999, to describe the biological character of the site in terms of vegetation, flora, wildlife, and wildlife habitats, and analyze the biological significance of the site in view of federal, state and local laws and policies. Three native plant communities or habitat types including disturbed forms were identified onsite: coastal sage scrub; southern cactus scrub; and coastal bluff scrub. In addition, three altered or non-native habitat types are present: non-native (annual) grassland; developed;

and disturbed habitat. One plant species considered sensitive by various resource agencies occurs on the site: bright green dudleya (Dudleya virens).

One animal species listed as threatened by the U.S. Fish and Wildlife Service (USFWS), the coastal California gnatcatcher (Polioptila californica californica), was observed on the site. One species formerly recognized as a Category 2 candidate for listing by the USFWS, the loggerhead shrike (Lanius ludovicianus), was observed on the site. The cactus wren (Campylorhuchus brunneicapillus), recognized as a "species of special concern" by the California Department of Fish and Game (CDFG) and a focal species in the City's Natural Community Conservation Plan (NCCP), was also observed on the Upper Point Vicente Area during the spring 1998 surveys. Although presently in draft from, the City's NCCP will establish Biological Reserve Areas(s) in the City to provide for protection of the Federally threatened California gnatcatcher, sensitive native plant communities (such as coastal sage scrub), an other sensitive species (such as the coastal cactus wren and loggerhead shrike). Refer to Response 4.4(f) for further discussion regarding the City's NCCP.

Due to the site's location, project impacts on marine resources which occur on the rock shorelines below the proposed development areas should be evaluated due to runoff potential and increase in visitors. The evaluation should include the shoreline and subtidal resources below the mean high water mark adjacent to the project area. Additionally, an evaluation of the project's impacts to the California Sea Lions which have been seen on the property would be required.

Potential impacts from the proposed project to on-site and surrounding vegetation and wildlife require further evaluation.

b) *Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?*

No Impact. The project area is void of riparian corridors and habitat. Thus, no impact to sensitive natural communities would occur.

c) *Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*

Less Than Significant Impact. U.S. Army Corps of Engineers jurisdictional "waters of the United States" were delineated on April 28, 1998 in accordance with the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual (TR Y-87-1). Currently there are no wetlands present on the project site; although, one three-foot wide non-wetland jurisdictional area, an incised channel, is located in the southeastern portion of the Resort Center Area. Therefore, less than significant imparts are anticipated to occur in this regard.

d) *Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*

Potentially Significant Impact. Although there are no designated migratory wildlife corridors in the project area, the Upper Point Vicente Area is considered an active or potential corridor for the movement of wildlife. Also, additional analysis is necessary to assess NCCP migratory bird issues through the Upper Point Vicente Area (refer to Response 4.4(f) for a discussion regarding the City's NCCP). Further review of available reference data will be required to

determine the project's affect upon wildlife movement. There are no native wildlife nurseries within the area.

e) *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

Potentially Significant Impact. Portions of both the Upper Point Vicente Area and the Resort Hotel Area are situated within a Natural Overlay Control District. According to Section 17.40.040 of the Municipal Code, this District is established to:

1. Maintain and enhance land and water areas necessary for the survival of valuable land and marine-based wildlife and vegetation; and
2. Enhance watershed management, control storm drainage and erosion, and control the water quality of both urban runoff and natural water bodies within the city.

These regulations further identify performance criteria which would be used in assessing the proposed land uses, development and alterations made to the project areas. Further evaluation is necessary to determine project impacts in this regard.

f) *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*

Potentially Significant Impact. Pursuant to the California Natural Community Conservation Planning Act of 1991 and the federal Endangered Species Act, the City of Rancho Palos Verdes is in the process of developing a Natural Community Conservation Plan (NCCP) for areas within its jurisdiction. Upon approval by State and Federal agencies, the City's NCCP will establish Biological Reserve Areas(s) in the City to provide for protection of the Federally threatened and sensitive species. Although the NCCP has not been adopted and is still in draft form, the EIR will address the project's conformity to the provisions of the City's current draft of the NCCP. Further review would be required to determine whether the project would conflict with the NCCP.

In the event the NCCP is not finalized, the applicant has prepared the Long Point Habitat Conservation Program. The Program provides for approximately 31.6 acres of native habitat conservation and enhancement, and approximately 7.8 acres of restored and new habitat. would be subject to the Habitat Conservation Plan (HCP). Further review would be required to determine whether the project is in compliance with the HCP requirements.

4.5 CULTURAL RESOURCES. *Would the project:*

a) *Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5?*

Potentially Significant Impact. The project area contains a number of military fortifications as well as the Marineland site. These onsite resources require further evaluation to determine the project's historical resources impacts.

b) *Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines §15064.5?*

Potentially Significant Impact. A Cultural Resources Survey Report was prepared by John Minch and Associates (JMA), Inc. (September 25, 1999). According to the Report, a records search of the project area was conducted at the South Central Coastal Information Center

(CCCIC) at the University of California, Los Angeles. The results of the records search indicated that one prehistoric archaeological site (LAN-103) and one isolated find (Primary #19-100099) have been previously recorded within the boundaries of the Upper Point Vicente portion of the project site.

Prehistoric Site LAN-103: This site lies in the western portion of the Upper Point Vicente Area. It was recorded by F.H. Racer in 1939 and described as a rockshelter with midden and shell (abalone). According to Racer, the rockshelter had been looted many years prior to 1939. A supplemental site record form filed by Ron Bissell in 1998 indicates that despite an effort to relocate the site, it appears to have been destroyed. This site could not be located during the site survey completed by JMA on July 16, 1999.

Isolated Find Primary #19-100099: In 1989, Richard Perry of the Los Angeles office of the Army Corps of Engineers recorded two isolated chert flakes in the vicinity of the U.S. Coast Guard Property. These two chert flakes could not be located during the site survey completed by JMA on July 16, 1999.

While the field surveys failed to relocate either prehistoric location, the potential exists that they still exist and will be located through the development process. Furthermore, not all open land was systematically surveyed due to farming operations and obscured surface visibility. Additional analysis is necessary to further evaluate project impacts on archaeological resources and identify appropriate mitigation.

c) *Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

Potentially Significant Impact. Previous assessments on-site have identified fossils during field reconnaissances. The fossils are primarily associated with the Monterey Formation located on-site. An evaluation of potential impacts to on-site paleontological resources is required.

d) *Disturb any human remains, including those interred outside of formal cemeteries?*

Less Than Significant Impact. It is not anticipated that human remains would be found on-site. However, since Los Angeles and most of Orange County were inhabited by the "Gabrieliño"[5], the potential exists that human remains may be encountered during site development. In the event human remains were discovered during construction, work would cease and appropriate County representatives would be informed and consulted.

4.6 GEOLOGY AND SOILS. *Would the project:*

a) *Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:*

1) *Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.*

[5] According to the Report by JMA, the Gabrieliño represented a branch of desert dwellers who moved to coastal southern California during the first millennium A.D.. These prehistoric people lived in scattered villages and relied upon hunting and gathering for subsistence.

Less Than Significant Impact. Although the Palos Verdes Peninsula is part of a seismically active region, no faults are known to extend through the site and the likelihood of fault-related ground rupture affecting the property is negligible. Thus, the proposed project would not expose people to potential impacts involving fault rupture.

2) *Strong seismic ground shaking?*

Potentially Significant Impact. Although no known faults exist within the project boundary, the site would experience ground motion and effects from earthquakes generated along active faults located off-site. The intensity of groundshaking would depend upon the magnitude of the earthquake, the distance to the epicenter, and the geology of the area between the epicenter and the project site. It should be noted that a strong movement along the Cabrillo fault, located approximately two and one half miles to the south of the site, may have some groundshaking effects. Recent findings have indicated that there has been movement of the offshore segment of the fault. This fault could, therefore, be considered potentially active. Current development standards would require the project applicant to comply with appropriate seismic design criteria in accordance with Uniform Building Code. Additional analysis is required to determine the potential significance of impacts associated with seismic ground shaking.

3) *Seismic-related ground failure, including liquefaction?*

Less Than Significant Impact. The potential for ground failure, such as liquefaction during a strong earthquake is limited to soils that are relatively cohesionless, relatively loose, unconsolidated and are below the water table. The project site does not contain specific geologic hazards that make it particularly vulnerable to major earthquake damage. Also, subsurface conditions on-site are not favorable for liquefaction. Therefore, the project is not anticipated to result in or expose people to potential impacts related to seismic ground failure or liquefaction (also refer to Responses 4.6 (a) (1) and (2) of this Initial Study).

4) *Landslides?*

Potentially Significant Impact. Certain regions in the Palos Verdes area are known for being susceptible to landsliding. Two large landslides on the Palos Verdes Peninsula, the Abalone Cove Landslide and the Portuguese Bend Landslide, are located approximately 1.1 and 1.6 miles east-northeast of the site, respectively. Factors conducive to the movement of the two notable landslides, and other landslides in the area, include the structural orientation of the bedrock units involved (unsupported beds dipping seaward), high ground water, and the presence of numerous tuff beds, including the Portuguese Tuff, within the stratigraphic section. Under conditions of high moisture content these tuff beds become weak and susceptible to sliding.

The Portuguese Tuff, which is a distinctive mappable unit in the Palos Verdes areas, is not known to occur beneath the project area and the risk of large scale landsliding at the Long Point site is minimal. Point Vicente, South Point, Middle Point, North Point, and Long Point are headland areas considered to be resistant to rapid erosion or sliding due to the locations of the plains.

Four relatively minor landslides have been observed along the sea cliff below the former Marineland site. These slide masses occur where large blocks of Altamira Shale are exposed on the face of the sea cliff. No other areas of landsliding are known to be present within the remaining portion of the project area. The potential for impacts related to landslides and/or mudflows on the project site requires further analysis to determine their significance.

b) *Result in substantial soil erosion or the loss of topsoil?*

Potentially Significant Impact. Grading and trenching during the construction phase of the project would increase the potential for erosion; however, implementation of erosion control measures as required by the City and adherence to all requirements set forth in the National Pollutant Discharge Elimination System (NPDES) permit required for construction would reduce these impacts to less than significant levels. Initial phases of construction may require export of soil and/or rock material. Further analysis is required to determine the significance of these potential impacts.

The sea cliff along the site's boundary is an erosional feature whose presence indicates that, over the past several thousand years, the shoreline has been slowly migrating in a landward direction. The potential for inland erosion from the sea cliff requires additional analysis to determine the significance of potential impacts.

c) *Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?*

Potentially Significant Impact. Refer to responses throughout Section 4.6.

d) *Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?*

Potentially Significant Impact. The on-site soils are generally moderate to highly expansive. However, due to widespread grading activities along the gently sloping terraced surface on the west and south side of Palos Verdes Drive South, the majority of these soils have been stripped away and used to re-grade the former Marineland and residential lots. A strip of relatively undisturbed native soils remains along the top of the bluffs north of the former Marineland site. Potential impacts associated with expansive soils requires further analysis to determine their significance and to identify appropriate mitigation measures.

e) *Have 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?*

No Impact. The project proposes to install on-site sewer lines. It would not be necessary to install septic tanks or other alternative types of wastewater disposal systems. No significant impacts are anticipated in this regard.

4.7 HAZARDS AND HAZARDOUS MATERIALS. *Would the project:*

a) *Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*

Potentially Significant Impact. A Phase I Environmental Assessment (June 30, 1999) was prepared for the project site to evaluate the potential presence of hazardous materials and the expected nature of the materials that may be present on the project site. A summary of the survey results are as follows:

- Due to the age of the existing on-site structures, the potential for asbestos-containing-material (ACM) to be found on-site is considered likely;

- Based on the presence of structures built prior to 1978, the presence of lead-based paint materials is likely;

- The review of available environmental documentation and interviews indicate that previous uses within the site may have resulted in a potential adverse environmental conditions. Specific uses include the missile silos and bunker on the Upper Point Vicente Area and some of the former structures on the Resort Center Area.

  A Phase II level investigation was recommended to determine the level of potential contamination associated with the historic use of the Upper Point Vicente Area. The focus of the investigation would be the determination of the actual absence or presence of the suspected underground storage tanks and fuel tank located near the Point Vicente Bunker. If determined present, soil sampling and/or testing to determine the characteristics and extent of potential contaminants would be required. Results of the sampling will indicate whether remediation efforts will be necessary

The potential for adverse environmental conditions on the project site from these previous uses requires further evaluation.

Future uses on-site may handle materials that are considered hazardous, though these materials would be limited to solvents and chemicals used for cleaning, building maintenance, and those used in landscaping. These materials would not be substantially different from household chemicals and solvents. No uses would be located on-site that would be engaged in the production or disposal of hazardous materials; thus, significant impacts in this regard would not occur.

b) *Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*

Less Than Significant Impact. The proposed project is not anticipated to result in the creation of health hazards to future residents with compliance with pertinent health and safety regulations. The proposed uses would not use, generate, or dispose of hazardous materials in large quantities.

c) *Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*

No Impact. Due to the nature of the proposed uses, hazardous emissions would not be anticipated and hazardous materials would not be handled. Further, the proposed project site is not located within a one-quarter mile of an existing or proposed school, therefore, no impacts are anticipated in this regard.

d) *Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?*

No Impact. The proposed project site is not included on a list of sites containing hazardous materials, and would not result in a significant hazard to the public or to the environment.

e) *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?*

No Impact. The proposed project site is not located within an airport land use plan or within two miles of a public airport and would not result in aircraft safety hazards for people within the area.

f) *For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?*

No Impact. Refer to Response 4.7(e).

g) *Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

Potentially Significant Impact. According to Figure 39, *Disaster Routes*, of the General Plan Safety Element, Rancho Palos Verdes Drive South in the vicinity of the project site has been identified as a disaster route in case of emergency. Temporary impacts to this route associated with project construction activities are anticipated. Additional analysis is required to identify if temporary routes should be provided during construction activities and the significance of potential impacts.

h) *Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?*

Potentially Significant Impact. The proposed project would remove existing potentially flammable brush and grass from portions of the project site, and replace these with structures and ornamental landscaping. Additional analysis would be required to evaluate brush and fire issues on the Upper Point Vicente Area. The EIR will evaluate impacts in consideration of Los Angeles County Fire Department requirements.

4.8 HYDROLOGY AND WATER QUALITY. *Would the project:*

a) *Violate any water quality standards or waste discharge requirements?*

Potentially Significant Impact. Impacts related to water quality would range over three different periods: 1) during the earthwork and construction phase, when the potential for erosion, siltation and sedimentation would be the greatest; 2) following construction, prior to the establishment of ground cover, when the erosion potential may remain relatively high; and 3) following completion of the project, when impacts related to sedimentation would decrease markedly, but those associated with urban runoff would increase.

Construction of the proposed project would result in soil disturbance of more than five acres. During a storm event, particulate matter would run off the site. Urban runoff is expected to increase as a result of developing the proposed project site. The concentration of chemical constituents dissolved or suspended in runoff waters leaving the site would vary with the distribution pattern of rainfall events. Similarly, the characteristics of rain events affect the concentration of pollutants.

Further review will be required with regard to compliance requirements with the statewide National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity which would prevent storm water pollution from impacting waters of the U.S. in the vicinity of the project site.

b) *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 level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?*

Less Than Significant Impact. Project construction would not involve excavation or the construction of barriers that would impede the flow of groundwater in underground aquifers. Groundwater has not been encountered in the many exploratory borings excavated within the project area over the past 40 years. Additionally, no seeps or springs were noted during previous site reconnaissances. In general, the majority of the material beneath the site consists of non-water bearing sedimentary and volcanic bedrock materials.

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

Potentially Significant Impact. The historic drainage patterns for the site follow the natural topography with the majority of the drainage flowing south towards the bluffs and down into the ocean. The project watershed includes some off-site drainage which passes through the project site; while some on-site drainage discharges onto other properties. Development of the site would involve the construction of impervious surfaces, which would lead to a decrease in ground absorption on-site, an increase in the quantity of surface water and a change in existing drainage patterns. The changes in drainage patterns, altered absorption rates, and the manner in which runoff from the site would be accommodated by existing or future flood control infrastructure improvements. Further analysis is necessary to adequately assess impacts in this regard.

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

Potentially Significant Impact. Refer to Response 4.8(c).

e) *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?*

Potentially Significant Impact. Refer to Responses 4.8(a) and 4.8(c).

f) *Otherwise substantially degrade water quality?*

Potentially Significant Impact. Implementation of the proposed project could result in short-term and long-term impacts to surface water quality. Short-term surface water quality impacts may occur from water erosion of soils during construction, with long-term impacts on surface water quality occurring primarily from the addition of project-related automobile trips which generate urban type pollutants (i.e. oil, tire particles, etc) and golf course operation (i.e., fertilizers). However, surface water quality is not expected to be significantly affected since the proposed project would be required to implement best management practices (BMPs) to comply with the National Pollutant Discharge Elimination System (NPDES) stormwater quality requirements. The significance of this issue requires further analysis.

As previously stated (Response 4.8(b), groundwater was not encountered in exploratory borings excavated within the project area over the past 40 years. In general, the majority of the

materials beneath the site consist of non-water bearing sedimentary and volcanic bedrock materials. However, as the project would partially discharge off-site, solvents and chemicals deposited on the proposed paved areas may be collected as part of storm water runoff, may percolate into off-site soils, and ultimately, the groundwater. Project development would be subject to NPDES requirements which would minimize impacts in this regard. Additional analysis is required to identify potential impacts in this regard and the required mitigation measures for contaminants in the storm water runoff.

g) *Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?*

No Impact. Implementation of the proposed project would not involve development of housing. Further, Figure 25, *Potential Flood and Inundation Hazards*, of the General Plan Safety Element, does not identify the site within a flood hazard area. Impacts associated with flood and water related hazards are considered to be less than significant.

h) *Place within a 100-year flood hazard area structures which would impede or redirect flood flows?*

No Impact. Refer to Response 4.8(g).

i) *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?*

No Impact. Refer to Response 4.8(g).

j) *Inundation by seiche, tsunami, or mudflow?*

Potentially Significant Impact. The project area is not subject to seiche or volcanic hazards. Although the high sea cliffs on-site reduces the potential tsunami damage, additional analysis is warranted to determine the significance of impacts in this regard.

k) *Changes in absorption rates?*

Potentially Significant Impact. Project implementation would result in the development of impervious surfaces which would lead to a decrease in ground absorption on-site. Additional analysis is warranted to determine the significance of impacts in this regard.

l) *Changes in the amount of surface water in any water body?*

Potentially Significant Impact. According to the Biological Resources Report and Impact Assessment prepared by Dudek & Associates, an intermittent stream is located near the southeast corner of the Resort Center Area. Additionally, the Pacific Ocean is located immediately south of the Resort Center Area. No other bodies of water are located on the project site.

Project implementation would increase the amount of impervious surfaces onsite, leading to a decrease in ground absorption, an increase in the quantity of surface water and a change in existing drainage patterns. Additional analysis is warranted to determine the significance of impacts in this regard.

m) *Changes in the currents, or the course of direction of water movements?*

Potentially Significant Impact. Refer to Response 4.8(c).

n) *Altered direction or rate of flow of groundwater?*

Less Than Significant Impact. Refer to Response 4.8(b).

o) *Stormwater discharges that would significantly impair the beneficial uses of receiving waters or areas that provide water quality benefits (e.g., riparian corridors, wetlands, etc.)?*

Potentially Significant Impact. Project development would be subject to NPDES requirements as noted in Response 4.8(a). Additional analysis is warranted to determine the significance of impacts in this regard.

p) *Harm to the biological integrity of drainage systems and water bodies?*

Potentially Significant Impact. Refer to Response 4.4(a).

4.9 LAND USE AND PLANNING. *Would the project:*

a) *Physically divide an established community?*

Potentially Significant Impact. The project vicinity is currently characterized by commercial and residential uses. Although there may be deemed a lack of unity or relationship among these uses due to the separation which exists between them, the area nevertheless is an established community. Further analysis is necessary to adequately assess impacts in this regard.

b) *Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?*

Potentially Significant Impact. Pursuant to the General Plan Land Use Map, land use designations on the project site are as follows:

- Upper Point Vicente Area: Recreational Passive; and Natural Overlay Control District.
- Resort Hotel Area: Agricultural and Commercial-Recreational; Urban and Socio-Cultural Overlay Control Districts; and Specific Plan District.

According to the Zoning Map, the project site is zoned as follows:

- Upper Point Vicente Area: Open Space Recreational (OR); Institutional (I); and Natural and Urban Overlay Control Districts.
- Resort Hotel Area: Commercial Recreational (CR); Open Space-Hazard (OH); and Urban, Socio-Cultural, and Natural Overlay Control Districts.

Further, the Resort Hotel Area is situated within the City's Coastal Specific Plan. The Coastal Specific Plan land use designation for this area is Commercial-Recreational.

The proposed project would be subject to conformity review with various environmental plans and policies adopted by agencies with jurisdiction over resources located on-site. These plans include, but are not limited to, the City's General Plan, Zoning Ordinance, the Local Coastal Program (LCP) for the area (same as City's Coastal Specific Plan), and Draft Natural Communities Conservation Plan (NCCP), the Southern California Association of Governments (SCAG) Regional Comprehensive Plan and the South Coast Air Quality Management District's (SCAQMD) Air Quality Management Plan.

Further analysis is required to determine the proposed project's consistency with these documents, in addition to other applicable environmental plans or policies adopted by agencies with jurisdiction over the project.

c) *Conflict with any applicable habitat conservation plan or natural community conservation plan?*

Potentially Significant Impact. As stated in Response 4.4(e), the City of Rancho Palos Verdes is currently preparing a Natural Community Conservation Plan (NCCP). Although this Plan has not been adopted and is still in draft form, the EIR will address the project's conformity to the provisions of the City's current draft of the NCCP. Further review would be required to determine whether the project would conflict with the NCCP.

4.10 MINERAL RESOURCES. *Would the project:*

a) *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?*

Less Than Significant Impact: The project site is not currently in mineral resource production, although illegal mining of barite crystal has occurred in the past. No significant impacts are anticipated in this regard.

b) *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?*

No Impact. According to the Natural Environment Element of the General Plan, from 1948 to 1958, the land in Rancho Palos Verdes was quarried for basalt, diatomaceous earth, and Palos Verdes stone. The Element further notes that there are no mineral resources present within the community which would be economically feasible for extraction.

The project site has not been delineated as an important mineral resource recovery site within the City's General Plan. No significant impacts are anticipated in this regard.

4.11 NOISE. *Would the project result in:*

a) *Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

Potentially Significant Impact. Project construction and operation would result in both short-term and long-term impacts. Short-term impacts would occur during grading and construction operation and would expose adjacent uses to noise levels between 70 and 90 decibel at 50 feet from the noise source. Long-term noise impacts would be associated with vehicular traffic to/from the site (including employees and visitors), outdoor activities, deliveries and stationary mechanical equipment on-site. Both short- and long-term noise impacts require further evaluation.

b) *Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?*

Potentially Significant Impact. Two levels of subterranean parking for valet parking are proposed beneath the Resort Hotel. The project may include blasting or extensive on-site drilling to prepare the site for grading, installation of infrastructure and for site development. Project construction may generate excessive ground borne vibrations or ground borne noise to excessive levels. Further review will be required to determine the significance of impacts.

c) *A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?*

Potentially Significant Impact. Refer to Response 4.11(a).

d) *A substantial temporary or periodic increase in ambient nosie levels in the project vicinity above levels existing without the project?*

Potentially Significant Impact. Refer to Response 4.11(a).

e) *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?*

No Impact. Refer to Response 4.7(e). 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, project implementation would not expose people residing or working in the project area to excessive noise levels.

f) *For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?*

No Impact. The project site is not located within the vicinity of a private airstrip. Therefore, project implementation would not expose people residing or working in the project area to excessive noise levels.

4.12 POPULATION AND HOUSING. *Would the project:*

a) *Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?*

Less Than Significant Impact.

Permanent Population. The proposed project does not involve the development of housing which would result in a direct growth in the City's permanent population. However, the employment created by the proposed Resort Hotel and golf course uses has the potential to result in an indirect growth in the City's population since the potential exists that "future employees" (and their families) may choose to relocate to the City.

Implementation of the proposed project has the potential to generate approximately 700 employees.[6] Estimating the number of these future employees who would choose to relocate to the City would be highly speculative since many factors influence personal housing location decisions (i.e., family income levels and the cost and availability of suitable housing in the local area). While the potential exists that a certain unknown number of new employees may choose to relocate to the City, it is not anticipated that this number would be substantial since the City of Rancho Palos Verdes' housing values and rents would not be within the means of most of the future employees: the majority of the employment created would involve Service occupations which would be in the low-income category. The City's housing values and rents, as well as the anticipated incomes for the future employees, would preclude the majority of the new employees from relocating to the City.

Due to the uncertainty which exists with regard to the number of new employees which may choose to relocate to the City, a more conservative analysis of impacts associated with the City's permanent population is also provided. Although highly unlikely, if every new employee of the proposed Long Point Resort were to relocate to the City, project implementation would result in a population growth of approximately 2050 persons.[7] This would constitute an increase of approximately five percent over the City's current population of 44,933 persons.[8] However, as the City's General Plan designates the Resort Hotel Area as Commercial-Recreational, and anticipated development and resultant population increases, project implementation would not induce substantial growth in the City's permanent population as a result of the employment. A significant impact is not anticipated in this regard.

As previously noted, the number of project employees who may choose to relocate to the City is not anticipated to be substantial. Nonetheless, in order to minimize the impact of the project's employment generation on the local housing market, the project applicant would be subject to compliance with Municipal Code Chapter 17.11, *Affordable Housing*. More specifically, pursuant to Section 17.11.140, *Affordable Housing Requirements for Non-Residential Projects*, the requirements of this Section of the Code would apply to the project since the project satisfies the following criteria:

- The proposed development would create more than thirty new full-time and/or part-time jobs in the city; and/or
- The proposed development would create more than 10,000 square feet of space.

According to Section 17.11.140.C., *Fee Required*, prior to issuance of a Certificate of Occupancy, developers of commercial development shall pay a residential impact fee to be set by resolution of the City Council according to the number of employees generated.

Project compliance with Municipal Code Chapter 17.11, *Affordable Housing*, would reduce impacts with regard to affordable housing to a less than significant level.

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[6] Based on the assumption that approximately 1.2 employees would be generated per hotel room.

[7] Approximately 700 employees x 2.927 persons per household (California Department of Finance, Table 2, *City/County Population and Housing Estimates*, January 1, 2000).

[8] California Department of Finance, Table 2, *City/County Population and Housing Estimates*, January 1, 2000.

Seasonal Population. As many as 582 new guestrooms may be developed as part of the Long Point Resort. Based on an average of 2.0 persons per guestroom, the City's seasonal population may increase by approximately 1,164 persons as a result of the proposed guestrooms. The seasonal population increase associated with the proposed guestrooms and additional meeting space would not be considered substantial, thus, a significant impact is not anticipated in this regard.

b) *Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?*

Less Than Significant Impact. Project implementation would require the removal of the single occupied housing unit which exists in the Resort Center Area, near the intersection of Nantasket Drive and Beachview Drive. According to Municipal Code Section 17.11.130, *Coastal Specific Plan District Replacement Housing Requirement*, where units are located in the coastal specific plan district and occupied by low or moderate income households are to be demolished or converted, the units shall be replaced on a one for one basis. However, this Section further notes that the conversion or demolition of two or fewer residential units would be exempt from this requirement. Therefore, a significant impact is not anticipated in this regard.

It should be noted, however, that the proposed development would be subject to compliance with Municipal Code Chapter 17.11, Affordable Housing. Refer to Response 4.12(b) for a discussion regarding Municipal Code Chapter 17.11, *Affordable Housing*.

c) *Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?*

Less Than Significant Impact. Uses which are still in operation on the Resort Hotel Area include the following:

- Catalina Room - 4,600 square feet, approximately 150-seat banquet facility;
- Property Management Offices - 800-square feet; and
- Warehouse - 3,000 square feet of storage space.

Additionally, this Area is occasionally utilized for movie shoots. Although project implementation would require displacement of these businesses, this would occur consistent with California State Law, therefore, a significant impact is not anticipated in this regard. Further, displacement of these commercial uses would not necessitate the construction of replacement housing elsewhere. Also refer to Response 4.12(b).

4.13 PUBLIC SERVICES.

a) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, 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:*

1) *Fire protection?*

Potentially Significant Impact. Fire protection for the site is provided by the Los Angeles County Fire Department via a county assessment district. The proposed project may place

increased demands upon fire services. Additional analysis and consultation with the Fire Department will be required.

2) Police protection?

Potentially Significant Impact. Police protection for the site is provided by the County of Los Angeles Sheriff's Department. The proposed project may place increased demands upon police services. Additional analysis and consultation with the Sheriff's Department will be required.

3) Schools?

Potentially Significant Impact. The project site is located within the Palos Verdes Peninsula Unified School District (PVPUSD). Under California State Assembly Bill 2768 (AB 2768), employees who work outside of the school district they reside in have the option to enroll their children in the school district of the area in which their workplace is located. This is left to the discretion of the school district, as it is dependent upon available capacity and verification of employment by the district. Therefore, under AB 2768, any employees of the Long Point Resort Hotel or golf course facilities who wish to enroll their children in the PVPUSD have the opportunity to do so, assuming acceptance by the District.

Project implementation has the potential to increase the PVPUSD's student population. Due to the limited increase in employment generated by the proposed project, the increase in the District's student population resulting from interdistrict transfers is not anticipated to be substantial. However, given the rising school enrollments on the Peninsula, and the desirability of the school system, additional analysis and consultation with the PVPUSD will be required.

4) Parks?

Potentially Significant Impact. Although recreational facilities/amenities such as public parking, parks, trails, coastal access, beach area, public use golf course and public golf practice facility would be provided on-site, further evaluation of the project's ability to meet public recreation facility requirements will be necessary. Additionally, it is anticipated that the proposed development would increase the use of existing recreational facilities as a result of the seasonal population introduced by the proposed Resort Hotel. Further analysis is necessary to determine project impacts in this regard.

5) Other public facilities?

Potentially Significant Impact. The increased public trails and public facilities associated with the project may result in greater maintenance requirements. Further review will be required to assess possible impacts to public trails and public facilities.

Additionally, lifeguard service is currently provided by the County of Los Angeles at Abalone Cove Beach, a public beach located south of the project site. Further review will be required to determine the potential need for lifeguard services and the potential impacts associated with project implementation.

4.14 RECREATION.

a) *Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?*

Potentially Significant Impact. As stated in Response 4.12(a), the City's seasonal population may increase as a result of the proposed guestrooms. As a result, it is anticipated that project implementation would increase the usage of existing park and recreational facilities. Further analysis is necessary to determine whether project implementation would increase the use of existing recreational facilities such that substantial physical deterioration would occur. Refer also to Response 4.13(a)(4).

b) *Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?*

Potentially Significant Impact. Refer to Responses 4.13(a)(4) and 4.14(a).

4.15 TRANSPORTATION/TRAFFIC. *Would the project:*

a) *Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?*

Potentially Significant Impact. Development of the proposed Resort uses on the project site would increase vehicular movement in the project vicinity. Impacts resulting from increased traffic volumes and modified circulation patterns require additional analysis to determine their level of significance.

The projects proposes approximately 11.1 miles of new public bicycle trails, equestrian trails, pedestrian trails/stairways, and coastal access ramps approximately 3.8 miles of new general public trails in the Resort Hotel Area and 0.9 miles of new general public trails/stairways in the Upper Point Vicente Area. Implementation of these improvements would complete all planned City facilities in the project vicinity linking the Point Vicente Interpretive Center, the Point Vicente Lighthouse, the Point Vicente Fishing Access and the trails to the east of the Resort Hotel Area. Additionally, completion of these trails would enable residents and visitors to walk between the City Hall and shoreline.

b) *Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?*

Potentially Significant Impact. Refer to Response 4.15(a).

c) *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?*

Less Than Significant Impact. The potential exists that air traffic levels may increase slightly due to an increase in visitors associated with the project. However, due the scale and nature of the proposed development, any increases in traffic levels would not be significant and would not result in substantial safety risks.

d) *Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*

Potentially Significant Impact. The project site plan should be reviewed to evaluate the effectiveness of internal circulation in the parking areas and the driveways . The focus of this assessment is to identify any hazards to pedestrians and vehicles associated with the project's circulation and access locations. An analysis of the project-generated traffic on the local circulation system, parking lot facilities, driveways, loading areas, bike paths, trails, and pedestrian walkways surrounding the site in addition to pedestrian/bicycle/golfcart crossings will be necessary.

e) *Result in inadequate emergency access?*

Potentially Significant Impact. Refer to Response 4.7(g).

f) *Result in inadequate parking capacity?*

Potentially Significant Impact. The availability and adequacy of proposed on-site parking and conformity with the City parking requirements requires further analysis.

g) *Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?*

Potentially Significant Impact. Impacts to alternative transportation modes such as bus facilities and bicycle access/parking requirements requires additional analysis, although the project will implement portions of the City's Conceptual Trails Plan and Conceptual Bikeways Plan.

4.16 UTILITIES AND SERVICE SYSTEMS. *Would the project:*

a) *Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?*

Potentially Significant Impact. The County Sanitation Districts of Los Angeles County, District No. 5 provides wastewater service to the project site. Wastewater generated by the proposed project would be treated at the Joint Water Pollution Control Plant (JWPCP). Further analysis is required to determine impacts associated with the available capacity of the District's treatment facility.

b) *Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?*

Potentially Significant Impact. The Los Angeles County Department of Public Works (DWP) and County Sanitation Districts of Los Angeles County maintain and operate the wastewater system within the City. The DWP is responsible for the collection of sewage from its source or origin and the County Sanitation Districts are responsible for operating and maintaining the network of trunk lines and the wastewater treatment facilities. Impacts related to wastewater generation and the capacity of collection and treatment facilities to service the proposed project requires further evaluation.

The California Water Service Company provides water service to the project site. The availability of water supplies and the need for new or altered facilities requires further analysis.

The extent of modifications, upsizing and required realignments of water and wastewater facilities will require further review to determine the extent of physical impacts associated with improvements.

c) *Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?*

Potentially Significant Impact. Refer to Response 4.8(a).

d) *Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?*

Potentially Significant Impact. Refer to Response 4.16(b).

e) *Result in a determination by the wastewater treatment provider which 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?*

Potentially Significant Impact. Refer to Response 4.16(b).

f) *Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?*

Potentially Significant Impact. The proposed project would generate additional solid waste beyond existing conditions. Private haulers would dispose of waste at area landfills. The project's affect upon the landfill capacity and consideration of the City's waste recycling programs require further evaluation.

g) *Comply with federal, state, and local statutes and regulations related to solid waste?*

Potentially Significant Impact. The project must comply with adopted programs and regulations pertaining to solid waste. Refer also to Response 4.16(f).

4.17 MANDATORY FINDINGS OF SIGNIFICANCE.

a) *Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?*

Potentially Significant Impact. Potential project impacts on threatened, endangered, and non-listed sensitive flora, fauna and marine species and habitats should be evaluated. Refer to Response 6.14.A regarding the project's impact on wildlife species and Response 6.14.C regarding the project's impact on historical resources.

b) *Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?*

Potentially Significant Impact. A review of cumulative impacts for each issue area that has been identified as potentially significant will be required pursuant to Section 15130 of CEQA.

c) *Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?*

Less Than Significant Impact. The proposed project does not have the potential to cause substantial adverse effects on human beings, either directly or indirectly.

5.0 REFERENCES

The following references were utilized during preparation of this Initial Study. These documents are available for review at the City of Rancho Palos Verdes Planning Department located at 30940 Hawthorne Boulevard, Rancho Palos Verdes, California, 90275.

Biological Resources Report and Impact Assessment, Dudek & Associates, Inc., September 1999.

CEQA and CEQA Guidelines, Office of Planning and Research, 1992.

Cultural Resources Survey Report for the Long Point Resort, John Minch and Associates, Inc., September 25, 1999.

Draft Environmental Impact Report for the Long Point Master Plan Development, SCH. No. 88062211, Myra L. Frank & Associates, June 1989.

Draft Environmental Impact Report No. 35 for Vesting Tentative Tract 46628, SCH No. 91031057, Volume I, Impact Sciences, Inc., September 6, 1991.

Long Point Resort Permit Documentation, FORMA, June 2000.

Long Point Specific Plan EIR Existing Conditions Hydrology Report, Robert Bein, William Frost & Associates, 1998.

Long Point Specific Plan EIR Marine Biological Resources Existing Report, Coastal Resources Management, 1998.

Long Point Specific Plan Existing Conditions, RKJK & Associates, Inc., February 26, 1998.

Marine Biological Surveys of the Coastal Zone Off the City of Rancho Palos Verdes, Vantuna Research Group of Occidental College and Chambers Group, Inc., July 1996.

Phase 1 Environmental Site Assessment, Robert Bein, William Frost & Associates, June 30, 1999.

Rancho Palos Verdes General Plan/Environmental Impact Report. June 26, 1975.

Rancho Palos Verdes Municipal Code Chapter 17.11, Affordable Housing. No Date.

Report of Existing Conditions: Geology, Soils and Seismicity for Long Point, Converse Consultants, April 1998.

Sea Cliff Setback Investigation and Preliminary Geotechnical Feasibility Report for Conditional Use Permit (C.U.P.) Submittal, Law/Crandall, August 1991.

NOTICE OF PREPARATION RESPONSES

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse

Gray Davis
GOVERNOR

Steve Nissen
ACTING DIRECTOR

RECEIVED
JUL 26 2000
PLANNING, BUILDING,
& CODE ENFORCEMENT

Notice of Preparation

July 20, 2000

To: Reviewing Agencies

Re: Long Point Resort (Coastal Permit #166, Conditional Use Permit #215 & 216, Tentative Parcel Map No. 26073 & Grading Permit Nos. 2229 & 2230)
SCH# 2000071076

Attached for your review and comment is the Notice of Preparation (NOP) for the Long Point Resort (Coastal Permit #166, Conditional Use Permit #215 & 216, Tentative Parcel Map No. 26073 & Grading Permit Nos. 2229 & 2230) draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

David Snow
City of Rancho Palos Verdes
30940 Hawthorne Boulevard
Rancho Palos Verdes, CA 90275

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan

Scott Morgan
Project Analyst, State Clearinghouse

Attachments
cc: Lead Agency

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Document Details Report
State Clearinghouse Data Base

SCH# 2000071076
Project Title Long Point Resort (Coastal Permit #166, Conditional Use Permit #215 & 216, Tentative Parcel Map No. 26073 & Grading Permit Nos. 2229 & 2230)
Lead Agency Rancho Palos Verdes, City of

Type NOP Notice of Preparation

Description The Long Point Resort involves a full-service hotel providing approximately 582 guestrooms, restaurants/bars, and meeting/function spaces. Also proposed are approximately 31.6 acres of conserved/enhanced habitat and approximately 81 acres of public open space/recreation facilities including public parking, shoreline access ramps, public parks/overlooks, public walking/hiking trails, a public golf practice facility, and a 9-hole public-use golf course.

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Agency City of Rancho Palos Verdes
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email davids@rpv.com
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City Rancho Palos Verdes **State** CA **Zip** 90275

Project Location

County Los Angeles
City Rancho Palos Verdes
Region
Cross Streets Palos Verdes Drive South/Hawthorne Boulevard
Parcel No. multiple
Township 5S **Range** 15W **Section** **Base**

Proximity to:

Highways
Airports
Railways
Waterways Pacific Ocean
Schools
Land Use Resort Hotel Area: Agricultural and Commercial-Recreational; Urban and Socio-Cultural Overlay Control Districts; and Specific Plan District. Upper Point Vicente Area: Recreational Passive; and Natural Overlay Control District.
Resort Hotel Area: Commercial Recreational (CR); Open Space-Hazard (OH); and Urban, Socio-Cultural, and Natural Overlay Control Districts. Upper Point Vicente Area: Open Space Recreational (OR); Institutional (I); and Natural and Urban Overlay Control Districts.

Project Issues Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Coastal Zone; Forest Land/Fire Hazard; Drainage/Absorption; Flood Plain/Flooding; Geologic/Seismic; Job Generation; Housing; Minerals; Noise; Public Services; Schools/Universities; Septic System; Sewer Capacity; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Wildlife; Growth Inducing; Landuse; Cumulative Effects

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Reviewing Agencies Resources Agency; California Coastal Commission; Department of Conservation; Office of Historic Preservation; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Game, Region 5; Native American Heritage Commission; State Lands Commission; Caltrans, District 7; California Highway Patrol; State Water Resources Control Board, Division of Water Rights; Regional Water Quality Control Board, Region 4

Date Received 07/20/2000 **Start of Review** 07/20/2000 **End of Review** 08/18/2000

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Sacramento, CA 95814-6511
916/324-0214 Fax 916/445-3556

California Environmental Protection Agency

[ ] *Air Resources Board*
2020 L Street (PO Box 2815)
Sacramento, CA 95814 (95814-2815)
916/327-5783 Fax 916/322-3646

( ) Rob Rogen
(airport projects)

( ) Ann Geraghty
(transportation projects)

( ) Mike Tollstrup
(industrial projects)

[ ] Sue O'Leary
Integrated Waste Management Board
8800 Cal Center Drive MS 24
Sacramento, CA 95826
916/255-0663 Fax 916/366-2428

[ ] Diane Edwards
State Water Resources Control Board
Division of Clean Water Programs
P.O. Box 944212
Sacramento, CA 94244-2120
916/227-4572 Fax 916/227-4349

SCH# 2000071076

[ ] Phil Zentner
State Water Resources Control Board
Division of Water Quality
P.O. Box 944213
Sacramento, CA 94244-2130
916/657-0912 Fax 916/657-2388

[X] Mike Falkenstein
State Water Resouces Control Board
Division of Water Rights
901 P Street, 3rd Floor
Sacramento, CA 95814
916/657-1377 Fax 916/657-1485

[ ] Dept. of Toxic Substances Control
CEQA Tracking Center
400 P Street, Fourth Floor
P.O. Box 806
Sacramento, CA 95812-0806
916/324-3119 Fax 916/324-1788

Regional Water Quality Control Board

[ ] North Coast Region (1)
Cathleen Hudson
5550 Skylane Blvd., Suite A
Santa Rosa, CA 95403
707/576-2220 Fax 707/523-0135

[ ] San Francisco Bay Region (2)
Environmental Document Coordinator
1515 Clay Street, Suite 1400
Oakland, CA 94612
510/622-2300 Fax 510/622-2460

[ ] Central Coast Region (3)
81 Higuera Street, Suite 200
San Luis Obispo, CA 93401-5427
805/549-3147 Fax 805/543-0397

[X] Los Angeles Region (4)
Jonathan Bishop
320 West 4th Street, Suite 200
Los Angeles, CA 90013
213/576-6600 Fax 213/576-6640

[ ] Central Valley Region (5)
3443 Routier Road, Suite A
Sacramento, CA 95827-3003
916/255-3000 Fax 916/255-3015

( ) Fresno Branch Office
3614 East Ashlan Avenue
Fresno, CA 93726
559/445-5116 Fax 559/445-5910

( ) Redding Branch Office
415 Knollcrest Drive
Redding, CA 96002
530/224-4845 Fax 530/224-4857

[ ] Lahontan Region (6)
2501 Lake Tahoe Boulevard
South Lake Tahoe, CA 96150
530/542-5400 Fax 530/544-2271

( ) Victorville Branch Office
15428 Civic Drive, Suite 100
Victorville, CA 92392-2359
760/241-6583 Fax 760/241-7308

[ ] Colorado River Basin Region (7)
73720 Fred Waring Drive, #100
Palm Desert, CA 92260-2564
760/346-7491 Fax 760/341-6820

[ ] Santa Ana Region (8)
3737 Main Street, Suite 500
Riverside, CA 92501-3339
909/782-4130 Fax 909/781-6288

[ ] San Diego Region (9)
9771 Clairemont Mesa Blvd., Suite A
San Diego, CA 92124-1331
858/467-2952 Fax 858/571-6972

South Coast
Air Quality Management District
21865 E. Copley Drive, Diamond Bar, CA 91765-4182
(909) 396-2000 · http://www.aqmd.gov

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July 25, 2000

Mr. David Snow, AICP
City of Rancho Palos Verdes
30940 Hawthorne Boulevard
Rancho Palos Verdes, CA 90275

Dear Mr. Snow:

Notice of Preparation of an Environmental Impact Report
Long Point Resort

The South Coast Air Quality Management District (AQMD) appreciates the opportunity to comment on the above-mentioned document. The AQMD's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the Draft Environmental Impact Report (EIR).

Air Quality Analysis
The AQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The AQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the AQMD's Subscription Services Department by calling (909) 396-3720.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project. Air quality impacts from both construction and operations should be considered. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, that is, sources that generate or attract vehicular trips should be included in the evaluation. An analysis of all toxic air contaminant impacts due to the decommissioning or use of equipment potentially generating such air pollutants should also be included.

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July 21, 2000

RANCHO PALOS VERDES CITY COUNCIL
30940 Hawthorne Blvd.
Rancho Palos Verdes, Calif.

~~COUCIL MEMBER:~~ City Planner: David Snow,

As a resident of the Abalone Cove area of RPV since 1956 I wish to go on record as opposing the release of any of the 120 acres of publicly owned land to the developers (LONG POINT). In fact, to any private developers whatever.

While I realize that the City Council members were elected to make decisions for the people, I believe any issue concerning the very limited remaining open space should be put to a vote of the people of Rancho Palos Verdes.

Sincerely,

Dorothea Alpert

Dorothea Alpert
25 Packet Road
Rancho Palos Verdes

This is a copy of the letter I sent to each City Council Member. I thought you should have one too.

ENVIRONMENTAL DOCUMENT REVIEW NOTICE

COUNTY OF LOS ANGELES FIRE DEPARTMENT

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PLANNING, BUILDING, & CODE ENFORCEMENT

Current Date: 7/24/00

Name/Title DAVID SNOW, AICP
Organization CITY OF RANCHO PALOS VERDES
Address 30940 HAWTHORNE BOULEVARD
City Rancho Palos Verdes State CA Zip 90275

We received the following environmental document on 7/21.

Document Title: LONG POINT RESORT (COASTAL PERMIT #166 & CONDITIONAL USE PERMIT #215 & #216, TENTATIVE PARCEL MAP #26073 & GRADING PERMIT #229 & #223) CITY OF RANCHO PALOS VERDES
REF: EIR#943/2000

We are either unable to respond at this time or our response will be delayed due to one or more of the following reasons:

___ The above document was not received in time to develop a response by the requested date of _____. We will respond as soon as we can.

X We did not receive the required number of copies. Three Divisions within the Fire Department concurrently review and draft responses to environmental documents. Three copies of environmental documents are needed to ensure a timely response (they must be received at the same time, please send them together). Please SEND TWO MORE COPIES

___ Our response has been delayed by a major emergency. The staff who would normally review your document are or have been assigned to major emergencies. Thank you for your understanding.

___ The document was improperly addressed. Please send future environmental documents to the address shown below:

County of Los Angeles Fire Department
Forestry Division, Rm. 123
5823 Rickenbacher Road
Commerce, CA 90040

___ The County is the lead agency for this project. An EIR deposit fee of $1,000 must be deposited with our Financial Management Division prior to the release of our response.

Should you have any questions regarding this memo, please call us at (323) 890-4330.

Eirform.R22 (Word)

c: GLENN LAJOIE, AICP
Robert Bein, William Frost & Assoc.
14725 ALTON PARKWAY
IRVINE, CA 92718

Thank you!

Copies sent by RBF.

COUNTY OF LOS ANGELES • DEPARTMENT OF HEALTH SERVICES
ENVIRONMENTAL HEALTH
MOUNTAIN & RURAL \ WATER, SEWERAGE & SUBDIVISION CONTROL PROGRAMS
2525 Corporate Place, Room 150, Monterey Park, CA 91754-7631
(323) 881-4147/4158
FAX (323) 269-4327

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July 21, 2000

David Snow, AICP
City of Rancho Palos Verdes
Department of Planning
Building and Code Enforcement
30940 Hawthorne Boulevard
Rancho Palos Verdes, California 90275

Re: Long Point Resort, CUP Nos. 215, 216

Dear Mr. Snow:

This is in response to the Notice of Preparation of a Draft Environmental Impact Report and the Initial Study for the above referenced property.

This Department has concerns about the availability of wastewater treatment facilities and adequate water supply to serve the proposed development. Please include us in the distribution of the Environmental Impact Report when completed.

If you have any questions or require further information, please contact me at 323-881-4157.

Very truly yours,

Richard Wagener

Richard Wagener, Chief
Mountain & Rural / Water & Sewage Program

Mitigation Measures
In the event that the project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures be utilized during project construction and operation to minimize or eliminate significant adverse air quality impacts. To assist the Lead Agency with identifying possible mitigation measures for the project, please refer to Chapter 11 of the AQMD CEQA Air Quality Handbook for sample air quality mitigation measures. Additionally, AQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook contain numerous measures for controlling construction-related emissions that should be considered for use as CEQA mitigation if not otherwise required. Pursuant to state CEQA Guidelines §15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed.

Data Sources
AQMD rules and relevant air quality reports and data are available by calling the AQMD's Public Information Center at (909) 396-3600. Much of the information available through the Public Information Center is also available via the AQMD's World Wide Web Homepage (http://www.aqmd.gov).

The AQMD is willing to work with the Lead Agency to ensure that project-related emissions are accurately identified, categorized, and evaluated. Please call Dr. Charles Blankson, Transportation Specialist, CEQA Section, at (909) 396-3304 if you have any questions regarding this letter.

Sincerely,

Charles Blankson

for Steve Smith, Ph.D.
Program Supervisor, CEQA Section
Planning, Rule Development and Area Sources

SS:CB:li

LAC000721-03LI
Control Number

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City of Rancho Palos Verdes
30940 Hawthorne Blvd.
Rancho Palos Verdes, CA 90275
Attn. David Snow, AICP
July 25, 2000

Gentlemen:

The Board of Directors of Sea Bluff P.V. Home owners Association, Inc. has received a notice of preparation of a Draft Environmental Impact Report brought about by the planned development of the Long Point Resort. In addition and attached there-to was the "Initial Study/Environmental Checklist" prepared by Robert Bein, William Frost and Associates. These items have been reviewed by the Board of Directors of Sea Bluff and find no reason to object to the development of the Long Point Resort as it is now planned. The inconveniences that Sea Bluff will experience during the preparation of the property for the Resort development is fully recognized and is a concern since the Sea Bluff property directly borders a large percentage of the Long Point property. However, it is also recognized that this development will significantly enhance the image of the City of Rancho Palos Verdes and result in improvements from which we will all benefit.

In view of the above, the Board of Directors of Sea Bluff heartily endorse the Long Point Development as it is now planned and encourage the rapid approval of this enhancement to our City.

Yours truly,

Barney E. Turner

Board of Directors
Sea Bluff P.V. Peninsula HOA, Inc.

NOTICE OF PREPARATION

To: Interested Agencies and Organizations
(Agency)

(Address)

Subject: **Notice of Preparation of a Draft Environmental Impact Report**

Lead Agency:

Agency Name: City of Rancho Palos Verdes
Street Address: 30940 Hawthorne Boulevard
City/State/Zip: Rancho Palos Verdes, California 90275

Contact: David Snow, AICP
E-Mail: davids@rpv.com

Consulting Firm:

Firm Name: RBF Consulting
Street Address: 14725 Alton Parkway
City/State/Zip: Irvine, California 92618

Contact: Glenn Lajoie, AICP

CITY OF RANCHO PALOS VERDES will be the Lead Agency and will prepare an environmental impact report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the project.

The project description, location, and the potential environmental effects are contained in the attached materials. A copy of the Initial Study (☒ is ☐ is not) attached.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but ***not later than 45 days*** after receipt of this notice.

Please send your response to David Snow, AICP at the address shown above. We will need the name of a contact person in your agency.

Project Title: Long Point Resort (Coastal Permit #166 & Conditional Use Permit #215 & 216 Tentative Parcel Map No. 26073 & Grading Permit Nos. 2229 & 2230)

Project Location: City of Rancho Palos Verdes (City (nearest)) Los Angeles (County)

Project Description: **(brief)** The Long Point Resort involves a full-service hotel providing approximately 582 guestrooms, restaurants/bars, and meeting/function spaces. Also proposed are approximately 31.6 acres of conserved/ enhanced habitat and approximately 81 acres of public open space/recreation facilities including public parking, shoreline access ramps, public parks/overlooks, public walking/hiking trails, a public golf practice facility, and a 9-hole public-use golf course.

Date: 7-18-00

Signature:
Joel Rojas

Title: Director of Planning
Building and Code Enforcement

Telephone: (310) 544-5228

Reference: California Code of Regulations, Title 14, (CEQA Guidelines) Sections 15082(a), 15103, 15375.

Revised October 1989

WATER RECLAMATION
SOLID WASTE MANAGEMENT

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (562) 699-7411, FAX: (562) 699-5422
www.lacsd.org

JAMES F. STAHL
Chief Engineer and General Manager

August 1, 2000
File: 31R-100.20

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Mr. David Snow, AICP
City of Rancho Palos Verdes
30940 Hawthorne Blvd.
Rancho Palos Verdes, CA 90275

Dear Mr. Snow:

Long Point Resort

The Sanitation Districts have received your Notice of Preparation of a Draft Environmental Impact Report, dated July 18, 2000, and offer the following comments in regard to solid waste management for the above-mentioned project within the city of Rancho Palos Verdes:

- The Puente Hills Landfill is the closest solid waste disposal facility, operated by the Sanitation Districts, that would accept waste originating from the Long Point Resort project. The Sanitation Districts also operate the South Gate Transfer Station in the vicinity of the Long Point Resort project.

  The Puente Hills Landfill is a publicly owned and operated disposal facility open to the public. Currently, the Puente Hills Landfill closes early due to permit-imposed tonnage restrictions. The existing local land permit authorizes the disposal of a maximum of 13,200 tons per day, not to exceed 72,000 tons/week. This permit is valid through November 1, 2003, at which time it will have to be renewed to continue operations. The South Gate Transfer Station is a publicly owned and operated transfer facility open to the public. The transfer station currently accepts approximately 545 tons per day of refuse. Permitted capacity and other information for both facilities are detailed in the enclosed fact sheets.

- The County of Los Angeles is facing a serious disposal crisis, both in terms of the daily capacity and long term disposal capacity available, that requires every effort to minimize the amount of wastes generated. Any new development exacerbates an already serious disposal capacity shortfall. Wastes generated from new development projects may displace the wastes already coming to regional landfills, accelerate the landfill closures, or cause a more distant site to be used. As a result, the environmental documentation should evaluate whether this project could have a significant cumulative impact on solid waste management in Los Angeles County.

- The California Integrated Waste Management Act, AB 939, requires cities to divert 25 percent and 50 percent of the wastestream away from land disposal by the years 1995 and 2000, respectively. In order to assist in meeting these goals, the Sanitation Districts recommend that the proposed development incorporate storage and collection of recyclables into each project design. It is recommended that refuse collection contracts include collection of recyclables. All occupants should be encouraged to recycle, at a minimum, newspaper, glass bottles, aluminum and bimetal cans, and P.E.T. bottles. Recycling should be included in the design of the project by reserving space appropriate for the support of recycling, such as adequate storage areas and access for recycling vehicles. In addition, all contractors should be urged to recycle construction and demolition wastes to the extent feasible. It should be recognized that, even with recycling, adequate regional disposal capacity is needed to accommodate new developments. If you have any further questions about recycling, please contact Bill George, who is the Recycling Coordinator for the Sanitation Districts, at extension 2427.

If you have any questions regarding these comments, please contact the undersigned at the above listed telephone number, extension 2456.

Very truly yours,

James F. Stahl

Felicia Ursitti

Felicia Ursitti
Project Engineer
Solid Waste Management Department

FAU:ksc
Enclosures

FACT SHEET
PUENTE HILLS LANDFILL

LOCATION:

2800 South Workman Mill Road
Whittier, CA 90601

Immediately southeast of the intersection of the San Gabriel Valley (I-605) Freeway and the Pomona (SR-60) Freeway, in unincorporated Los Angeles County.

PROJECT DESCRIPTION:

The 1365-acre Puente Hills Landfill site is owned and operated by the Sanitation Districts of Los Angeles County (Sanitation Districts) in compliance with federal, state and local standards. With the exception of certain holidays, the site is open to the public six days a week (Monday through Saturday) from 6:00 a.m. to 5:00 p.m.

The landfill operation is designed to eliminate or minimize any potential impacts on nearby residents. Refuse accepted for disposal is compacted by crawler tractors and covered at the end of each workday. All refuse receives daily cover 9 to 12 inches in depth. Various specific measures are employed to control potential nuisances due to noise, odor, litter, dust, and vectors and to minimize landfill traffic impacts and overall visual impacts.

BACKGROUND:

The site was first permitted as a privately owned landfill in 1957. In 1970, the Sanitation Districts purchased the site and took over operation of the landfill. Puente Hills Landfill accepts only non-hazardous solid and inert waste; the disposal of hazardous or liquid waste is not allowed. Over 80 million tons of refuse have been disposed of at the site.

The existing local land use permit, which was issued on August 30, 1994, authorizes a fill design of 37 million tons. This permit is valid through November 1, 2003, at which time it will have to be renewed in order to continue operations.

Puente Hills Landfill operates in compliance with the following permits and requirements:

- Conditional Use Permit (CUP No. 92-250-(4)) issued by the Los Angeles County Board of Supervisors.
- Solid Waste Facilities Permit (No. 19-AA-053) issued by the County of Los Angeles - Department of Health Services.
- Waste Discharge Requirements (Order No 90-046, 91-035, 93-062 and 93-070) issued by the California Regional Water Quality Control Board, Los Angeles Region.
- Air quality permits issued by the South Coast Air Quality Management District.

- Resource Recovery. The Sanitation Districts have instituted a comprehensive resource recovery program at Puente Hills Landfill. Asphalt and clean dirt are accepted free of charge for reuse on site. Asphalt is used for road construction, and clean dirt is used as daily cover. Clean loads of green waste (grass and tree trimmings) are accepted at a reduced rate at the landfill. The Sanitation Districts grind the green waste and use it for daily cover. The green waste recovery program saves valuable landfill capacity and cover soil and provides an immediate market for cities implementing separate green waste collection.

  The Sanitation Districts also operate a recycling center at the west entrance to the landfill. The recycling center, which is open to the public Wednesday through Saturday from 8:30 a.m. to 4:00 p.m., accepts glass, aluminum and tin cans, paper, plastic beverage containers, and waste oil.

NATIVE HABITAT PRESERVATION AUTHORITY:

The Puente Hills Landfill Native Habitat Preservation Joint Powers Authority (JPA) has been established for the purpose of acquiring, restoring and/or maintaining open space lands in the La Puente/Whittier Hills/Hacienda Heights area, adjacent to the landfill. The JPA, which is governed by a Board of Directors composed of representatives from the Sanitation Districts, the County of Los Angeles, the City of Whittier and the Hacienda Heights Improvement Association, is funded by an annual payment by the Sanitation Districts of one dollar per ton of refuse disposed of at the landfill during the landfill operation under CUP No. 92-250-(4). To date, over 921 acres of valuable native habitat within the region surrounding the landfill have been preserved and are being maintained by the Authority.

ULTIMATE USE OF THE SITE:

After landfilling is completed, the site will be ultimately dedicated for park and recreational use, the specifics of which will be the subject of future planning between the surrounding community and the County Department of Parks and Recreation. Funding for park planning and development will be provided by the Sanitation Districts through the tipping fee charged at the landfill.

Despite the fact that top priority must be given to recycling and waste diversion activities (programs which are encouraged and supported by the Sanitation Districts through the resource recovery programs at the Puente Hills Landfill), adequate disposal capacity must be provided for those materials not recycled or diverted. The Puente Hills Landfill is an important disposal facility in the regional solid waste management system.

FOR ADDITIONAL INFORMATION, CONTACT:

Sanitation Districts of Los Angeles County
Solid Waste Management Department
1955 Workman Mill Road
P. O. Box 4998
Whittier, CA 90607
(562) 699-7411

FACT SHEET
SOUTH GATE TRANSFER STATION

LOCATION:

9530 South Garfield
South Gate, CA 90280

In the City of South Gate, east of the Long Beach Freeway (I -710) at the Firestone Blvd exit (see attached map).

PROJECT DESCRIPTION:

South Gate Transfer Station is owned and operated by the Sanitation Districts of Los Angeles County (Districts). The site is open to public access from 6:00 a.m. to 5:00 p.m., six days a week (Monday through Saturday), with the exception of certain holidays.

The transfer station is operated in compliance with Federal, State, and local standards, and to eliminate or minimize any potential impacts on nearby residents. Various specific measures are employed to control potential nuisances due to noise, odor, litter, dust, and vectors and to minimize traffic impacts and overall visual impacts.

BACKGROUND:

South Gate Transfer Station opened in 1958 and accepts only non-hazardous municipal solid and inert waste. The acceptance of liquid or hazardous waste is not allowed. The transfer station currently accepts approximately 545 tons per day of refuse.

PERMITS:

South Gate Transfer Station is operated in compliance with the following permits and requirements:

- Solid Waste Facilities Permit (No. 19-AA-0005), issued by the County of Los Angeles- Department of Health Services.
- State Water Resources Control Board Water Quality Order (No. 97-03-DWQ) and National Pollution Discharge Elimination System General Permit (No. CAS000001)

PROJECT DESIGN FEATURES:

The Sanitation Districts employ several environmental control systems, which are expanded as necessary, to eliminate or reduce to minimal levels potential impacts on the environment and surrounding areas from transfer station activity. These measures include:

- **Litter and Odor Control** Walls and fences have been constructed around the site perimeter to contain litter. The yard, driveways, and internal roads are cleaned daily by facility personnel. All transfer trailers are covered when traveling to and from the site to prevent windblown litter.

The majority of incoming refuse contains relatively few organics or materials that produce odors. The Districts remove the waste in the holding area rapidly minimizing the potential for odor generation.

- **Dust Control** South Gate Transfer Station is designed and operated to minimize the creation, emission and accumulation of excessive dust and particulates, and to prevent other safety hazards to the public caused by obscured visibility. Measures to control dust include handling the waste only as necessary, spraying the waste with water as needed, periodic sweeping and cleaning, and ventilation control.

- **Illegally Deposited Wastes** The Sanitation Districts continuously monitor the tipping area for illegally deposited hazardous, toxic, or infectious wastes. The Sanitation Districts have also instituted a load checking program consisting of a random selection of at least one load each day for a thorough search. If unacceptable wastes are found, they are transferred to appropriate off-site disposal facilities. The hauler whose load contained the waste is charged for the cost of proper disposal, and in the case of repeat violations, faces suspension of disposal privileges. This program acts as a strong deterrent to delivery of illegal wastes to the transfer station by haulers.

- **Resource Recovery** The Districts conduct a resource recovery program that consists of removal of scrap metals such as refrigerators and pipes from the refuse for recycling. Currently, an average of approximately 10 tons of scrap metal is recovered at South Gate Transfer Station each month.

FOR ADDITIONAL INFORMATION CONTACT:

Sanitation Districts of Los Angeles County
Solid Waste Management Department
1955 Workman Mill Road
P.O. Box 4998
Whittier, CA 90607
(562) 699-7411

Revised April 4, 2000

CITY OF PALOS VERDES ESTATES
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CITY OF
Palos Verdes Estates

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August 1, 2000

Mr. David Snow, AICP
City of Rancho Palos Verdes
Department of Planning, Building and Code Enforcement
30940 Hawthorne Blvd.
Rancho Palos Verdes, CA 90275

RE: LONG POINT RESORT INITIAL STUDY/ ENVIRONMENTAL CHECKLIST

Dear Mr. Snow:

The City of Palos Verdes Estates has reviewed the Initial Study and Environmental Checklist for the proposed Long Point Resort project, dated July 18, 2000. The City of Palos Verdes Estates supports the lead agency's finding that the proposal will have a significant effect on the environment, requiring the preparation of an Environmental Impact Report (EIR).

The City of Palos Verdes Estates has deep concerns with the anticipated impacts related to increased traffic loads and volumes caused by this project. Traffic accessing the project site from the north will most likely travel along Palos Verdes Drive West, through the City of Palos Verdes Estates, causing a variety of impacts. Two categories of traffic impacts will occur: impacts during construction due to transportation of heavy loads of construction equipment and materials; and impacts after construction caused by increased traffic volumes resulting from patrons and employees of Long Point Resort destined for the Resort.

At a minimum, the City of Palos Verdes asks that the following issues be addressed in the preparation and review of an EIR for this project:

- Haul Route: The City of Palos Verdes Estates strongly opposes any haul route which runs through the City of Palos Verdes Estates. The number of grading trips should be determined prior to approval of the project, and an appropriate haul route designated.
- Wide and Heavy Loads: The City of Palos Verdes Estates, as a policy, does not issue wide and heavy load permits to vehicles which do not have destinations within the City. All trucks transporting equipment and materials during construction must be routed outside of Palos Verdes Estates.
- Additional Traffic During Construction: The City of Palos Verdes Estates respectfully requests that all construction traffic be diverted outside of Palos Verdes Estates. In the event that the applicant wishes to travel via streets within

Palos Verdes Estates, the City requests that projected traffic counts be incorporated into the construction schedule and be submitted for review by the City Engineer. Upon review, the City Engineer shall estimate the expected cost to repair the damage caused to the streets during construction, and require the applicant to compensate the City, based on this figure.

- Additional Traffic After Construction: The EIR should estimate the increase in the average daily traffic volumes projected for 2005, 2010 and 2020, caused by this project. The City of Palos Verdes Estates requests that these projected increases be determined for all streets within the City which are expected to be utilized to access the site (most notably Palos Verdes Drive West, Palos Verdes Drive North and Palos Verdes Boulevard). These figures should be submitted to the City Engineer for additional review. The City of Palos Verdes Estates further requests that all employees and delivery services to the site be required to access the site along routes outside of Palos Verdes Estates.
- Noise: Additional traffic within Palos Verdes Estates will subject our residents to additional noise. The City requests mitigation measures to sufficiently protect the residents of Palos Verdes Estates from any additional noise pollution. We ask that proposed mitigation measured be submitted to the City Engineer for review and analysis.
- Air Quality and Odors: Additional traffic will also cause increased air pollution and odors generated by automobile exhaust. The City of Palos Verdes Estates requests that the anticipated increase in air pollution within the City to be quantified and submitted to the City Engineer for further review and analysis.

In summary, the City of Palos Verdes Estates is strongly concerned with the Long Point Resort Project due to its anticipated impacts on traffic, noise, air quality and odor within Palos Verdes Estates. We respectfully request that our concerns be considered and incorporated into the Environmental Impact Report which is to be prepared for this project, and submitted for our review when completed.

Thank you for the opportunity to review and comment on this project.

Sincerely,

James B. Hendrickson
City Manager

Allan Rigg
Director of Planning

cc: Timm Browne, Police Chief

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& CODE ENFORCEMENT

SOUTHERN CALIFORNIA

ASSOCIATION of GOVERNMENTS

Main Office

818 West Seventh Street

12th Floor

Los Angeles, California

90017-3435

t (213) 236-1800

f (213) 236-1825

www.scag.ca.gov

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Orange County: Charles Smith, Orange County • Ron Bates, Los Alamitos • Ralph Bauer, Huntington Beach • Art Brown, Buena Park • Elizabeth Cowan, Costa Mesa • Jan Debay, Newport Beach • Cathryn DeYoung, Laguna Niguel • Richard Dixon, Lake Forest • Alta Duke, La Palma • Shirley McCracken, Anaheim • Bev Perry, Brea

Riverside County: Bob Buster, Riverside County • Ron Loveridge, Riverside • Greg Pettis, Cathedral City • Andrea Puga, Corona • Ron Roberts, Temecula • Charles White, Moreno Valley

San Bernardino County: Kathy Davis, San Bernardino County • Bill Alexander, Rancho Cucamonga • Jim Bagley, Twentynine Palms • David Eshleman, Fontana • Lee Ann Garcia, Grand Terrace • Gwenn Norton-Perry, Chino Hills • Judith Valles, San Bernardino

Ventura County: Judy Mikels, Ventura County • Donna De Paola, San Buenaventura • Glen Becerra, Simi Valley • Toni Young, Port Hueneme

Riverside County Transportation Commission: Robin Lowe, Hemet

Ventura County Transportation Commission: Bill Davis, Simi Valley

August 2, 2000

Mr. David Snow, AICP
City of Rancho Palos Verdes
Department of Planning, Building and Code Enforcement
30940 Hawthorne Boulevard
Rancho Palos Verdes, CA 90275

RE: **Comments on the Notice of Preparation for a Draft Environmental Impact Report for the Long Point Resort Project - SCAG No. I 20000377**

Dear Mr. Snow:

Thank you for submitting the **Notice of Preparation for a Draft Environmental Impact Report for the Long Point Resort Project** to SCAG for review and comment. As areawide clearinghouse for regionally significant projects, SCAG assists cities, counties and other agencies in reviewing projects and plans for consistency with regional plans.

In addition, The California Environmental Quality Act requires that EIRs discuss any inconsistencies between the proposed project and the applicable general plans and **regional plans (Section 15125 [d])**. If there are inconsistencies, an explanation and rationalization for such inconsistencies should be provided.

Policies of SCAG's Regional Comprehensive Plan and Guide that may be applicable to your project are outlined in the attachment. **We expect the DEIR to specifically cite the appropriate SCAG policies and address the manner in which the Project is consistent with applicable core policies or supportive of applicable ancillary policies. Please use our policy numbers to refer to them in your DEIR. Also, we would encourage you to use a side-by-side comparison of SCAG policies with a discussion of the consistent or support of the policy with the Proposed Project.**

Please provide a minimum of 45 days for SCAG to review the DEIR when this document is available. If you have any questions regarding the attached comments, please contact Jeffrey Smith, Senior Planner at (213) 236-1867.

Sincerely,

Sylvia Patsaouras

SYLVIA PATSAOURAS
Interim Manager,
Performance Assessment and Implementation

COMMENTS ON THE PROPOSAL TO DEVELOP A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE LONG POINT RESORT PROJECT SCAG NO. I 20000377

PROJECT DESCRIPTION

The proposed Project considers the development of a full service hotel providing approximately 582 guestrooms, restaurants/bars and meeting/function spaces. In addition, approximately 31.6 acres of conserved/enhanced habitat are proposed along with, 81 acres of public open space facilities, public parking, shoreline access ramps, public parks/overlooks, public walking/hiking trails, a public golf practice facility and a 9-hole public use golf course. The proposed Project encompasses approximately 168.4 acres in the City of Rancho Palos Verdes

CONSISTENCY WITH REGIONAL COMPREHENSIVE PLAN AND GUIDE POLICIES

The **Growth Management Chapter (GMC)** of the Regional Comprehensive Plan and Guide (RCPG) contains the following policies that are particularly applicable and should be addressed in the Draft EIR for the Project.

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

Regional Growth Forecasts

The Draft EIR should reflect the most current SCAG forecasts which are the 1998 RTP (April 1998) Population, Households and Employment forecasts for the South Bay Cities Council of Governments subregion and the City of Rancho Palos Verdes. These forecasts area as follows:

South Bay Cities Subregional Forecasts	**2000**	**2005**	**2010**	**2015**	**2020**
Population	857,700	872,200	884,600	902,900	925,600
Households	300,000	304,200	310,800	317,100	328,200
Employment	450,200	478,300	500,500	524,600	554,400

City of Rancho Palos Verdes Forecasts	2000	2005	2010	2015	2020
Population	13,700	13,700	13,800	13,800	13,800
Households	5,000	5,000	5,100	5,100	5,200
Employment	2,300	2,300	2,400	2,400	2,400

3.03 The timing, financing, and location of public facilities, utility systems, and transportation systems shall be used by SCAG to implement the region's growth policies.

The **Regional Transportation Plan (RTP)** also has goals, objectives, policies and actions pertinent to this proposed project. This RTP links the goal of sustaining mobility with the goals of fostering economic development, enhancing the environment, reducing energy consumption, promoting transportation-friendly development patterns, and encouraging fair and equitable access to residents affected by socio-economic, geographic and commercial limitations. Among the relevant goals, objectives, policies and actions of the RTP are the following:

Core Regional Transportation Plan Policies

4.01 Transportation investments shall be based on SCAG's adopted Regional Performance Indicators.

Mobility - Transportation Systems should meet the public need for improved access, and for safe, comfortable, convenient and economical movements of people and goods.

- *Average Work Trip Travel Time in Minutes – 22 minutes*
- *PM Peak Highway Speed – 33 mph*
- *Percent of PM Peak Travel in Delay (All Trips) – 33%*

Accessibility - Transportation Systems should ensure the ease with which opportunities are reached. Transportation and land use measures should be employed to ensure minimal time and cost.

- *Work Opportunities within 25 Minutes – 88%*

Environment - Transportation Systems should sustain development and preservation of the existing system and the environment. (All Trips)

- *Meeting Federal and State Standards – Meet Air Plan Emission Budgets*

Reliability - Reasonable and dependable levels of service by mode. (All Trips)
- *Transit – 63%*
- *Highway – 76%*

Safety - Transportation Systems should provide minimal, risk, accident, death and injury. (All Trips)
- *Fatalities Per Million Passenger Miles – 0.008*
- *Injury Accidents – 0.929*

Livable Communities - Transportation Systems should facilitate Livable Communities in which all residents have access to all opportunities with minimal travel time. (All Trips)
- *Vehicle Trip Reduction – 1.5%*
- *Vehicle Miles Traveled Reduction – 10.0%*

Equity - The benefits of transportation investments should be equitably distributed among all ethnic, age and income groups. (All trips)
- *Low-Income (Household Income $12,000)) Share of Net Benefits – Equitable Distribution of Benefits*

Cost-Effectiveness - Maximize return on transportation investment. (All Trips)
- *Net Present Value – Maximum Return on Transportation Investment*
- *Value of a Dollar Invested – Maximum Return on Transportation Investment*

4.02 Transportation investments shall mitigate environmental impacts to an acceptable level.

4.04 Transportation Control Measures shall be a priority.

4.16 Maintaining and operating the existing transportation system will be a priority over expanding capacity.

GMC 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 cost, 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 evaluation of the proposed project in relation to the following policies would be intended to guide efforts toward achievement of such goals

and does not infer regional interference with local land use powers.

3.05 Encourage patterns of urban development and land use, which reduce costs on infrastructure construction and make better use of existing facilities.

3.09 Support local jurisdictions' efforts to minimize the cost of infrastructure and public service delivery, and efforts to seek new sources of funding for development and the provision of services.

3.10 Support local jurisdictions' actions to minimize red tape and expedite the permitting process to maintain economic vitality and competitiveness.

GMC POLICIES RELATED TO THE RCPG GOAL TO IMPROVE 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 evaluation of the proposed project in relation to the following policies would be intended to provide direction for plan implementation, and does not allude to regional mandates.

3.12 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.

3.13 Encourage local jurisdictions' plans that maximize the use of existing urbanized areas accessible to transit through infill and redevelopment.

3.14 Support local plans to increase density of future development located at strategic points along the regional commuter rail, transit systems, and activity centers.

3.16 Encourage developments in and around activity centers, transportation corridors, underutilized infrastructure systems, and areas needing recycling and redevelopment.

3.18 Encourage planned development in locations least likely to cause environmental impact.

3.20 *Support the protection of vital resources such as wetlands, groundwater recharge areas, woodlands, production lands, and land containing unique and endangered plants and animals.*

3.21 *Encourage the implementation of measures aimed at the preservation and protection of recorded and unrecorded cultural resources and archaeological sites.*

3.22 *Discourage development, or encourage the use of special design requirements, in areas with steep slopes, high fire, flood, and seismic hazards.*

3.23 *Encourage mitigation measures that reduce noise in certain locations, measures aimed at preservation of biological and ecological resource, measures that would reduce exposure to seismic hazards, minimize earthquake damage, and to develop emergency response and recovery plans.*

GMC POLICIES RELATED TO THE RCPG GOAL TO PROVIDE SOCIAL, POLITICAL, AND CULTURAL EQUITY

The Growth Management Goal to develop urban forms that avoid economic and social polarization promotes the regional strategic goal of minimizing social and geographic disparities and of reaching equity among all segments of society. The evaluation of the proposed project in relation to the policy stated below is intended guide direction for the accomplishment of this goal, and does not infer regional mandates and interference with local land use powers.

3.27 *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, social services, recreational facilities, law enforcement, and fire protection.*

AIR QUALITY CHAPTER CORE ACTIONS

The **Air Quality Chapter** core actions related to the proposed project includes:

5.07 *Determine specific programs and associated actions needed (e.g., indirect source rules, enhanced use of telecommunications, provision of community based shuttle services, provision of demand management based programs, or vehicle-miles-traveled/emission fees) so that options to command and control regulations can be assessed.*

5.11 Through the environmental document review process, ensure that plans at all levels of government (regional, air basin, county, subregional and local) consider air quality, land use, transportation and economic relationships to ensure consistency and minimize conflicts.

WATER QUALITY CHAPTER RECOMMENDATIONS AND POLICY OPTIONS

The **Water Quality Chapter** core recommendations and policy options relate to the two water quality goals: to restore and maintain the chemical, physical and biological integrity of the nation's water; and, to achieve and maintain water quality objectives that are necessary to protect all beneficial uses of all waters.

11.02 Encourage "watershed management" programs and strategies, recognizing the primary role of local governments in such efforts.

11.07 Encourage water reclamation throughout the region where it is cost-effective, feasible, and appropriate to reduce reliance on imported water and wastewater discharges. Current administrative impediments to increased use of wastewater should be addressed.

OPEN SPACE CHAPTER ANCILLARY GOALS

Outdoor Recreation

9.01 Provide adequate land resources to meet the outdoor recreation needs of the present and future residents in the region and to promote tourism in the region.

9.02 Increase the accessibility to open space lands for outdoor recreation.

9.03 Promote self-sustaining regional recreation resources and facilities.

CONCLUSIONS

All feasible measures needed to mitigate any potentially negative regional impacts associated with the proposed project should be implemented and monitored, as required by CEQA.

ENDNOTE

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

Roles and Authorities

SCAG is a ***Joint Powers Agency*** established under California Government Code Section 6502 et seq. Under federal and state law, SCAG is designated as a Council of Governments (COG), a Regional Transportation Planning Agency (RTPA), and a Metropolitan Planning Organization (MPO). SCAG's mandated roles and responsibilities include the following:

SCAG is designated by the federal government as the Region's ***Metropolitan Planning Organization*** and mandated to maintain a continuing, cooperative, and comprehensive transportation planning process resulting in a Regional Transportation Plan and a Regional Transportation Improvement Program pursuant to 23 U.S.C. '134(g)-(h), 49 U.S.C. '1607(f)-(g) et seq., 23 C.F.R. '450, and 49 C.F.R. '613. SCAG is also the designated ***Regional Transportation Planning Agency***, and as such is responsible for both preparation of the Regional Transportation Plan (RTP) and Regional Transportation Improvement Program (RTIP) under California Government Code Section 65080.

SCAG is responsible for developing the demographic projections and the integrated land use, housing, employment, and transportation programs, measures, and strategies portions of the ***South Coast Air Quality Management Plan***, pursuant to California Health and Safety Code Section 40460(b)-(c). SCAG is also designated under 42 U.S.C. '7504(a) as a ***Co-Lead Agency*** for air quality planning for the Central Coast and Southeast Desert Air Basin District.

SCAG is responsible under the Federal Clean Air Act for determining ***Conformity*** of Projects, Plans and Programs to the Air Plan, pursuant to 42 U.S.C. '7506.

Pursuant to California Government Code Section 65089.2, SCAG is responsible for ***reviewing all Congestion Management Plans (CMPs) for consistency with regional transportation plans*** required by Section 65080 of the Government Code. SCAG must also evaluate the consistency and compatibility of such programs within the region.

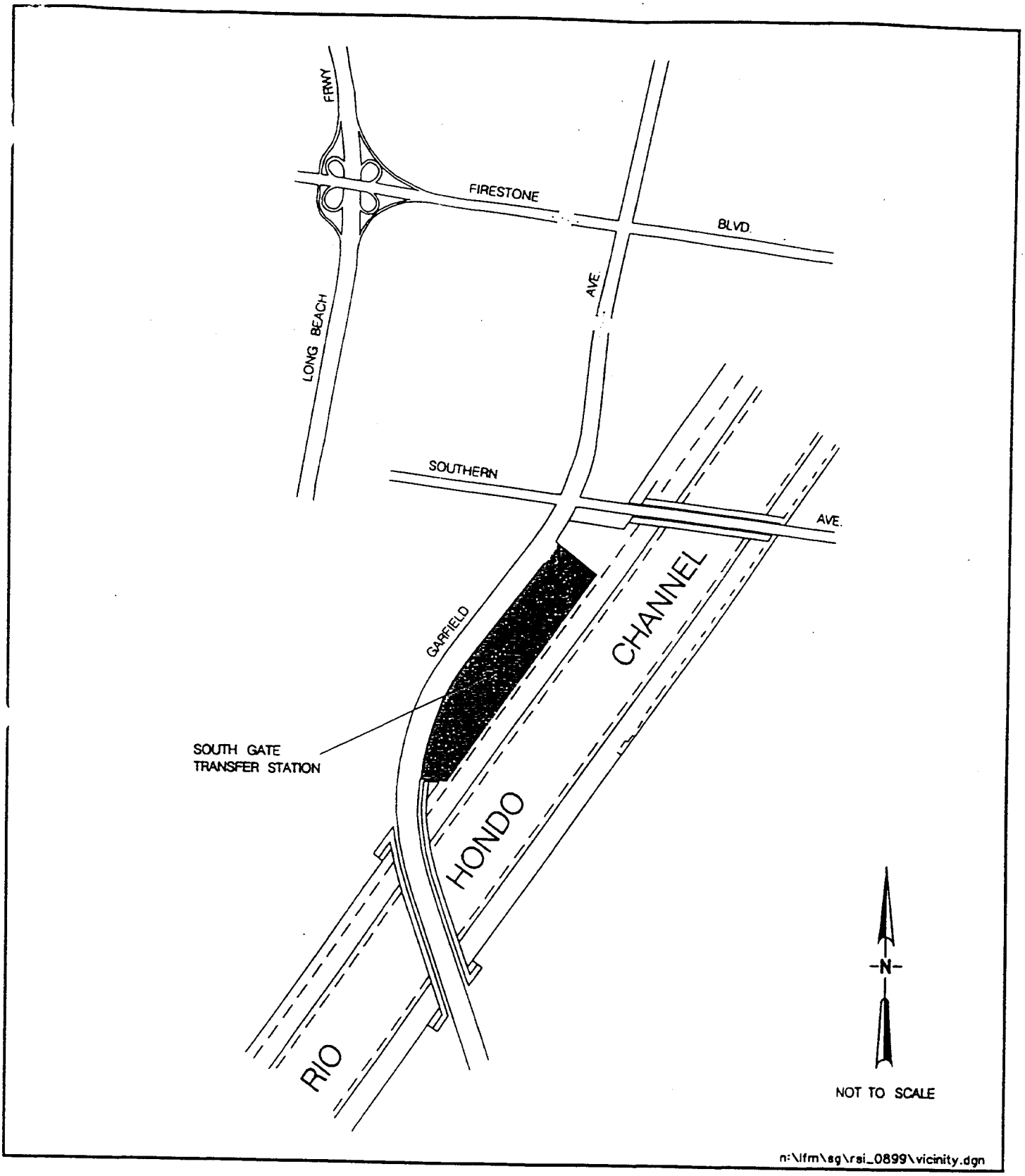
SCAG is the authorized regional agency for ***Inter-Governmental Review*** of Programs proposed for federal financial assistance and direct development activities, pursuant to Presidential Executive Order 12,372 (replacing A-95 Review).

SCAG reviews, pursuant to Public Resources Code Sections 21083 and 21087, ***Environmental Impact Reports*** of projects of regional significance for consistency with regional plans [California Environmental Quality Act Guidelines Sections 15206 and 15125(b)].

Pursuant to 33 U.S.C. '1288(a)(2) (Section 208 of the Federal Water Pollution Control Act), SCAG is the authorized ***Areawide Waste Treatment Management Planning Agency***.

SCAG is responsible for preparation of the ***Regional Housing Needs Assessment***, pursuant to California Government Code Section 65584(a).

SCAG is responsible (with the San Diego Association of Governments and the Santa Barbara County/Cities Area Planning Council) for preparing the ***Southern California Hazardous Waste Management Plan*** pursuant to California Health and Safety Code Section 25135.3.



COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

SOLID WASTE MANAGEMENT DEPARTMENT

SOUTH GATE TRANSFER STATION

VICINITY MAP

WATER RECLAMATION
SOLID WASTE MANAGEMENT

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (562) 699-7411, FAX: (562) 699-5422
www.lacsd.org

JAMES F. STAHL
Chief Engineer and General Manager

August 7, 2000

RECEIVED
AUG 08 2000
PLANNING, BUILDING,
& CODE ENFORCEMENT

File No: 05-00.04-00

Mr. David Snow, AICP
City of Rancho Palos Verdes
30940 Hawthorne Boulevard
Rancho Palos Verdes, CA 90275

Dear Mr. Snow:

Long Point Resort, Tentative Parcel Map No. 26073,
Coastal Permit No. 166, Conditional Use Permits Nos. 215 and 216

The County Sanitation Districts of Los Angeles County (Districts) received a Notice of Preparation of a Draft Environmental Impact Report for the subject project on July 20, 2000. The proposed development is located within the jurisdictional boundaries of District No. 5. We offer the following comments regarding sewerage service:

1. Because of the project's location, the flow originating from the proposed project would have to be transported to the Districts' trunk sewer by local sewer(s) which are not maintained by the Districts. If no local sewer lines currently exist, it is the responsibility of the developer to convey any wastewater generated by the project to the nearest local sewer and/or Districts' trunk sewer.

2. The nearest Districts' trunk sewer is the Joint Outfall "J" Unit 1G Trunk Sewer, located in a right of way north of Palos Verdes Drive South and west of Crestmont Lane. This 21-inch diameter trunk sewer has a peak capacity of 5.2 million gallons per day (mgd) and conveyed a peak flow of 2.3 mgd when last measured in 1996.

3. The wastewater generated by the proposed project will be treated at the Joint Water Pollution Control Plant (JWPCP) located in the City of Carson. The JWPCP has a design capacity of 385.0 mgd and currently processes an average flow of 332.4 mgd.

4. The following table contains a breakdown of the expected average wastewater flow from the project site.

USE	UNITS OR SQUARE FEET	GENERATION RATE (GALLONS/DAY/UNIT OR 1,000 SQUARE FEET)	WASTEWATER FLOW (GALLONS/DAY)
Hotel Rooms	400	125	50,000
Resort Casitas	50	156	7,800
Resort Villas	32	260	8,320
Restaurants	(400 seats) 9,000	1,000	9,000
Conferee Dining	(200 seats) 3,000	1,000	3,000
Lounges/Beverage Bars	(150 seats) 2,250	1,000	2,250
Pool Bar	2,000	1,000	2,000
Banquet/Meeting Rooms/Retail	68,000	125	8,500
Health Spa	25,000	600	15,000
Parks/Golf Course	81.2 acres	---	15,744
		TOTAL	121,614

5. The Districts are empowered by the California Health and Safety Code to charge a fee for the privilege of connecting (directly or indirectly) to the Districts' Sewerage System or **increasing the existing strength and/or quantity of wastewater attributable to a particular parcel or operation already connected**. This connection fee is required to construct an incremental expansion of the Sewerage System to accommodate the proposed project which will mitigate the impact of this project on the present Sewerage System. Payment of a connection fee will be required before a permit to connect to the sewer is issued.

6. The design capacities of the Districts' wastewater treatment facilities are based on population forecasts adopted in the Southern California Association of Governments' (SCAG) 1994 Regional Comprehensive Plan and Guide (RCPG). The RCPG is part of the 1994 South Coast Air Quality Management Plan (AQMP). The AQMP and RCPG are jointly prepared by the South Coast Air Quality Management District (SCAQMD) and SCAG as a requirement of the Federal Clean Air Act (CAA). In order to conform with the AQMP, all expansions of Districts' facilities must be sized and service phased in a manner which will be consistent with the Growth Management Element of the RCPG. The Growth Management Element contains a regional growth forecast for the counties of Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial which was prepared by SCAG. Specific policies included in the RCPG which deal with the management of growth will be incorporated into the AQMP strategies to improve air quality in the South Coast Air Basin. The available capacity of the Districts' treatment facilities will, therefore, be limited to levels associated with approved growth identified in the RCPG. As such, this letter does not

constitute a guarantee of wastewater service, but is to advise you that the Districts intend to provide this service up to the levels which are legally permitted and to inform you of the currently existing capacity and any proposed expansion of the Districts' facilities.

If you have any questions, please contact the undersigned at (562) 699-7411, extension 2717.

Very truly yours,

James F. Stahl

Ruth I. Frazen

Ruth I. Frazen
Engineering Technician
Planning & Property Management Section

RIF:eg

DEPARTMENT OF TRANSPORTATION
DISTRICT 7, ADVANCE PLANNING
IGR OFFICE 1-10C
120 SO. SPRING ST.
LOS ANGELES, CA 90012
TEL: (213) 897-0486 ATSS: 8- 647-0486
FAX: (213) 897-8906
E-mail: :NoraPiring/CAGOV@DOT

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PLANNING, BUILDING,
& CODE ENFORCEMENT

August 11, 2000

MR. DAVID SNOW
City of Rancho Palos Verdes
30940 Hawthorne Boulevard
Rancho Palos Verdes, CA 90275

Re: ***IGR/CEQA #000754***
NOP, Long Point Resort
City of Rancho Palos Verdes
Vic. LA-213-0.00/SCH No. 2000071076

Dear Mr. Snow:

Thank you for the opportunity to provide comments on the above-named document. The Long Point Resort involves a full-service hotel providing approximately 582 guestrooms, restaurants/bars, and meeting/function spaces. Also proposed are approximately 31.6 acres of conserved/enhanced habitat and approximately 81 acres of public open space/recreation facilities.

Our review indicates, a full traffic study is needed in advance of the DEIR to analyze the following information:

1) Assumptions and methods used to develop trip generation/distribution, percentages and assignments.
2) An analysis of ADT, AM & PM peak-hour volumes for both the existing and future (year 2020) conditions. This is to include mainline freeways, Routes 213, 405, 110, and 107 and affected ramps, streets, crossroads and controlling intersections.
3) This analysis to address year 2020 conditions including project traffic, cumulative traffic generated for all approved developments in the area, interchange utilization (I.C.U.) and level of service (LOS) of affected freeway ramp intersections on the State highways, and indicating existing + project(s) + other projects LOS (existing and future).

4) Discussion of mitigation measures to alleviate traffic impacts. This mitigation discussion to include, but not be limited to, the following:
   * financing
   * scheduling considerations
   * implementation responsibilities
   * monitoring plans
5) Applicant's percent share of the cost, as well as plan of realistic mitigation measures under the control of the applicant to be addressed. Any assessment fees for mitigation to be of such proportion as to cover the mainline highway deficiencies that occur as a result of the additional traffic generated by the project.

A Caltrans encroachment permit will be processed for work within the State right-of-way, such as signalization, grading, widening, drainage or mainline improvements, etc. A Caltrans Project Study Report (PSR) will be prepared for any work, which exceeds $1,000,000.00 not including right-of-way.

A Caltrans transportation permit will be required for any transportation of heavy construction equipment, which requires the use of over-sized transport vehicles on State highways. We recommend trucks be limited to off-peak commute periods.

We look forward to receiving the DEIR. We expect to receive a copy from the State Clearinghouse. However, to expedite the review process, you may send two (2) copies in advance to the undersigned at the following address:

STEPHEN J. BUSWELL
Program Manager
Caltrans, District 07, IGR/CEQA 1-12G
120 South Spring Street
Los Angeles, CA 90012

If you have any questions regarding this response, please feel free to contact the undersigned at (213) 897-4429 and refer to IGR/CEQA #000754/NP.

Sincerely,

STEPHEN J. BUSWELL
Program Manager
IGR/CEQA

cc: Scott Morgan
State Clearinghouse

COUNTY OF LOS ANGELES

FIRE DEPARTMENT

1320 NORTH EASTERN AVENUE
LOS ANGELES, CALIFORNIA 90063-3294

(323) 890-4330

RECEIVED

AUG 15 2000

PLANNING, BUILDING,
& CODE ENFORCEMENT

P. MICHAEL FREEMAN
FIRE CHIEF
FORESTER & FIRE WARDEN

August 14, 2000

David Snow, AICP
City of Rancho Palos Verdes
30940 Hawthorne Boulevard
Rancho Palos Verdes, CA 90275

Dear Mr. Snow:

SUBJECT: ENVIRONMENTAL IMPACT REPORT - (CITY OF RANCHO PALOS VERDES) INITIAL STUDY/ENVIRONMENTAL CHECKLIST, "LONG POINT RESORT" (COASTAL PERMIT #166, CUPS #215 & #216, TPM #26073, AND GRADING PERMIT #2229 & #2230) - EIR #943/2000

The Initial Study/Environmental Checklist for the Long Point Resort Project has been reviewed by the Planning, Subdivision, and Forestry Divisions of the County of Los Angeles Fire Department. The following are their comments:

PLANNING:

Fire protection serving the area appears to be adequate for the existing development/land use; however, each additional development creates greater demands on existing resources. Consequently, the impact that this project will have on the adequacy of the Fire Department's level of service remains uncertain.

It would be helpful if the environmental document specifies the square footage of all proposed structures and of any existing structures in the former Marineland site that are scheduled for demolition.

DESIGN AND CONSTRUCTION -- GENERAL REQUIREMENTS:

Size, complexity, and projected use of the proposed development may necessitate multiple ingress/egress access for the circulation of traffic, and emergency response issues. The development of this project must comply with all applicable code and ordinance requirements for construction, access, water main, fire flows and hydrants.

This property is located within the area described by the Forester and Fire Warden as a Fire Zone 4, Very High Fire Hazard Severity Zone (VHFHSZ). All applicable fire code and ordinance requirements for construction, access, water mains, fire hydrants, fire flows, brush clearance and fuel modification plans, must be met.

Specific fire and life safety requirements for the construction phase will be addressed at the building fire plan check. There may be additional fire and life safety requirements during this time.

Every building constructed shall be accessible to fire department apparatus by way of access roadways, with an all weather surface of not less than the prescribed width, unobstructed, clear to the sky. The roadway shall be extended to within 150 feet of all portions of the exterior walls when measured by an unobstructed route around the exterior of the building.

Any bridges to be constructed shall be constructed and maintained in accordance with nationally recognized standards and designed for a live load sufficient to carry a minimum of 70,000 pounds.

When involved with subdivision, Fire Department requirements for access, fire flows and hydrants are addressed during the subdivision tentative map stage.

It is strongly suggested that fire sprinkler systems be installed in all commercial and residential buildings. This will reduce potential fire and life losses. Systems are now technically and economically feasible for residential use.

COMMERCIAL OR INDUSTRIAL:

Development may require fire flows up to 5,000 gallons per minute at 20 pounds per square inch residual pressure for up to a five hour duration. Final fire flows will be based on the size of the buildings, their relationship to other structures, property lines, and types of construction used. Fire hydrant spacing shall be 300 feet and shall meet the following requirements:

1. No portion of lot frontage shall be more than 200 feet via vehicular access from a public fire hydrant.

2. No portion of a building should exceed 400 feet via vehicular access from a properly spaced public fire hydrant.

All on-site driveways shall provide a minimum unobstructed width of 26 feet, clear-to-sky. The on-site driveway is to be within 150 feet of all portions of the exterior walls of the first story of any building. Driveway width for commercial or industrial developments shall be increased when any of the following conditions will exist:

1. Provide 28 feet width when buildings are three stories or more than 35 feet in height above access level. Also, for using fire truck ladders, the centerline of the access roadway shall be located parallel to, and within 30 feet of the exterior wall on one side of the proposed structure.

2. Provide 34 feet width when parallel parking is allowed on one side of the access roadway/driveway. Preference is that such parking is not adjacent to the structure.

3. Provide 42 feet width when parallel parking is allowed on each side of the access roadway/driveway.

4. All "Fire Lanes" will be depicted on the final map, and will be designated with the appropriate signage. "Fire Lanes" are any ingress/egress roadway/driveway with paving less than 34 feet in width, and will be clear-to-sky.

HIGH-DENSITY RESIDENTIAL:

Development may require fire flows up to 5,000 gallons per minute at 20 pounds per square inch residual pressure for up to a five-hour duration. Final fire flows will be based on the size of the buildings, their relationship to other structures, property lines, and types of construction used. Fire hydrant spacing shall be 300 feet and shall meet the following requirements:

1. No portion of lot frontage shall be more than 200 feet via vehicular access from a public fire hydrant.

2. No portion of a building should exceed 400 feet via vehicular access from a properly spaced fire hydrant.

All on-site driveways shall provide a minimum unobstructed width of 26 feet, clear-to-sky. The on-site driveway is to be within 150 feet of all portions of the exterior walls of the first story of any building. The 26 feet width does not allow for parking, and shall be designated as a "Fire Lane," and have appropriate signage. The 26 feet width shall be increased to:

1. Provide 34 feet width when parallel parking is allowed on one side of the access way.

2. Provide 36 feet width when parallel parking is allowed on both sides of the access way.

3. Any access way less than 34 feet in width shall be labeled "Fire Lane" on the final recording map, and final building plans. Driveway labeling is necessary to ensure access for Fire Department use.

Should any questions arise regarding design and construction, and/or water and access, please contact Inspector Mike McHargue at (323) 890-4243.

OTHER ENVIRONMENTAL CONCERNS:

The statutory responsibilities of the County of Los Angeles Fire Department Forestry Division include erosion control, watershed management, rare and endangered species, vegetation, fuel modification for Very High Fire Hazard Severity Zones or Fire Zone 4, archeological and cultural resources and the County Oak Tree Ordinance. Potential impacts in these areas should be addressed in the Draft EIR.

Oak trees are known to exist in the proposed project area. Further field studies should be conducted to determine the presence of this species on the project site. The applicant should incorporate innovative design to reduce or eliminate the impact to any Oak resources and the loss of any Oak tree habitat should be mitigated for pursuant to the provisions of the City's Tree Management Policy.

As required by Section 1117.2.1 of the County Fire Code a fuel modification plan, a landscape plan and an irrigation plan shall be submitted with any subdivision of land or prior to any new construction, remodeling, modification or reconstruction where such activities increase the square footage of the existing structure by at least

50% within a 12-month period and where said structure or subdivision is located within an area designated as a Very High Fire Hazard Severity Zone or within Fire Zone 4. Said plans shall be reviewed and approved by the Forestry Division of the County of Los Angeles Fire Department for reasonable fire safety. Specific questions regarding fuel modification requirements should be directed to the Brush Clearance Office at (626) 969-2375.

If you have any additional questions, please contact this office at (323) 890-4330.

Very truly yours,

David R. Leininger

DAVID R. LEININGER, ACTING CHIEF, FORESTRY DIVISION
PREVENTION BUREAU

DRL:lc

RECEIVED

AUG 15 2000

PLANNING, BUILDING,
& CODE ENFORCEMENT

Mr. David Snow, AICP
City of Rancho Palos Verdes
30940 Hawthorne Blvd.
Rancho Palos Verdes, CA 90275

August 12, 2000

RE: Long Point Resort (Coastal Permit #166 & Conditional Use Permit #215 & 216
Tentative Parcel Map No. 26073 & Grading Permit Nos. 2229 & 2230)

In response to the Notice of Preparation, Los Serenos de Point Vicente, a volunteer organization, takes no stand on the present issue. Previously we, as docents for the Point Vicente Interpretive Center, took the position that the use of Point Vicente land for Long Point purposes would interfere with our children's tours on the property. We are concerned only with matters that would infringe on our duties as docents for the city of Rancho Palos Verdes.

Joan Barry

Joan Barry, President
Los Serenos de Point Vicente
c/o Recreation and Parks Department
30940 Hawthorne Blvd.
Rancho Palos Verdes, CA 90275

Submitted by Holly Cain (52 Ave. Corona RPV)
at the 8-15-00 City Council meeting

August 15, 2000

Dear City Council Members,

As you know, the Rancho Palos Verdes General Plan designates Upper Point Vicente Park as PASSIVE recreational. We hope to see it remain such. However, if the RPV City Council elects to go through the process of legally amending our city's General Plan in order to consider a Conditional Use Permit allowing developers to use this public property for part of a nine-hole golf course, then there are many serious concerns.

The developers have said repeatedly that they would not put lights or fences, or nets on the proposed golf course or driving range. Residents who appreciate the natural beauty and serenity while driving along Palos Verdes Drive South and Hawthorne Boulevard appreciate this gesture. But what is going to happen when people, cars, homes and a church get hit with errant golf balls? Can the city guarantee that there will never be any fences, nets or lights from this proposed golf facility blighting our special community?

If a golf ball is hit from the proposed golf course or driving range, which is proposed to be located on city property, and causes damage, is the city liable? The Department of the Interior has said that they would not approve this proposed project unless the city was in control; not the developer, or the resort. At the Financial Committee meeting August 8, 200, Mr. Au said that if the city is in control, the city is liable. Does the city wish to put itself in a position to be liable for all the mishaps miss hit golf balls will incur?

Looking at the Conceptual Development Plan being circulated by the developer it appears that proposed golf holes five and two, and the proposed driving range would be particularly dangerous. On proposed golf holes five and two the golfers would be hitting toward Palos Verdes Drive South, and undoubtedly some balls will end up on P.V. Drive South, denting cars, and causing accidents. According to Mr. Mohler, the driving range is located "200 feet" from the Villa Capri homes. Two hundred feet translates into about sixty-seven yards. It isn't a matter of "if" golf balls will be hit into the church and residential areas, it's a matter of "how many" and "how often" and "how much damage." Why would the city consider letting Destination Points Development use precious public land with such great potential that can never be replaced in exchange for this kind of liability?

We hope that both our Rancho Palos Verdes City Council and the Coastal Commission are concerned about the gnatchatcher song-birds that live and nest in the native plants at Upper Point Vicente Park.. Will these birds remain when golf balls and golf carts invade their habitat? If they stay, will they be able to survive the pesticides and chemical fertilizer run-off from the proposed golf course?

An Environmental Impact Report must address the question, "Does the proposed project impact adjacent property?' This proposed project most certainly would negatively impact adjacent property.

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse

Gray Davis
GOVERNOR

Steve Nissen
ACTING DIRECTOR

RECEIVED

AUG 24 2000

PLANNING, BUILDING,
& CODE ENFORCEMENT

Memorandum

Date: August 21, 2000

To: All Reviewing Agencies

From: Scott Morgan, Project Analyst

Re: SCH # 2000071076
Long Point Resort (Coastal Permit #166, Conditional Use Permit #215 & 216, Tentative Parcel Map No. 26073 & Grading Permit Nos. 2229 & 2230)

The Lead Agency has extended the review period for the above referenced project to September 5, 2000 to accommodate the local public review process. All other project information remains the same.

cc: David Snow
City of Rancho Palos Verdes
30940 Hawthorne Boulevard
Rancho Palos Verdes, CA 90275

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
916-445-0613 FAX 916-323-3018 WWW.OPR.CA.GOV/CLEARINGHOUSE.HTML

Approved
October 10, 2000

CITY OF RANCHO PALOS VERDES
PLANNING COMMISSION
JOINT MEETING
AUGUST 22, 2000

CALL TO ORDER

The meeting was called to order by Chairman Lyon at 7:03 p.m. at the Fred Hesse Community Building, 29301 Hawthorne Boulevard.

FLAG SALUTE

Commissioner Vannorsdall led the assembly in the Pledge of Allegiance.

ROLL CALL

Present: Commissioners Cartwright, Mueller, Long, Paulson, Vannorsdall, Vice Chairman Clark, and Chairman Lyon

Absent: None

Also present were Director of Planning, Building, and Code Enforcement Rojas, Planning Administrator Snow, and Recording Secretary Morreale.

APPROVAL OF AGENDA

Chairman Lyon suggested modifying the Agenda to finish all of the regular Planning Commission business before beginning the public hearing for Long Point. Therefore, Item 4 would be heard before Item 3. The Commission agreed.

PUBLIC HEARINGS (CONT.)

3. LONG POINT RESORT – ENVIRONMENTAL IMPACT REPORT SCOPING: Destination Development Corporation (applicant) 6610 Palos Verdes Drive South and 30940 Hawthorne Blvd.

Chairman Lyon explained that the purpose of this hearing was to provide a forum for the public to state their concerns, which may then be addressed in the Environmental Impact Report. There would be no decisions made at this meeting, nor would there be any deliberation over what was good and bad regarding the project. In addition, Chairman Lyon explained the City staff would like input from the Planning Commission and Traffic Committee, which will be made following the public comments.

The Recording Secretary called the roll for the Traffic Committee:

Present: Committee Members Covey, Hildebrand, Ruben, Schurmer, Wall, Chairman Jones

Absent: Committee Member Jordan-Shepherd

Planning Administrator Snow presented the staff report including a brief overview of the proposed development. The presentation included details regarding the components of the proposed resort, the various applications required for the project, and that the project site consists of two separate properties, namely the Long Point property, owned by York Long Point Associates and the Upper Point Vicente property, owned by the City of Rancho Palos Verdes.

Mr. Snow indicated that the purpose of the meeting was to obtain public input regarding the scope of the Environmental Impact Report (EIR) that must be prepared for the Long Point Resort Project. He indicated that the deadline for submission of written comments on the scope of the EIR was September 5, 2000. He indicated that the deadline applied only to comments on the scope of the EIR, and that there would be several opportunities to comment on the merits of the project and the contents of the Draft EIR in the future when public hearings are held before the Planning Commission and the City Council.

Glenn Lajoie, 1725 Alton Parkway, Irvine, with RBF Consulting, the City's environmental impact report consultant for the project, presented an overview of the California Environmental Quality Act process and requirements. Mr. Lajoie's report concluded the staff presentation.

Vice Chairman Clark asked if the cumulative analysis made with regards to this project included not only Rancho Palos Verdes, but also the entire peninsula.

Mr. Lajoie responded that they were looking at the project from a regional standpoint. He added that the notice of preparation process offers adjacent jurisdictions the opportunity to comment in terms of the project.

Commissioner Long asked about evaluating alternatives and how input on that issue was being obtained.

Mr. Lajoie responded that alternatives are typically structured so that they reduce one or more potentially significant impacts. The alternatives will be developed in conjunction with potentially significant impacts.

Planning Administrator Snow added that staff had already identified some project alternatives and more will likely be developed based on the comments received at this meeting. These would then be included in the Draft EIR.

Chairman Jones asked at what point in the process the traffic analysis would be performed and when that would be given to the Traffic Committee for review before going to the Planning Commission.

Planning Administrator Snow answered that the Traffic Committee will be looking at the traffic analysis contained in the Draft Environmental Impact Report, whether that will occur before or after the Planning Commission begins reviewing the document could not be determined at this time.

The applicant then presented the project to the Commission and Committee.

Mike Mohler, 11777 San Vicente Blvd, Suite 900, Los Angeles, representing the applicant Destination Development Corporation addressed the Commission and Committee. He introduced Paul Edwards, the land planner for the Long Point Resort project.

Paul Edwards, 17500 Red Hill Avenue, Suite 100, Irvine of Forma Design described the project to the Commission, Committee and public. He indicated that the project site consists of two distinct parcels, and summarized the uses proposed for each of the parcels. The Upper Point Vicente site would include habitat and natural preservation areas, parks, parking, trails, overlooks, golf course holes, and a golf practice facility. The Upper Point Vicente site would be connected to the Long Point site by an underground tunnel under both lanes of Palos Verdes Drive South. The resort center on the Long Point site would consist of a variety of hotel accommodations including hotel rooms, bungalow units, casitas, and resort villas. The resort villas would be privately owned, but with restricted use by the owner. The restrictions would likely allow the owner to use the villa for a maximum of three months out of each year, with a maximum term of 30 days at any stay. When not in use by the owner, the units would be managed as additional hotel accommodations by the resort hotel. Additionally, the resort center would contain spa and banquet facilities.

Chairman Lyon opened the public hearing.

Barbara Gleghorn, 28850 Crestridge Road, stated that the scoping meeting should not be held, as the applicant does not own all of the project site, and since the issue of management of public lands needed to be resolved first. She believed the scoping meeting gave the appearance of tacit approval of the project, and she noted that petitions previously submitted to the City demonstrate a lot of opposition to the project. She believed the process being followed for this project was inappropriate. Mrs. Gleghorn represented SOC II (Save Our Coastline II).

Bob Nelson, 6612 Channelview Court, spoke on behalf of the Seabluff Homeowner's Association. He stated there was unanimous approval, as neighbors, of the project and referenced prior letters to the City to that effect. He stated that the Marineland site was blighted, and that the development would improve the site. He believed that many of the opponents to the project were not neighbors of the project site, and were not residents of the City, whereas his Association consisted of residents and neighbors. Mr. Nelson expressed environmental concerns regarding control of dust from construction, the blighted condition of the Upper Point Vicente site, and that the prior Marineland operation on the Long Point site generated a lot of traffic which should be taken into consideration. Mr. Nelson indicated that he was speaking for the Association.

Vice Chairman Clark asked if all 60 homeowners shared this view.

Mr. Nelson responded that these were the views of the HOA Board of Directors, who represented the homeowners. He felt sure that there would be some homeowners in the area who were opposed to the project.

Mark Feil, 2565 Chelsea Road, PVE, stated his belief that the existing entitlements on the Long Point property were not feasible, and that he supported the project.

Donald Pehrson, 8 Shadow Lane, RHE, questioned if the EIR would include economic analysis of the project, and felt that the project, if approved, must be an economic success for both the City and the applicant. He urged the City to consider the economic impacts of the project. Mr. Pehrson indicated support for the project.

Chairman Lyon informed Mr. Pehrson that the economic issues were being handled separately from the environmental impact report by the Finance Advisory Committee who would then report to the City Council.

Marjorie Jensen 32653 Seagate Drive 'D' , in the Palos Verdes Bay Club, and a member of SOC II addressed the Commission and Committee. She suggested that alternative uses should be analyzed, such as using the Upper Point Vicente property for park and recreation uses. She believed that public use of the property should be maximized rather than golf use. Ms. Jensen indicated opposition to the project.

Suzanne Gulcher, 30034 Via Borica, representing St. Paul's Lutheran Church expressed concerns regarding traffic capacity of the cul-de-sac between the Church and the proposed practice facility location, the types of foods and beverages that would be available at the restroom/restaurant facility (particularly alcoholic beverages), the impact of the separately proposed pre-school facility between the Church and the Golden Cove commercial center regarding traffic and safety, hazards resulting from the golf activity and the construction of nets to control the hazard. Ms. Gulcher, also stated concerns regarding potential lighting impacts, irrigation impacts, and drainage impacts as related to the Church. Ms. Gulcher indicated neutrality toward the project.

Kay Conrad, 28649 Crestridge, stated her belief that the proposed project was a good environmental use of the land, particularly with respect to the Long Point property. The project would improve the site and improve access to the ocean, and would allow for recreation by many people. She expressed concerns regarding use of pesticide and herbicides on the golf course, the relationship to drainage and potential for impact to the ocean. Ms. Conrad indicated support for the project.

William Tolliffe, 6347 Tarragon Road, believed the proposed project would have negative impacts on the City owned land such as destruction of biological resources during construction, impacts from golf hazards and netting to control any such hazards, soil stability from the proposed grading and subsequent golf course irrigation, and the loss of natural open space for the public use. He expressed concern regarding the construction and maintenance of the proposed tunnel, and believed it could become an attractive nuisance. He questioned whether a nine-hole golf course would be sufficient to make the project successful, and suggested that arrangements be made between other golf courses in the area and the proposed hotel. Mr. Tolliffee advocated retaining the Upper Point Vicente property as open space. Mr. Tolliffee indicated that he opposed the portion of the project on the City owned land.

Anne Shaw, 30036 Via Borica, expressed concern regarding errant golf balls and the proximity of the practice facility to the Villa Capri condominiums. She stated that the Los Verdes course was redesigned to address problems, and the result was the tall nets that are now visible. Ms. Shaw stated that holes 2, 3, and 4 of the course presented golf safety issues due to the design and the potential for wind impacts to airborne golf balls. She was concerned that the course would get built, and then tall nets and poles would be installed to address problems, which would result in significant visual and aesthetic impacts to the community.

RECESS AND RECONVENE

At 8:30 p.m. the Commission and Committee took a short recess until 8:40 p.m. at which time they reconvened.

COMMENTS FROM THE AUDIENCE

Lois Larue, 3136 Barkentine Road, suggested that the Planning Commission receive a pay increase.

PUBIC HEARINGS (CONT.)

Vic Quirarte, 29369 Quailwood, stated his concern for impact to the California gnatcatcher and the cactus wren that utilize the portions of the project site. He discussed the Department of the Interior's letter regarding the necessary changes to the program of utilization for the Upper Point Vicente portion of the site, and the criteria they must consider regarding impacts to natural habitats and sensitive plant and animal species. Mr. Quirarte expressed concern regarding the impact of construction and grading on the habitat and biological resources, and pesticide and water runoff impacts to adjacent habitat areas. Mr. Quirarte indicated his affiliation with SOC II and his opposition to the project.

Angie Papadakis, 28655 Roan Road, a 40-year resident, stated her support of the project and that she would like to have a hotel on the Palos Verdes Peninsula. She supported the trails, and thought the proposed project would be better than the existing condition of the project site. She believed that the project would be an environmental enhancement by improving the site conditions beyond the existing condition.

Betina Arnold, 30803 Rue Langlois, believed the grading proposed would result in a significant amount of exported dirt, and was concerned about where and how disposal of the earth would be handled. She believed the depth of cut, and the height of retaining walls indicated too much disturbance to the Upper Point Vicente property. Ms. Arnold indicated her affiliation with SOC II, and her opposition to the project.

George Gleghorn, 28250 Crestridge Road, expressed concern with the proposed Long Point project, and felt that the project already approved for the Long Point site should be built. Mr. Gleghorn indicated his affiliation with SOC II.

Jim Knight, 5 Cinnamon Lane, submitted a 14-page letter of comments. Additionally, he questioned whether the applications were complete in light of the Natural Community Conservation Plan (NCCP) that the City is working on. He expressed concerns regarding natural habitat as well as corridors and linkages between stands of habitat. He felt that the NCCP must be completed before the City could consider the Long Point Resort proposal. He discussed fragmentation impacts to habitat on the Upper Point Vicente property. He was concerned about view corridors that would be interrupted with golf course improvements or uses, and believed that the proposed project excluded the general public from certain view that could only be enjoyed from the golf course itself. Mr. Knight indicated his opposition to the project.

Tony Baker 16 Limetree, stated that he did not oppose development on the Marineland site, but was concerned with the use of the Upper Point Vicente property for uses other

than open space. He stated that non-native grasslands are important too, and should be considered in analysis of biological impacts regarding restoration potential and open space value. He was concerned about birds and isolation issues. Mr. Baker indicated his opposition to the project.

Dena Friedson, 1737 Via Boranada, PVE, discussed the state law requirements for General Plan consistency, and stated her opposition to the general plan amendment which was added to the project to change the land use designation on a portion of the Upper Point Vicente property from Passive Recreational to Active Recreational. She believed the change to the general plan would result in an adverse impact to environmental quality. Ms. Friedson discussed the existing approved project on the Long Point property, and that it was appealed to the California Coastal Commission. She discussed the deed restriction on the Upper Point Vicente property, and believed that the golf course would unduly restrict the public from enjoying the property. She believed the restricted use would not be consistent with the deed restriction requiring public use of the property. Ms. Friedson indicated her affiliation with SOC II and her opposition to the project.

Norma Knowles, 30021 Avenida Esplendida, stated that she believed the project would have positive environmental impacts to recreational opportunities and parks and the EIR should recognize this. She believed issues of lighting, netting, poles, and safety must be addressed. Ms. Knowles indicated her support for the project.

Lois Larue, 3136 Barkentine Road, stated her belief that golf courses are toxic waste sites. She stated that the project currently approved for the Long Point site was appealed to the Coastal Commission. She expressed her opposition to the applicant's proposal. She stated that the deed restriction on the Upper Point Vicente property was for the benefit of all people.

Holly Cain, 52 Avenida Corona, believed that the golf uses were too close to neighboring uses. She expressed concern about the loss of open space areas, and the impact to the rural character of the City. She advocated enhancing the trails and other public uses of the Upper Point Vicente property. Ms. Cain indicated her affiliation with SOC II and her opposition to the project.

Robert Haase, 20 Sea Cove, expressed his opposition to the inclusion of the Upper Point Vicente property in the project. He believed the proposed golf course would not be truly for the public but for the guests of the hotel. Mr. Haase challenged anyone to explain the difference between a public golf course and a private golf course.

Chairman Lyon accepted the challenge and explained that in the golf industry a public golf course is open to the public for play at a fee, whereas a private golf course connotes a membership requirement in order to use the course.

Betty Zappas, 32614 Coastsite Drive, #104, indicted that she was a neighbor to the Long Point property. She believed the proposal needed to be fully studied before

construction started, and that there was the potential for impact to 65 acres of open space. Ms. Zappas indicated her affiliation with SOC II and her opposition to the project.

Marianne Hunter, 31 Narcissa Drive, stated her concern regarding cumulative impact and the additional environmental degradation that would accompany the proposed project. She questioned the quality of the habitat in the plan, and was concerned about edge effects caused by fragmented habitat. She was concerned about traffic, believed that financial benefits that could flow from the project should not be the only consideration. She suggested use of volunteers to clean up the Upper Point Vicente site. Ms Hunter indicated her affiliation with SOC II and her opposition to the project.

Steven LaPine, 6744-5 Los Verdes Drive, suggested that if a 9-hole golf course was fiscally viable, then the plan already approved for the Long Point site should be built. He expressed concern regarding impacts of night operation of the practice facility, and the potential for a cumulative light impact on nocturnal creatures. Mr. LaPine indicated his affiliation with SOC II and his opposition to the project.

Alfred Sattler, 1904 Avenida Aprenda, identified himself as the Chairman of the Sierra Club's Conservation Committee for the Los Angeles Area. He stated his objection for use of the public land for private development, and suggested an alternative to the project consisting of only privately owned property. He stated concerns regarding impacts of golf netting on flying birds, runoff impacts on coastal sage scrub, and light impact on wildlife.

Larry Vivian, 2324 West 37th Street, Los Angeles identified himself as the local Conservation Chair for the Sierra Club, and stated that he has been involved with the NCCP preparation. He expressed concerns regarding the amount of public land included in the project, and that some areas of the plan should not be considered as habitat. He also indicated concern regarding the economic ramifications of the proposed project.

Diane Weinberger, 4206 Exultant felt that the City owned property should be kept for the public, and that view corridors and wildlife and vegetation on the site should be preserved and protected. She noted that there are five golf courses in the area. She suggested considering uses other than golf such as a spa for enjoyment of the natural character, ocean views, botanical gardens, and other such uses. She suggested utilization of soft-scape materials in parking areas. Ms. Weinberger indicated her affiliation with the Seaview Subdivision, and her opposition to the golf course.

Russell Hudak, 38 Via Capri, stated that the prior applicant had promised that the project would not include a driving range. He was concerned about view impacts on adjacent residences from the structures at the practice facility, traffic impacts from the project and other proposed projects in the area, noise impacts due to the amphitheater shape of the practice facility area, and fire hazards associated with the vegetation

buffer adjacent to the Villa Capri development. Mr. Hudak indicated his position on the Board of Directors for the Villa Capri Homeowner's Association.

Dodie Clarkson, 6424 Seabryn, stated her opposition to staff working on the proposal, and questioned why the City was proceeding with the EIR. She pointed out the deed restrictions on the Upper Point Vicente property, and reinforced that the property was owned by the City for public use. Ms. Clarkson indicated her opposition to the project.

Angelika Brinkmann-Busi, 2141 w. 35th Street, San Pedro, expressed concern about impacts to California gnatcatchers, and suggested that no action should occur until the NCCP is finalized. She requested that resource issued be addressed in the EIR, including the Ocean Locoweed, and the coastal plants present at the Long Point site. She expressed concern about habitat strips and edge effects on habitat. Ms. Brinkmann-Busi indicated her affiliation with the South Coast Chapter of the California Native Plant Society, and her opposition to the project.

Samuel VanWagner, 2763 San Ramon, expressed concern regarding the use of public lands, and believed that the question of use of the land should be answered prior to processing the plan. He discussed the deed restrictions on the City property, and a letter from the National Park Service from February 1990 stating golf would be generally acceptable on City property however controls would be needed to ensure that the use was public. He expressed concern that the project would not ensure public access to the site.

Barbara Walsh, 34 Oceanaire, believed that potentially significant aesthetic impacts could result from the proposed project. She stated opposition to use of the property for golf, and was concerned with noise and water impacts. Ms. Walsh indicated her affiliation with SOC II.

Eric Paris, 29234 Stadia Hill Lane, felt that the casitas and other components of the project should be eliminated to allow for transfer of golf holes to the Long Point property. He indicated that the applicant previously indicated that an 18-hole golf course was necessary to make the project feasible, however in the revised plan removed golf holes, and did not significantly reduce area dedicated to housing. Mr. Paris suggested that a par 35, 9-hole golf course could fit on the Long Point site with a reduction in the number of casitas and villas. He stated that by attribution, the City's land was not being used for golf, but for the housing. He expressed concern regarding the privatization of the ocean and the impact of structures on views. He felt the existing approved project should be built, and he believed that project to be economically viable. Mr. Paris indicated his opposition to the project.

Vice Chairman Clark moved to close the public hearing, seconded by Commissioner Paulson. There being no objection, the public hearing was closed.

Chairman Lyon complimented the audience on their concern and devotion to the community which was reflected in their comments and suggestions. He also thanked the speakers for adhering to the time allocation in place for the hearing.

The Planning Commission and Traffic Committee then provided input regarding the potential impacts of the proposed project.

Traffic Committee:

Chairman Jones explained that for any traffic analysis the issues to be reviewed should be volume, access, and circulation. He felt that the documentation received thus far on the future proposal noted that the additional analysis was forthcoming. Therefore, he did not feel there was much for the Traffic Committee to review in the current documentation.

Committee Member Hildebrand discussed the potential significant impacts of helicopters accessing the site. He also discussed the significantly higher traffic volumes associated with the historic Marineland use, and suggested that those conditions be considered in the traffic analysis.

Committee Member Ruben recommended that the parking areas be better distinguished from the park areas, and that occupancy and keying issues of the casitas and villas be considered when completing the traffic analysis.

Committee Member Schurmer suggested using the Marineland data as a baseline for the traffic analysis, and was concerned with the scope of the cumulative impact analysis, and that the intersection at Western and 25th Street be considered. He suggested that safety issues be analyzed by considering acceleration and deceleration lanes. Parking access, vehicular visibility issues, and signal locations all should be analyzed. Additionally, turn pockets and potential need for expansion should be considered.

Committee Member Covey stated that the impacts to Villa Capri and St. Paul's church should be analyzed, and that more information was needed regarding the practice facility design.

Committee Member Wall stated that traffic surveys were needed, and that survey should include impacts related to the Church.

Committee Chaiman Jones concluded the Traffic Committee comments, and requested maps, street elevations and project exhibits when the Committee next considers this project.

Planning Commission:

Commissioner Paulson expressed concerns regarding impacts from lights, drainage containment and disposal of pesticides, fencing and netting for golf safety, and aesthetic impacts from any such netting.

Commissioner Cartright stated that the EIR should address the appropriateness and impact of the use of public land for the project, as well as impacts of lighting, noise, traffic, landslide potential, grading, export of soils, and drainage.

Commissioner Vannorsdall stated that the EIR should address hours of operation, provision of utilities including capacity to furnish the required services, export of dirt and export routes, and biological impacts.

Commissioner Long stated that the EIR should address likely future view impacts that could result from golf safety nets, alternate recreational uses of the Upper Point Vicente property, and traffic impacts including impact on bicycle traffic. He suggested that the density of golf uses be considered in light of parks, pools, and other recreational opportunities in the City in order to determine if golf is the best use of the Upper Point Vicente property. Commissioner Long expressed concern that the decision on whether or not to allow golf on the City property should be made by the City Council now, rather than deferring this decision to after completion of the environmental review.

Commissioner Mueller stated that the EIR should address impacts to the urban environment; impacts related to limousines, valet parking, and airport shuttles; helicopter noise; and the practice facility regarding noise and lighting. Commissioner Mueller suggested that the traffic analysis consider distinctions between the Marineland use which had morning and afternoon peaks, whereas the Long Point Resort would experience more constant traffic flows throughout the day. He concurred that the parking areas should not be shown as green on the maps, to avoid confusion with the true park areas.

Vice Chairman Clark agreed with the previous comments from the Commission and requested that the preparation of the EIR be comprehensive and thorough and address the geologic issues in great detail, particularly with respect to minor slides identified at the bluff face on the Long Point property. He expressed concern that a 45-day comment period for the Draft EIR was not long enough.

Chairman Lyon clarified the Planning Commission's role with regard to the use of City land for the project. He stated that use of City land deserves consideration to determine if the proposed uses make sense for the City. He explained that after analyzing the project, the Planning Commission would forward a recommendation to the City Council.

Commissioner Paulson stated that the EIR must cover all parts of the project, public and private.

ADJOURNMENT

Chairman Lyon moved to adjourn, seconded by Vice Chairman Clark. The meeting was adjourned at 10:50 p.m. to September 12, 2000.

SAVE OUR COASTLINE - II
P.O. BOX 3984, PALOS VERDES PENINSULA, CA, 90274
PHONE: 377-2168 FAX: 377 1228
soc2steering@aol.com

21 August 2000

Mr. David Snow,
Planning Department,
City of Rancho Palos Verdes
30940 Hawthorne Blvd,
Rancho Palos Verdes, CA, 90275

Dear Mr Snow,

In reply to your request of July 18 regarding input to the scoping meeting for the conditional use permits for the Long Point Resort project, SOC-II wishes to submit the following:

The Long Point Resort, in its permit documentation (PD) for Conditional Use Permit (CUP) No. 216 proposes to use 64.9 acres of public land of the Upper Point Vicente area for a golf course and related activities. This area is designated as "recreational-passive" in the city's General Plan dated June 26, 1975, as acknowledged by the Developer on page 1-29 of the PD, and is zoned open space-recreational (OR) in the RPV Development Code, dated November 25, 1975.

"Passive Recreation" is defined in the General Plan, pages 94-95, and in the glossary of the RPV development code as "outdoor recreation activities that are non-structured in nature (picnicking, sightseeing, nature study areas, etc.)." The General Plan, page 95, makes it clear that golfing is considered *active* recreation.

We do not agree, as the Developer claims (PD: 1-29), that the proposed usage is consistent with the passive recreational use designated on the City's General Plan. His quotation from the Development code is misleading in that it is from a section which applies to land owned by the permittee and not to public land as is the case in point. The proposed usage, in fact, violates the General Plan and should require a change to that document before the CUP can be properly processed.

You may contact Barbara Gleghorn at the above address regarding this matter.

Sincerely,

Barbara Gleghorn George J Gleghorn

for the SOC-II Steering Committee

PC · 8·22·00

ENVIRONMENTAL AND REGULATORY CONCERNS OF THE LONG POINT DEVELOPMENT

Presented at:
SCOPING MEETING FOR LONG POINT AUGUST 22, 2000

Prepared by: Jim Knight
5 Cinnamon Ln.
Rancho Palos Verdes, CA 90275

The following are concerns on the proposed development application of Destination Resorts at Long Point and Upper Point Vicente Park..

NO NCCP-NO PROPOSAL

Before this EIR can be addressed, a fundamental question arises of whether or not the application for this development should be deemed complete.

The developer has signed on to the RPV Natural Communities Conservation Plan (NCCP) yet this proposal is being submitted to government agencies for review before that NCCP plan has been approved. As a matter of fact the NCCP does not even have a final alternative to be reviewed by the Resource Agencies or scientific community, let alone approved by the City Council.

This EIR before you is addressing this project and this project alone. It is not taking into consideration one of the most central premises of the RPV NCCP; defining a conservation plan for the remaining open spaces within the RPV city and linking habitats in different regions together as a cohesive, functioning ecosystem.

The Upper Point Vicente Park is a critical site for the NCCP as it is one of the more abundant, contiguous locations for several endangered species; the gnatcatcher, the cactus wren, coastal sage scrub (CSS) and southern cactus scrub (SCS) habitats. It also is an important link/corridor to other areas under the NCCP that are outside the scope of this EIR.

Addressing environmental impacts of this project alone will preclude this basic postulate of the RPV NCCP. Because of this inherent limitation, I do not see how the development of the NCCP and this application process can proceed concurrently.

The Endangered Species Act (ESA) prohibits the taking of any listed endangered wildlife species or habitat on private land. Section 10 of the ESA provides a limited exception from this requirement in the form of Incidental Take Permits (ITP), but only if a habitat conservation plan is prepared. The NCCP has not been prepared and the proposed destruction of CSS, or take, by the Long Point development on the Upper Point Vicente Park should not allowed until a NCCP mapping has been completed and adopted by the City Council.

Even the Resource Agencies have expressed their concerns over this development proposal being pushed ahead of the NCCP. In their letter dated Sept. 7 (exhibit A) they say that "we are concerned that the currently proposed development within the City may be speculative and constraining the (NCCP) planning process." They go on to say "We are concerned that there are many caveats on the proposed alternative reserve designs, making it appear that development opportunities are priorities over conservation."

This scoping hearing is putting the cart before the horse. The development processing and the NCCP planning cannot be developed concurrently. It is tantamount to allowing development before a city has a general plan. The Planning Commissioners, I am sure, can understand this principle.

All governmental agencies that are being asked to review this proposal, including this committee panel, should rightfully send the entire plan back to the developer as incomplete until a NCCP has been finalized and approved by the City Council.

Having said this, I will continue my comments in this particular EIR so that, if this process does continue, they may be entered into the record.

NCCP AND PROPER HABITAT PLANNING

California sits atop the list of states where shrinking habitats spell doom for scores of endangered species according to a U.S. Geological Survey.

Coastal Sage Scrub has been reduced by 90% and the Palos Verdes Peninsula has some of the only remaining CSS habitat left in Los Angeles County. The CSS and SCS on Upper Point Vicente counts for a large part of that habitat that is left.

The proposed golf use in this area could have significant impacts instigating habitat failure on the Upper Point Vicente area. Existing diversity could fail in a short time span

The Los Angeles County General Plan has identified several Significant Ecological Areas (SEA) in the L.A. basin. Among those listed are: Rolling Hills Canyons, Agua Amarga Canyon, the entire Portuguese Bend area and the entire P.V. coastline. The habitat corridor element of Upper Point Vicente is an integral part of the SEA established by Los Angeles County Plan. Fragmentation by the proposed golf course could disrupt the connection between the bluff habitat around City Hall and other important corridors throughout Subregion 1, and, beside poor habitat planning, would be in violation of the Los Angeles General Plan.

NONCOMPLIANCE WITH NCCP PRINCIPLES

One of the basic principles of the NCCP is that conservation planning comes before development. Development is allowed but only when it is compatible with habitat preservation. The current golf plan does not achieve appropriate habitat preservation or restoration.

A second principle is that long term land use plans and management programs be implemented for the long term preservation of habitats and constituent species. Under the NCCP, development should be confined to areas with low species diversity. Upper Point Vicente Park is occupied with rich habitat and with particular species that are of great importance.

The current proposed golf use in this area greatly risks the potential loss of these rare habitats and thusly does not comply with the NCCP principles.

The policies of the ESA struggle to strike a balance of private property rights vs. public wildlife resources. Upper Point Vicente is public land. It is debatable whether those tradeoff policies or take permit privileges apply to developers who are impacting public wildlife resources already in the public domain

Another basic tenant of the NCCP is the concept of "avoidance". This means that development should be designated in areas of less rich habitat while preserving the more dense sections of habitat. Only using the developers own property at Long Point would be more in line with this principal than the current proposal. In addition, the NCCP works hard at preservation of corridors between wildlife areas, constructing enhancements when at all possible. Construction of golf courses on Upper Point Vicente would achieve the exact opposite of this principle.

HABITAT FRAGMENTATION

The developer has indicated that, after some habitat restoration, that Upper Point Vicente will have more CSS than it has now. What is not said is that the habitat will be fragmented, and interspersed with active golf use, and, in the opinion of most biologist, would be less useful to endangered species than the existing habitat.

Fish and Wildlife and Fish and Game have both indicated their view of the biological importance of preserving habitat corridors in the Upper Point Vicente Park. I have attached two letters, exhibit A, a letter dated Sept. 7, 1999 from both Resource Agencies and exhibit B, a letter dated Sept. 12, 1999 from Jess Morton of the Endangered Habitats League, both addressed to Joel Rojas of the RPV Planning Department.

The Resource Agencies were "concerned about losing productive gnatcatcher habitat" on Upper Point Vicente to golf development. They also expressed concern over the fragmentation of habitat, saying that the habitat could become a mere "patchwork surrounding the proposed fairways within the golf course".

They go on to say that "Development should be directed away from core/linkage areas that are the basis of the (NCCP) reserve"

In addition, this golf plan has not addressed the usage of CSS in front of the greens, and the impact of players hitting balls and recovering them in sensitive habitat. Currently these areas of CSS revegetation are treated with the same habitat value as all other areas of CSS revegetation.

This, combined with the effects of fragmentation, results in inaccurate CSS revegitation calculations by the developer and could increase ongoing maintenance costs.

The negative impact on wildlife of the grading needed to implement this proposal must also be analyzed as a part of an EIR.

Also, revegetation plans do not specify whether it will be small established plants or hydroseeding. This must be determined as each has it own success rate and impacts depending on how it is administered. For instance, hydroseeding many times is accompanied with the use of enzymes and fertilizers and the concerns for chemical introduction as discussed below must be considered.

INCREASED EDGE EFFECTS

The accumulated linear footage of the circumference of the numerous golf greens greatly increases statistical incidents of edge effects and thusly significantly increases negative impacts for wildlife.

The introduction of golf greens within a habitat area diminishes the benefit of the additional CSS the developer has proposed to revegetate.

Most biologists would agree that fewer acres of habitat with diminished edge effects has more habitat value than more acres with significant edge effects.

This negative impact is compounded by the introduction of chemicals needed by golf greens. (See discussion below).

In addition, human usage with this edge could be significant. On p. 26 of the economic analysis it is estimated there will be an average of 140 rounds of play 7 days a week 365 days a year.

Currently the nonnative plant edge would have a far lesser effect on wildlife than the proposed golf greens, even with the addition of CSS acreage through the developer's revegetation plan.

The introduction of golf greens greatly increases edge effects for wildlife and must be taken into consideration in the quality of total acreage of CSS revegetation proposed, and any impact on wildlife.

An additional note, Jonathon Atwood did a study entitled "Analysis of Edge Effects on California Gnatcatcher Reproductive Success." covering the Palos Verdes Peninsula. It has come before the NCCP panel and may come up with the EIR. I have had long discussions with Mr. Atwood concerning his study and I must warn you to read the study carefully and that it should not be used as a justification for

putting golf greens all over the gnatcatcher habitat on Upper Point Vicente.

First, the study criteria was limited to vegetation only. Not human activities, buildings, golf courses, roads, golf carts or related noise, air or water pollution impacts on the surrounding habitats.

Secondly, the vegetation edge was between native and non-native, such as ruderal grasslands, etc. It did not study effects of golf greens and their numerous impacts as discussed in this paper.

Thirdly, he readily admitted that with the large number (20) of regressions that were performed, a return of four significant relationships is about what would be expected by chance alone. Atwood concurred with me that one of the best explanations of why the study turned out the way it did was because it is impossible to determine any statistical success/failure of the gnatcatcher on the Palos Verdes Peninsula due to the fact that there is not enough large patches of natural undisturbed CSS to use as a baseline comparison to the CSS of his study.

On p.14 of his study he concludes "Consequently, analysis of gnatcather reproductive success as a function of any measure of proximity to developed land might, at least on the Peninsula, be biased by the fact that the only large remaining patches of scrub are not optimum for gnatcatchers, whereas small, "edgy" patches represent the only areas of high quality scrub remaining in the area."

CHEMICAL DEPENDENCY AND WILDLIFE

Golf is a notoriously dirty land usage. Besides the flow of fertilizers, herbicides and rodentcides into the coastline just a few hundred yards away, there would be chemicals deposited on land occupied by endangered wildlife. It could have long term, devastating impacts on marine and terrestrial life, especially organophosphates which has been documented to interfere with the reproductive cycles of animals, including humans.

Marine Habitat

There is a poster in the RPV Dept. of Public Works put out by the L.A. Co. Dept. of Public Works. It says, "Storm drains lead straight to the ocean. Make the connection." The proposed golf courses on public lands is less than a few hundred yards away from the shoreline. We won't need a storm drain; it would be a direct chemical pipeline to the that shoreline, and this EIR must make the connection.

For the marine habitat just a few hundred yards from these golf courses, nitrogen/phosphorus rich fertilizers could create an environment that favors the growth of algae. Algae both produces toxins and starves oxygen from the water. Other deadly pathogens and bacteria can also flourish as a result these fertilizers. The increased number of

pathogens, combined with a weakened immune system from the urban runoff, could spell disaster for the local marine life, especially sensitive tidepools.

Neptune Cove, just below Golden Cove and the CPH development in Subregion 1 has very sensitive tidepools that could be negatively impacted by this chemical runoff.

For more information on the effects of urban pollution on marine life, contact Major Marine Disturbances at:
http://head.unh.edu/index.html
or The Aquatic Botany Laboratory at North Carolina State University at www.pfiesteria.org. Also, the May-June 2000 edition of Audubon magazine there is an excellent article on the subject.

Terrestrial Habitat

The terrestrial wildlife could also be affected by this chemical dependency of golf courses. The new plan has taken the Upper Point Vicente Coastal Sage Scrub habitat and divided it into narrow strips between the proposed golf courses. Not only will this effect the nesting for birds such as the gnatcatcher, but the insects that birds feeds on will no doubt stray beyond their habitat parameters into this chemical cornucopia to be found in golf courses. (See discussion on Edge Effects) Even if it does not kill the adult bird, reproductive patterns and/or vulnerable young can be affected by organophosphates.

Other seed-feeding birds will be attracted to pesticide granules and treated seeds. Raptors such as the red tailed hawk, owls or falcons could feed on pesticide-poisoned prey.

Gophers are a known problem with golf courses. Golf courses attract earth burrowing animals when they convert hard, dry soils into a virtual paradise with their soft, moist soils. But these rodents are pests to the manicured greens required of the game and landscape management inevitably implement rodentcidel eradication programs.

A common rodentcide used is the anticoagulant, Brodifacoum. Brodifacoum (d-CON, Talon-G) is a vitamin K inhibitor and creates internal bleeding causing a slow death for the gopher leaving it easy prey for the raptors. But this can lead to massive poisoning of raptor or scavenger birds because it is bioaccumulating and can cause the same symptoms within the raptors.

Chemical warfare is no stranger to golf courses. Diazinon, an organophosphate applied to golf courses on Long Island, NY in the early 1980's, killed 700 brant geese or 28% of the local wintering population. After several other ecological disasters associated with golf course use of Diazinon, the EPA finally banned it from golf courses.

As of this date, the developers of Long Point has not addressed how they will handle the ongoing management of chemicals for the golf course and what impact it might have on wildlife in the area.

These pollutants and/or pathogens also can have serious effects on human activities in the water. Additional beach closures may be required, affecting local enjoyment and pride in the coastline and turning tourist dollars away. Both the physical and financial impacts of such a potential event must be studied.

NONCOMPLIANCE WITH GENERAL PLAN

The current plan to build golf courses on Upper Point Vicente Park does not comply with the RPV general plan.

One of the basic decrees of the 1974 RPV general plan states "...the City of Rancho Palos Verdes recognizes that open space land is a limited and valuable resource, and that many of the unique characteristics and much of the atmosphere of the Peninsula depends upon it to a degree impossible to achieve elsewhere... The residents of Rancho Palos Verdes therefore desire that highest priority be given to acquisition and other preservation of large amounts of open space within the City."

Under the section of the plan entitled: "Parks and Recreation", Section A reads (in all caps): "A SIGNIFICANT ASPECT OF RECREATION IN OUR COMMUNITY IS THE OPEN SPACE WHICH REMAINS WITHIN THE CITY. WHETHER USED FOR FREE CREATIVE PLAY AND LEARNING EXPERIENCES BY OUR CHILDREN OR FOR ITS AESTHETIC BEAUTY, AS MUCH LAND AS POSSIBLE SHOULD BE KEPT FREE FROM EARTH MOVING OR BUILDING."

It is obvious that the highest priority of this general plan was given to the acquisition and preservation of large amounts of undisturbed, pristine open space within the City. Not the "active" open space that the exclusive game of golf falls into.

This prime goal of the founding fathers was to preserve the inherent biological, aesthetic and educational values the resource of undisturbed open space has to offer for generations to come. They clearly drafted that general plan to preserve the intrinsic characteristics of which defines and sets aside the peninsula as unique to any other location.

The conversion of this land to golf does not achieve any of these stated goals of the general plan. A more suitable plan would be to restore more habitat areas and to leave more open space and trails for the general public, not to those who happen to play the game of golf.

An additional conflict of golf on these lands is that, since golf is "active" recreational use, it would be in discord with the general plan's designation of "passive recreational" use for this site. The fact that conditional use permits are allowed under RPV municipal code does not override the use designation of "passive recreation" for Upper Point Vicente in the general plan.

California Government Code Section 65860 specifically states that all city municipal codes and zoning ordinances shall be consistent with

the general plan and shall be "compatible with the objectives, policies, general land uses, and programs specified in the general plan".

The development of golf on this land would violate both the RPV General Plan use and the CA. Gov. Code Section 65860.

RPV SPECIFIC COASTAL PLAN

In the Appendix/Definitions section of the documents submitted to the city by the developer, it is stated that "To the extent that the golf course area on Upper Point Vicente Site is an integral part of the Coastal Zone resort land uses, it will be treated as being within the Coastal Zone". This brings this proposal under jurisdiction of the RPV Specific Coastal Plan (SCP) and the Coastal Commission.

Converting the Upper Point Vicente Park to a golf use is not compatible with the SCP.

1-On p. S1-11 item 8 of the SCP it states the it is the policy of the city to "require proposed developments on lands affected by view corridors to maintain the resource."

The placement of golf along the south and westerly edges of the bluffs, especially hole #3, restricts the general public from enjoying the most spectacular view corridor down to the Point Vicente Lighthouse and the surrounding rocky shoreline. The true view resource along this bluff edge is restricted from the general public without paying a $40-$60 fee. It has been reserved for those who pay that fee and play golf only. (See map exhibit C). This spectacular view is also the only place accessible by seniors and handicapped.

On this same map one can see that the "scenic viewpoints" reserved for the general public are far from the bluff edge and must look through golfing activity for that view. (View points 1 and 2 on map C.)

A person at "viewpoint" #3 must also look through golfers to get that view. "Viewpoint" #4 is on top of a steep hill where the Coast Guard bunker is located. It is not accessible by seniors or handicapped.

Viewpoint #5 is down a steep hill and is not accessible by seniors or handicapped.

None of the viewpoints will maintain the natural setting that currently exists. The addition of golfers and golf carts will created an irreplaceable loss of a resource destroying this rustic, natural setting that can be found no where else in the Los Angeles basin.

EXCLUSIVITY OF GOLF

In the Overview Analysis of Market and Economic Potentials prepared for Destination Development Corp., July 2000, we see who really will be benefiting from golf on public lands.

On p. 10 it is stated "Golf demand is directly correlated with household income. The primary market area is relatively affluent with a

median household income level estimated currently at $64,800 compared with only $43,700 for Los Angeles County". Herein lies the confirmation that the conversion of this public park to golf will only serve a select proportion of the population, not the general public. The table on p.14 of the Overview Analysis reinforces this imbalance.

In addition, on p.5, it is stated that "Consequently, the proposed Long Point 9 hole golf course primary market area is defined as the area within a 15-20 minute driving time (eight-mile radius)" Even the pool of high income people, who happen to play golf and that will benefit from this public land conversion to golf, will be minor as this population within an eight-mile radius is very small.

Table 5 clearly shows that this green fees for the proposed 9 hole course are on the average 4 times higher than any other course in the South Bay, whether 9 hole or 18 hole, placing it in the "high-fee" category of golf courses.

On p. 14 the historical table indicates that only 11% of the general population participate in golf. Of that 11%, typically 10-20% of golf play is oriented toward high-fee courses.(p.16) With a little math one sees that really only 1-2% of the general population will actually use this high-fee course.

This brings us back to the fundamental question, who really is benefiting from this conversion of public land to golf? Besides 1-2% of the population, everything seems to point to the profit margin of the developer. By the developer altering their original entitlements and transferring golf off of their private land onto public land opens up more space to add living quarters and expand the original golf course. All at the expense of 99% of the general public.

That transfer from public to private also has the advantage of the developer not having to purchase expensive private ocean view land for these golf holes. The reduction of capital expenditure and debt service to the developer by the use of this public land constitutes a very significant subsidy of this development. It is unclear whether this subsidy can take place without some form of consent from the public directly.

DEED RESTRICTIONS

The deed restrictions from the Dept. of Interior in subsection 3 in Exhibit "A" page 7 of the Pt. Vicente Park Quitclaim Deed as recorded Dec. 6, 1979, reads that the use of this city property be used in perpetuity for "public park and public recreation area uses."

The above discussion of the exclusivity of use that would result from this golf proposal on public lands would not meet this requirement. In addition, the charging of a $40 to $60 admission fee in order that the public can utilize the portions of this public property being reserved for golf, would not meet this standard as well.

Neither does golf on this land address consignment agreement requirements in the deed restrictions. It does say that the Grantee (RPV

City) can provide related recreational facilities and services through concession agreements with third parties, but it specifies that those agreements must be compatible with the approved application. And any application must meet the requirement of the general public's use of the recreational area without special fees.

As stated above, golf on Upper Point Vicente Park does not meet this "general public" standards.

DRIVING RANGE

On p. 2 the report states "Given the market's low population density, the proximity of the Los Verdes practice range, and the preclusion of night lighting, a Long Point practice range has limited commercial potential." There are no conclusive figures to support how introduction of a learning center would have to overcome these inherent short fallings and subsequent financial impact to the City of RPV.

A full analysis has to be done as to the impacts this driving range would have on the neighbors, including the church and the condominium project directly across.

Additional impacts to local residents such as hours of operation of mowers and sprinklers, noise impacts and the risk of golf balls smashing residential and car windows needs to be addressed.

SAFETY OF GOLF ON UPPER POINT VICENTE

The safety analysis does not adequately address the possibility of errant golf balls winding up in the windshields of passing cars on P.V. Dr. South, especially with hole # 2 . With the combined velocity of a golf ball and an oncoming car, the collision damage could be very significant, even fatal with loss of control of a car.

Nowhere in the report does it state that residences, churches or parked cars will not be affected by this driving range. It mentions a berm to collect errant balls, but adds that the berm will not be higher than the condominiums themselves. This seems to leave open the possibility of errant golf balls driven over the berm and directly into residential areas.

On the maps labeled "Golf Course Safety Corridors", one can clearly see that these corridors overlapped parks, public walking corridors and native habitat. It is unclear what impact these overlaps will have as many are not discussed in the verbal description and recited setbacks do not match the maps.

One glaring example is hole #3. It clearly shows corridor overlap within the park and overlap with the public walkway along City Hall.

FISCAL IMPACT TO THE GENERAL PUBLIC

As stated in the developer's financial analysis, the City cannot collect their 10% fee on golf on lands that they own. According to the deed restrictions, only the public can own the land at Upper Point Vicente Park. Since California law holds that any leasehold interests are considered ownership with specific exclusive rights, a consignment agreement under this Federal grant deed is the only mechanism to get around this restriction of public vs. private ownership.

Since no one but the City can own this land, it doesn't seem to make much sense to have any financial consideration of this 10% golf fee in relation to the Upper Point Vicente, including the driving range, anywhere in this analysis. Any addition of these figures in the analysis should be corrected.

The fiscal analysis states that the net operation income from golf in 2000 dollars is projected to be $924,000 before debt service. Yet no where in this report is stated what that debt service would be. This figure could be substantial and is critical for the City to determine their subsequent income stream and/or determine the financial stability of the developer.

A study for the Hellman development in Orange County for a Seal Beach golf course has shown that interest on debt for land purchase for a golf course is greater than the best profit yield for that course. Unless this land can be acquired for free. The land in this case also happens to be sensitive habitat.

By getting land free from the public for some of their golf course, this windfall will reduce their debt service. Debt service would be lower than if they had to pay market price for equivalent expensive ocean view acreage for these golf greens. These capital and debt service costs are eliminated by getting public land for free enabling more profit for the developers.

The public is being asked to help increase profits to the developer at the public's own expense and at the expense of native habitat. As mentioned above, this subsidy should not happen without some form of consent from the public directly.

GEOLOGIC HAZARDS

The peninsula is well known for its unstable land. One of the most important elements to this instability is the susceptibility of soil cohesion to water.

The needs of the proposed golf greens will create a significant increase in the quantity of water introduced to this area. Even though the developer claims there is no geological issues on the city property, it remains to be seen how the land will respond to the unnatural addition of significant amounts of water, especially if a major waterline should burst undetected.

The Ocean Trails developer also assured the public that their golf project was safe and ended up with a tremendous landslide. Had it happened only a few weeks later when it was scheduled to open to the public, there could have been human lives lost.

Even if the this artificial introduction of water does not affect this particular area, could it, through underground aquifers, affect another area such as Ocean Front Estates, the Interpretive Center, Lower Point Vicente lighthouse, the county beach area, and even the Destination Hotel resort itself?

A full geotechnical/hydrological analysis needs to be done before allowing this amount of unnatural water be introduced into this region.

TRAFFIC

Because of the nature of the location, the only access to this resort is from three roads; Palos Verdes Dr. West, Hawthorne Blvd. and Palos Verdes Dr. South. Alternative routes do not exist.

Because of the transitory nature of its inhabitants, it will generate a daily traffic pattern that will negatively impact traffic these roads as well as other tributaries leading onto these roads. Traffic impacts as far away as Malaga Cove and Redondo Beach, the Northside of Hawthorne all of the way up to the 405 freeway, and Western or Gaffy all the way up to the 110 freeway must be studied for impacts. The Impact Report must extend to include traffic impacts to these outlying regions, especially the corridor connecting LAX to the resort.

The assurance by the developer that they will encourage their employees and guests to use a certain travel corridor does not translate into any assurances in the real world and should be discounted when doing this traffic study.

In addition, the increase of response time for police, fire and ambulances, and the resulting safety risk impacts to surrounding communities, needs to be analyzed to these outlying regions for the same reason.

FISCAL ANALYSIS

A press release from the developers indicated that the new project could bring in as much as $3-$4 million annual revenues to the RPV budget from hotel taxes alone. With this figure, and the current city budget at a surplus, the argument for needing golf revenues seems to be unnecessary fiscally.

In this fiscal analysis there is nothing to indicate that the benefits of golf would outweigh the environmental impacts, especially on Upper Point Vicente.

ALTERNATIVES

Existing Marineland site

There must be a complete financial and developmental feasibility study on using the existing site for the hotel development independent of the Upper Point Vicente Park.

A 400 room hotel and 9 hole golf course has already been approved for the old Marineland site. York and Associates are very intelligent, sophisticated investors and, when they submitted their bid to the RTC for this site with a Hotel and 9 hole golf course, the amount of their bid no doubt was calculated very carefully. It would not be very difficult to reconstruct those calculations that motivated them to buy this site 5 years ago.

If the developers wish to expand their options for visitors I would suggest talking with Mr. Zuckerman. He has a world class golf course already approved at Ocean Trails. I have spoken to Mr. Zuckerman and he says he would welcome their business and, with a nominal fee, could take advanced reservations. It would be easy to provide a limo or shuttle bus service as it is only a few minutes away. This is an amenity, and additional gain to the resort, that has been added since their original purchase.

P. 4 of the Economic Analysis says that the opportunity of access to the Ocean Trails golf course by Destination Hotels, either formal or informal, is part of suitable recreation infrastructure.

In addition to golf, there could be attractions at Long Point such as scuba diving, kayaking, boating, or utilizing the equestrian resources available nearby, and nature walks with spectacular views on Upper Point Vicente Park.

These features, along with the entitled 9 hole golf and Ocean Trails access, could easily provide the developer's stated "onsite" amenities needs without the need for golf on public lands.

Destination Hotels has a resort 20 miles outside of Acapulco called the Mayan Inn. It has no onsite golf course, no nature walks nearby, no equestrian resources, no kayaking or boating facilities. Yet it seems to have a high attendance.

I don't see why this resort couldn't also be successful on its own without having to use public lands.

A side note. A beach in front of the MAYAN hotel in which an endangered sea turtle used for laying eggs, is gone. The hotel did leave a 20' by 20' stretch of beach for the turtles but is questionable whether they will survive the massive habitat reduction. It certainly hope the local endangered species don't meet the same fate with the developer's conservation planning on Upper Point Vicente.

Larger Habitat Restoration

One of the alternatives that should be studied is the possibility of restoring native habitat on Upper Point Vicente with golf remaining on the developer's privately owned land. This holds the possibility of restoring a greater quantity and quality of native habitat.

I have talked with the P.V. Land Conservancy and they would gladly be a part of any such conservation plan. With the volunteer resources available through the conservancy and other organizations, it could be achieved at a fraction of the cost quoted by the developer. It would definitely have fewer environmental impacts, greater benefit to the general public and I'm sure would be strongly endorsed by all of the Resource Agencies. The restoration process would also provide an truly unique educational opportunity for school children and Universities within the Palos Verdes Peninsula and beyond.

A

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SEP 0 7 1999 RECEIVED
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PLANNING, BUILDING & CODE ENF.

Subject: Rancho Palos Verdes NCCP, Los Angeles County, California

This letter summarizes some of the key issues and concerns of the Department of Fish and Game (Department) and U.S. Fish and Wildlife Service (Service), the Wildlife Agencies, related to the Rancho Palos Verdes Peninsula Natural Communities Conservation Planning (NCCP) effort. As discussed on a telephone conversation between representatives of the wildlife agencies, the City of Rancho Palos Verdes (City) staff, and the City's consultants on August 11, 1999, we are providing written comments specifying our concerns about the NCCP process and the City's proposed NCCP reserve design (alternative 4).

As previously stated, we will evaluate each alternative on the basis of consistency with the NCCP Conservation Guidelines (seven tenets of preserve design), individual species' conservation requirements for take, feasibility of implementing the plan (financing, land use implementation, etc.), (adaptive) management commitments and monitoring/reporting commitments. To date, we have been provided summary tables of conservation of vegetation types for the reserve alternatives. The wildlife agencies have expressed our concerns about the City alternative (alternative 4) meeting the preserve design tenets/species requirements.

We are concerned that the NCCP process, which the City has committed to and accepted NCCP funding for, will produce a balanced planning effort. In addition we are concerned that the currently proposed development within the City may be speculative and constraining the planning process. The York/Long Point development (that proposes to develop the former Marine Land site, current Coast Guard, City Hall, and National Park Service properties, and an existing mitigation site) would impact a productive area for the federally threatened coastal California gnatcatcher (*Polioptila californica californica*, "gnatcatcher"), and a 30-acre mitigation site that is supposed to be revegetated. Another golf course has been proposed by Hon Development (i.e., Palos Verdes Land Holding Company) in Portugese Bend within the landslide moratorium area. Hon Development is also proposing to develop residential units within the area of Peacock Flats. As stated during discussions and telephone conversations with you, we are concerned that these development, as currently proposed, leave little room for effective conservation planning.

The recently released alternative 4 adds some open space to alternative 3 (Developer's alternative), but retains most of the project development that is in that alternative. Our specific concerns about alternative 4 are discussed below.

1. Portugese Bend Landslide Area (proposed Hon Development). This area is within the active landslide and is within the City imposed moratorium. We understand that development cannot occur in the area unless geological studies verify an area acceptable risk for the development activities. The proposed development is residential and a golf course. The Hon Company is proposing development "bubbles" in the core area of undeveloped land within the landslide. Although the habitat there is not pristine, it comprises the largest block of sage scrub habitat in the planning area. Our concern is that the combined golf course and residential development significantly impacts the core habitat area.

   In light of the Ocean Trails Golf Course slide within an ancient, previously inactive landslide, we are concerned that the proposed development, even if it is able to meet the landslide safety/risk requirement, may not be stable in the long-term. This approximately 15-acre landside on Ocean Trails, in an area that was certified safe for the course construction, has raised concerns about any other construction in landslide areas.

2. York/Long Point. York Company proposes to develop the old Marine Land site, along with existing public lands owned by the Coast Guard, City, and National Park Service, and the 30-acre mitigation site required for the construction of a resort hotel/golf course. The Wildlife Agencies are concerned about losing productive gnatcatcher habitat in these public properties. Even though the City had indicated that about 20 acres of sage scrub will remain or be revegetated in the area, these areas have not been specified on the map, nor is it known if they will be a patchwork surrounding the proposed fairways within the golf course.

   One of our major concerns is the proposed loss of the 30-acre mitigation site that was a condition of a 4(d) habitat loss permit agreed to by the City and project proponent. This site that was to be revegetated and provide habitat for the gnatcatcher is now proposed to part of the golf course. We are concerned that this is inconsistent with the permit, especially since the site has already commenced construction activities. The mitigation site should already have begun to be revegetated, and the proposed impacts to it should be considered a loss of usable habitat irrespective of its current condition. Due to the mitigation site's location and finite amount of habitat areas remaining, we are uncertain that the mitigation site could be exchanged for conservation of other lands elsewhere City.

   An additional concern with this area is that a portion of the golf course is proposed near the bluff top within the Subregion 1 mitigation area. Although it may meet the factor of safety now, we are concerned with bluff failures as we have seen on the Ocean Trails Golf Course recently and on the Subregion 1 property last year.

3. City Landslide Area. We recommend that the City property at the base of the landside be included as reserve lands. As discussed during our telephone conversation, we can assist in crafting language to allow the City to retain the option to remediate landslide problems and still include this area into the reserve. We believe that the City could include this area into

the reserve design and retain the right to remediate the landslide, with the condition that a specified amount of the area would be revegetated to habitat once the stabilization occurs.

4. Abalone Cove. We understand that the City plans to improve public recreational facilities at Abalone Cove Park. We are concerned that this area is mostly within the proposed reserve areas identified in the alternatives. We will continue to work with the City regarding the need for a soil borrow site in the area and on a plan to revegetate the area where habitat was removed. We recommend that the proposed reserve design alternatives be revised to reflect the retention of natural habitat and revegetation of the borrow site.

5. Lower Filiorum. This area is a key linkage/connector between the coast and upper Filiorum. An assured, functional connection needs to be maintained through this area. Presently, the reserve design only indicates that a habitat linkage is planned, but neither the linkage criteria nor the hardline are specified. Prior to final analysis, this area needs to defined and presented more clearly on the maps and in the text.

6. Core/linkage. More definitive core and linkage areas should be identified at this stage in the planning process. Development should be directed away from core/linkage areas that are the basis of the reserve, rather than the reserve areas be designed around proposed development. We are concerned that there are many caveats on the proposed alternative reserve designs, making it appear that development opportunities are priorities over conservation.

7. Agua Amara Canyon is a productive gnatcatcher habitat area. Some of the private open space within this area is not included in the reserve design. We recommend that the City include the maximum amount of existing open space included into the reserve.

Although the biological analysis of the three reserve designs has not yet been prepared to address individual species or vegetation community conservation levels, the reserve design issues that are identified above suggest potential biological deficiencies.

We hope that these comments are helpful to you and will be addressed. We continue to be available to work with the City and your consultants to prepare a plan that is consistent with NCCP Conservation Guidelines. We are also available to provide guidance and input on how to reduce impacts to the species we are addressing under this plan and to ensure that proposed alternatives avoid and minimize take of listed species to the maximum extent practicable. Please contact William Tippets at (619) 467-4212, of the Department or Mary Beth Woulfe at (760) 431-9440, of the Service, if you have any questions or comments concerning this letter.

Sincerely,

Jim A. Bartel
Assistant Field Supervisor

William E. Tippets
Habitat Conservation Supervisor

B

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SEP 15 1999
PLANNING, BUILDING & CODE ENF.

ENDANGERED HABITATS LEAGUE
Dedicated to Ecosystem Protection and Improved Land Use Planning

Dan Silver • Coordinator
8424-A Santa Monica Blvd., #592
Los Angeles, CA 90069-4267
TEL 323-654-1456 • FAX 323-654-1931

September 12, 1999

Joel Rojas
City of Rancho Palos Verdes
30940 Hawthorne Blvd.
Rancho Palos Verdes, CA 90275

Re: NCCP Alternative #4 Comments

Dear Joel,

The comments below are intended to address problems that we perceive apply to NCCP Alternative #4. In some cases, these comments touch on questions that have to do with implementation of the NCCP itself, which are issues addressed in a separate letter. There are three main concerns we have with respect to Alternative #4:

1) the portrayed habitat connection across the Hon property,
2) the uses of land around Point Vicente, RPV City Hall and Subregion 1, and
3) the connection from the Abalone Cove bluffs to the main preserve

These issues were addressed in a separate set of comments, though some additional comments are included here. There are also a number of lesser issues and questions which have arisen as the result of a detailed review of a large scale map for Alternative #4. In addition, we have one comment which applies to all of the current NCCP maps: each should contain a disclaimer about the usefulness of habitat information shown in areas outside RPV city limits.

1. The single most important aspect of the final NCCP preserve will be the size and shape of the core habitat area extending from the Forrestal Tract west to McCarroll Canyon. Alternative #4 shows a number of corridors across Hon which give the mistaken impression that there is some fixed connection between the eastern and western portions of the main preserve. In fact, the development bubbles and habitat connections shown in Hon are purely conjectural. Since this alternative implies development in Hon, there can be no certainty about land usage until a tract map exists for the area. Thus, the habitat connection across Hon should simply be indicated with an annotation, as it has been in the Lower Filiorum for the connection from Abalone Cove to the western part of the preserve. This would prevent anyone from assuming that habitat shown in Hon is anything more than a possible site for revegetation after the area is developed.

2. As indicated in our previous comment letter, we are very concerned about the elimination of virtually all public land around RPV City Hall and the western bluffs from the preserve. This

abandons any hope for a viable habitat connection to habitat in PVE and Agua Amarga Canyon. It also severely weakens the connections of the bluff habitat in the area to other habitat. The inclusion of two patches around the Point Vicente Interpretive Center will not help in this regard unless they are part of a larger Subregion 1 to City Hall preserve area, in which case they can serve as public demonstration zone for what the NCCP is intended to do.

3. We have also expressed concern before about the weakness of the habitat corridor between Abalone Cove and the main preserve. Although the City has reservations about making a permanent commitment of the public lands running eastward from Abalone Cove to the preserve because of the ongoing need for landslide remediation measures, it would be worthwhile including an intended habitat corridor there, just as has been done through Lower Filiorum. In either case, the configuration and conditions on these corridors would be matters for negotiation with the agencies. Neither connection can be expected to be strong, but for purposes of the NCCP, two weak corridors are far better than one.

4. In Friendship Park, there is a bubble of grassland which was presumably set aside for the proposed nature center. Since this has been relocated eastward to the parking lot area, the bubble should be eliminated.

5. In the Forrestal Tract, there is an exclusion of a glassland area off the end of Packsaddle Lane. Is this an intentional exclusion, or is it in error?

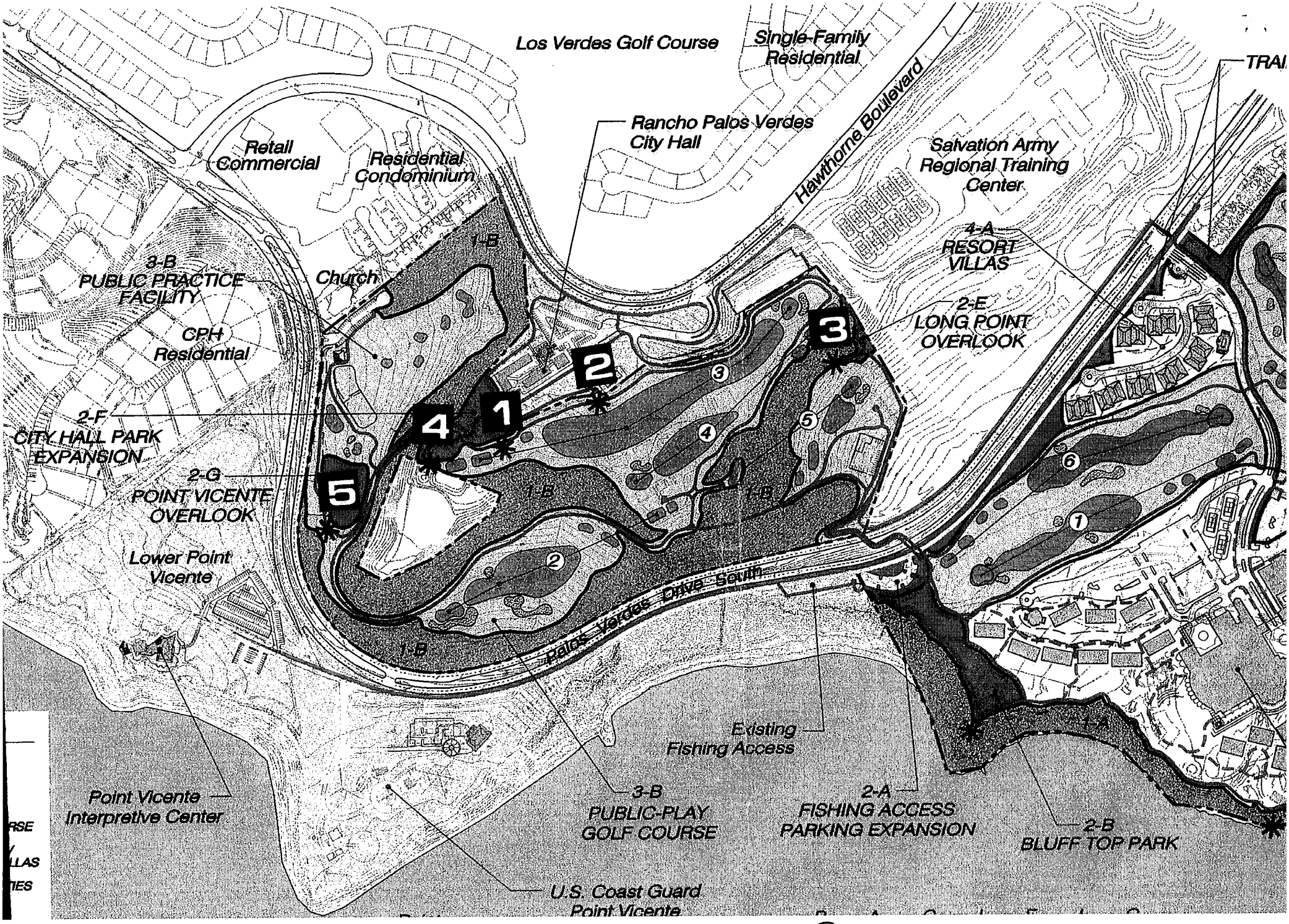
6. The highway corridor along PV Drive South does not appear to include the actual road itself in the Portuguese Bend area from about Peppertree Drive eastward for 1/4 mile. Does this have to do with legal as opposed to functional property lines, and will the lines be redrawn?

7. A large patch designated grassland has been gouged out of the middle of Abalone Cove Park, which goes against the basic principles of reserve design by virtually splitting the area in two.

In closing, we would like to reiterate one of the fundamental tenets of the NCCP: during the planning phase, no development should be approved which precludes the achievement of a successful outcome. Although we grant that no official approval of such a project has been given to date, Alternative 4 appears to imply that one is thinkable in the very heart of the eventual preserve. We cannot accept an approach like that. When it comes to the NCCP, we should think of what is needed, then figure how to achieve it. If we succumb to "Realpolitik," what seems most expedient at the moment, we shall surely fail in the long run, just as such an approach always does.

Sincerely yours,

Jess Morton
LA County Director, Endangered Habitats League


Los Verdes Golf Course
Single-Family Residential
Rancho Palos Verdes City Hall
Hawthorne Boulevard
Salvation Army Regional Training Center
Retail Commercial
Residential Condominium
1-B
3-B PUBLIC PRACTICE FACILITY
Church
CPH Residential
4-A RESORT VILLAS
2-E LONG POINT OVERLOOK
2-F CITY HALL PARK EXPANSION
2-G POINT VICENTE OVERLOOK
Lower Point Vicente
Palos Verdes Drive South
Existing Fishing Access
Point Vicente Interpretive Center
3-B PUBLIC-PLAY GOLF COURSE
2-A FISHING ACCESS PARKING EXPANSION
2-B BLUFF TOP PARK
U.S. Coast Guard Point Vicente

8.22.00
PC

PUBLIC COMMENT FORM

PROJECT NAME:

Program Environmental Impact Report (EIR) for the Long Point Resort Project.

NAME AND ADDRESS OF COMMENTOR: (include group or public agency affiliation, as applicable)

LOIS KNIGHT LARUE
3136 BARKENTINE ROAD
ABALONE COVE
RANCHO PALOS VERDES CA 90275-5937

Telephone Number: 310-377-3489

COMMENTS:

Please provide your comments on potential environmental issues/impacts which you feel should be addressed in further detail in the subject Program EIR. Attach additional pieces of paper, as needed.

This form and/or additional comments can be submitted to City Staff at the Scoping Meeting or mailed to the City of Rancho Palos Verdes, 30940 Hawthorne Boulevard, Rancho Palos Verdes, California 90275, Attention: Mr. Dave Snow, AICP, Principal Planner.

DO NOT ALLOW LONG POINT TO USE CITY HALL LAND

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DO NOT ALLOW LONG POINT TO USE CITY HALL LAND.

DO NOT ALLOW LONG POINT TO USE CITY HALL LAND.

8-22.00
PC

USE OF PUBLIC LAND FOR A PRIVATE GOLF COURSE

Upper Point Vincente

I would like to see a through study of alternative uses for this land before it is forever removed from the public domain. Is there a use for this land that would better meet the needs of the residents of Rancho Palos Verdes? Has the city council studied alternative ideas for this property? Once it is consigned for a private golf course the land will be forever lost to the residents of this community. Shouldn't we consider all our options now?

Marjory C Jensen
32653 Seagate Dr. "D"
Rancho Palos Verdes

8-22-00 PC

SeaBluff Homeowners Association
Board of Directors
Dick Mellor, President
Bobbie Masters, Vice President
Barney Turner, Member
Dick Bryon, Member
Mimi Lau, Member
Dick Jones, Member
Bob Nelson, Secretary/Treasurer

Mayor Lee Byrd
City of Rancho Palos Verdes
30940 Hawthorne Blvd.
Rancho Palos Verdes, Ca 90275

July 9, 2000

Subject: Board Resolution in Support of Long Point Development

Dear Mayor Byrd,

At our Association's recent Board meeting we unanimously voted to send this letter expressing strong support for the current Long Point development proposal, including the 9 hole golf course.

We are composed of 60 Rancho Palos Verdes homeowners that border on the northeast corner of Long Point, just south of Palos Verdes Drive South.

As representatives of our members our Board expressed strong support for your expeditious consideration and approval of Long Point. For many years now we have watched our old Marineland site slowly deteriorate while awaiting development. Now we have the opportunity to see this turned around.

We believe this project will bring much needed resources to our community. Outside of the obvious need for a hotel and the 9 hole golf course, these include ongoing employment opportunities for our youth (long missing since Marineland's closure) and significant income to our city. Also, our Rancho Palos Verdes will benefit from additional public trails directly alongside our sensational coast and the transformation of an ugly, grey parking lot into the beautiful green of a golf course.

We do understand there will be many whose viewpoints will basically preserve this area as a parking lot. Many you hear opposing this proposal live some distance away, some not even in Rancho Palos Verdes. We do. Our homes directly border this proposal and, as such, we have opted to have our voices heard early on.

Thank you for this time and consideration. Should you have any questions on this letter, please do not hesitate to contact us.

Sincerely,

Bob Nelson

SeaBluff Homeowners Association
Board of Directors
Bob Nelson, Secretary/Treasurer
Tel: 310-544-4632

cc: Rancho Palos Verdes City Council Members
Joel Rojas, Director of Planning, Building and Code Enforcement, Rancho Palos Verdes
Jim York, Mike Mohler; Long Point Resort

PUBLIC COMMENT FORM

8-22-50 PC

PROJECT NAME:

Program Environmental Impact Report (EIR) for the Long Point Resort Project.

NAME AND ADDRESS OF COMMENTOR: (include group or public agency affiliation, as applicable)

MARK Pfeil
2565 Chelsea Rd.
Palos Verdes Est. CA. 90274

Telephone Number: 310-541-4841

COMMENTS:

Please provide your comments on potential environmental issues/impacts which you feel should be addressed in further detail in the subject Program EIR. Attach additional pieces of paper, as needed.

This form and/or additional comments can be submitted to City Staff at the Scoping Meeting or mailed to the City of Rancho Palos Verdes, 30940 Hawthorne Boulevard, Rancho Palos Verdes, California 90275, Attention: Mr. Dave Snow, AICP, Principal Planner.

I've heard some people say that the Resort and its amenities should be on only the Long Point property, as the old Marriott project was. It's not possible. I understand the EIR reviews alternatives to the proposed plan for the Resort. I would hope the modification plan is one of these alternatives. It's not possible. I've heard that the Long Point Resort developer in order to secure financing, must have an amenity package that will attract hotel guests. That package must include a nine hole regulation golf course. Not the Marriott plan. If the Resort plan is changed another well end up with no Resort or amenities at all. And the community would lose income, golf course, trails, parks and viewpoints. It would be a shame.

8-22-00
PC

Scoping Session Statement; August 22, 2000

Mr. Lyon, Mr. Jones, Mr. Snow, Commissioners and staff,

I'm Barbara Gleghorn, speaking for Save Our Coastline II. I live at 28850 Crestridge Road

With no offense to you intended, I believe that this Scoping Session should not be taking place Let me explain why.

This proposal differs from the usual projects in two major aspects: it proposes development of land not owned by the developer and it proposes that the city enter into some kind of business arrangement in the operation of part of the enterprise - the golf facilities. Since both involve the use of public land, the City Council has the full responsibility for these decisions. They are the governmental entity that determines the use of the public land. A request to use public land is a serious matter, not to be delegated to anyone other than the City Council. We believe that the City Council must accept its responsibility and decide this issue at the earliest possible time. The developer, the City, you, as commissioners, and the residents should be spared the time and expense of considering detailed plans on the city land when there is a good chance this land may not be included.

Also, we are very concerned that a prolonged consideration of this project in detail gives the wrong impression. The danger we see is that the Commissions and Staff may get mired in the details and not give recognition to the fact that a fundamental issue of the use (or misuse) of public land is involved - an issue that you, the Planning Commission and the Traffic Commission, are not empowered to act upon. All of this work and discussion can make it appear that the use of the land is a foregone conclusion. The City Council has not made a decision. However, by continuing to involve the Staff and those of you in the Commissions, there is an appearance of tacit approval.

You may remember that last August former Mayor Hollingsworth recommended that the Council make a decision on the use of public land. That statement followed SOC II presenting signatures of 1600 Rancho Palos Verdes residents opposing this use of city land. Now, over 2000 RPV residents have signed our petitions, and an additional 700 peninsula residents have signed and oppose this use.

For these reasons, we believe the process that is being followed for this project is inappropriate.

I know you are stuck with this mandate from the City Council and so are we, as opponents of this use of public land, because of the inaction of the City Council. We will continue to point out the many problems inherent in this project as it stands.

Thank you for your attention.

Hocey Cain 8.22.00 PC

I

We are rapidly loosing precious open space in RPV, and as it disappears, so does the rural ambiance we prize. Upper Point Vicente Park is our city's diamond in the rough. A place with great potential that provides refuge for our native plants and animals; a place where people can enjoy magnificent vistas from the trails and open space; a place where families can picnic. A place where children can fly kites and red-tailed hawks can soar. A place where scout troops can camp in preparation for more distant campgrounds.

The construction of a hotel on the Long Point property, and the expansion of Point Vicente Interpretive center will introduce large structures into this area and significantly change the character and feeling of this special place. It's important that we preserve some open space in order to maintain a bit of the rural atmosphere that many of us were seeking when we moved to the peninsula.

The proposed golf facilities would benefit about 5% of the people of the peninsula, and hotel guests, while keeping the majority of the people of the peninsula from enjoying this space. Let us rather utilize this land to the benefit of the majority of the people of the peninsula.

Let us keep Upper Point Vicente Park the natural preserve that it is. With help from existing environmental groups, let's plant more native vegetation, improve the trails, create more open space for kite flying and camping, and create more picnic areas on the periphery of this open space. Hotel guests will be able to have a real Rancho Palos Verdes experience as they walk these nature trails and enjoy the magnificent views of our beautiful coastline.

Let us utilize this land for the use of the majority of our people and visitors.

8.22.00
PC

STATEMENT FOR THE SCOPING SESSION ON AUGUST 22, 2000

To: The Planning Department, Planning Commission, and Traffic Committee

From: Dena Friedson, a member of Save Our Coastline II

Re: The Initial Study/Environmental Checklist for the Long Point Resort

The developer states in both the Permit Documentation for Conditional Use Permits and the Initial Study/Environmental Checklist that no plan amendments are required. We disagree.

State law requires zoning and conditional use permits to be consistent with the General Plan. The 65 acres surrounding the civic center site are designated as "passive" on the General Plan. Golf is a very active sport. The conditional use permit can not be processed until the General Plan is amended.

We do not want the General Plan to be amended. We believe a golf course and a driving range/practice facility will have a very detrimental impact on the environmental, ecological, and social qualities of this publicly owned land. Around 91% of the general public will be prevented permanently from enjoying the principal trails and wonderful views that are currently available to everyone. According to the developer's documentation, pedestrians will be able to use golf cart paths only during non-golfing hours - in other words, in the dark. Wildlife, birds, and nests will be endangered.

With respect to the Coastal Specific Plan, the Long Point Hotel project may be consistent with the conforming CR zoning. However, the current proposal has greatly expanded the numbers of rooms and buildings that were previously allowed. In 1991, the Coastal Commission issued a permit - which is still in effect - for a 9 hole golf course, a 400 room hotel, and other amenities on the Long Point Resort property. The permit stated that "any deviation from the approved plans must be reviewed and approved by the (Commission) staff and may require Commission approval." It also stated that the "terms and conditions shall be perpetual, and it is the intention ... to bind all future owners." There is high probability that this matter will be appealed.

When the city acquired the former Nike site, the federal deed restrictions stated that the land was to be used in

perpetuity by the general public for parkland and recreational purposes. The financial analysis prepared by Economics Research Associates (ERA) assumes that an average of 14% of the population in the primary market area play golf. Children under 14 are excluded. (See Table 6.) The primary market area is inside a curve extending from Pier Avenue in Hermosa Beach to Carson Boulevard in Torrance near the 110 Freeway to the Long Beach Harbor. Of these golfers, 75% are expected to prefer public courses. Adding in the children under 14, these figures show that only 9% of the population will be able to enjoy the area on Point Vicente Park where only golf carts will be allowed. 91% of the general public will be deprived of the major part of the parkland, trails, and magnificent views that were granted to them by the federal government.

8.22.00
PC

SOC II Scoping Meeting 22 August '00

Thank you for calling this meeting tonight. As you know, it's so important to thoroughly study and discuss the Long Point Resort project before the bulldozers move in -- especially the very probable adverse impacts.

The city's Initial Study Checklist cites 16* potential environmental impacts and grades them under 4 catagories:

Potentially Significant Impact

Potentially Significant Unless Mitigated

Less Than Significant Impact

No Impact

The Checklist then finds 65 areas that have *Potentially Significant Impact* involved in the Project, including not just the Long Point acres but the Upper Point Vicente area.

The city is presently drafting a Natural Community Conservation Plan that "will establish Biological Reserve Areas in the city to provide protection of the federally threatened gnatcatcher... sensitive native plant communities... and other sensitive species."

If parts of our 77 acres of public land are included in this Reserve, what happens to their protected status if the Project receives 68.3 acres for it's golf course & support buildings?

*Issue Areas Evaluated in the Initial Study:

Aesthetics
Agriculture Resources
Air Quality
Biological Resources
Cultural Resources
Geology and Soils
Hazards and Hazardous Materials
Hydrology and Water Quality
Land Use and Planning
Mineral Resources
Noise
Population and Housing
Public Services
Recreation
Transportation/Traffic
Utilities & Service Systems

8-22-00
PC

PUBLIC COMMENT FORM

PROJECT NAME:

Program Environmental Impact Report (EIR) for the Long Point Resort Project.

NAME AND ADDRESS OF COMMENTOR: (include group or public agency affiliation, as applicable)

Save Our Coastline - II
PO Box 3984 P.V.P. CA 90274
Phone 377 2168 FAX 377 1228 soc2steering@aol.com
Contact: Barbara GLEIGHORN

Telephone Number: 377-2168

COMMENTS:

Please provide your comments on potential environmental issues/impacts which you feel should be addressed in further detail in the subject Program EIR. Attach additional pieces of paper, as needed.

This form and/or additional comments can be submitted to City Staff at the Scoping Meeting or mailed to the City of Rancho Palos Verdes, 30940 Hawthorne Boulevard, Rancho Palos Verdes, California 90275, Attention: Mr. Dave Snow, AICP, Principal Planner.

RE: ALTERNATIVES

WE SUGGEST THAT THE PROJECT VISUALIZED BY THE MONAGHAN INTERESTS - THE PLAN THAT HAS BEEN APPROVED BY CITY + STATE RESPONSIBLE AGENCIES - BE REVIEWED AND CONSIDERED AS A VIABLE ALTERNATIVE.

THIS WOULD ALLOW NO DEVELOPMENT OF THE RESORT ON PUBLIC LAND.

George J Gleighorn

8-22-00
PC

STATEMENT FOR THE SCOPING SESSION ON AUGUST 22, 2000

To: The Planning Department, the Planning Commission, and the Traffic Committee

From: Dena Friedson, a member of Save Our Coastline II

Re: The Initial Study/Environmental Checklist for the Long Point Resort

The grading permits requested by Destination Development Corporation for the proposed golf course on Point Vicente Park indicate that 317,000 cubic yards of earth are to be moved: 167,000 cubic yards of cut, 150,000 cubic yards of fill, and 17,000 cubic yards to be taken somewhere.

Figuring 8 cubic yards per dump truck, 2,125 loads will be leaving the site. Where will they go? Perhaps more important for consideration, is the amount of land being disturbed on Point Vicente Park. Dirt up to 15 feet deep will be dug up and pushed around by bulldozers and transported by dump trucks and packed into different fill locations up to 20 feet high. To visualize the quantity of earth movement in this fragile area, think of an acre of land, presently covered with grasses and shrubs. 167,000 cubic yards of cut spread out 1 foot deep would cover 103.5 acres. Point Vicente Park is 65 acres. Retaining walls will be required up to 20 feet high.

This massive grading will create a great deal of noise and dust, which will continue for quite a while but will be temporary. The disruption to the land and all vegetation, wildlife, birds, and nests on it and nearby will be devastating and permanent. Don't let this happen.

RECEIVED
AUG 25 2000
PLANNING, BUILDING,
& CODE ENFORCEMENT

PUBLIC COMMENT FORM

PROJECT NAME:

Program Environmental Impact Report (EIR) for the Long Point Resort Project.

NAME AND ADDRESS OF COMMENTOR: (include group or public agency affiliation, as applicable)

VIC QUIRARTE
29369 QUAILWOOD DR.
RANCHO PALOS VERDES, CA.
90275

Telephone Number: (310) 377-3916

COMMENTS:

Please provide your comments on potential environmental issues/impacts which you feel should be addressed in further detail in the subject Program EIR. Attach additional pieces of paper, as needed.

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1) POSSIBLE DESTRUCTION OF HABITAT CAUSED BY GRADING AND OTHER CONSTRUCTION PROCESSES.
2) REQUEST A PLAN TO RESOLVE PROBLEM OF RUN-OFF WATER.
3) PLAN TO ASSURE THAT CHEMICALS WILL NOT CONTAMINATE LOWER PALOS VERDES AND THE OCEAN.
4) GOLF COURSE NETTING WILL BE REQUIRED TO SAFEGUARD HOMES, PEDESTRIANS, AND AUTOMOBILES. ALTHOUGH THE DEVELOPER DISAGREES, WHAT WILL BE THE ADVERSE IMPACT TO VIEWS OF THE COAST LINE?
5) IF AN 18 HOLE GOLF COURSE (OCEAN TRAILS) DOES NOT REQUIRE A DRIVING RANGE WHY WOULD A 9 HOLE COURSE NEED ONE?
6) WHY NOT USE THE MONAHAN PLAN AS AN ALTERNATIVE?
7) ONE SPEAKER WAS CORRECT. CITY PROPERTY IS NOT NEEDED FOR A GOLF COURSE BUT TO ACCOMMODATE ANCILLARY HOUSING ON LONG POINT. IS THIS A PROPER USE OF CITY PARK LAND?
8) IF NIGHT LIGHTING IS REQUIRED THEN THAT WOULD BECOME A NUISANCE TO THE PUBLIC AND A HAZARD TO ANIMAL LIFE.
9) CONSTRUCTION OF AN UNDERGROUND TUNNEL BENEATH PALOS VERDES DRIVE IS DANGEROUS IN THAT THE AREA IS PRONE TO SLIDE AND EARTHQUAKE AND IT WILL TIE UP TRAFFIC DURING CONSTRUCTION.

(Quirate)

10) WHAT ARE THE PROCEDURAL PROBLEMS THAT CONSIDERS THE LONG POINT PROPOSAL TO BE OUT OF SYNC WITH THE CITY GENERAL PLAN AND THE NCCP GUIDELINES?

11) SHOULD A BIRD CENSUS BE CONDUCTED TO DETERMINE NUMBER AND SPECIES OF BIRDS ON UPPER POINT VICENTE PROPERTY?

12) WHY WOULD A GOLF "STARTER" BE LOCATED ON CITY PROPERTY?

13) WHAT IS THE CITY'S LIABILITY IN THE EVENT THE PROJECT FAILS FOR ANY REASON?

14) WHO IS RESPONSIBLE FOR MAINTENANCE ON CITY PROPERTY ONCE THE COURSE IS OPENED?

15) WHAT IS CITY LIABILITY FOR A PERSON BEING INJURED WHILE PLAYING GOLF ON UPPER POINT VICENTE PROPERTY?
A PEDESTRIAN NOT INVOLVED IN PLAYING GOLF?
DAMAGE TO AUTOMOBILES PARKED ON CITY PROPERTY?

DAVE,

WILL RESPONSE BE AVAILABLE TO LISTED CONCERNS?

Vi 8/23/00

August 25, 2000

To: David Snow
Rancho Palos Verdes Planning Department

RECEIVED
AUG 28 2000
PLANNING, BUILDING,
& CODE ENFORCEMENT

From: Ann Shaw and Dena Friedson
Members of Save Our Coastline II

Re: Long Point Resort Golf Course
Initial Study/Environmental Checklist - Recreation

We just learned about a threatening challenge to the viability of the Long Point Resort Golf Course.

The proposed County Golf Course, shown for many years on Peninsula maps, is on the way to becoming a reality in the not-too-distant future. Attached is a copy of the timeline, received from the office of Supervisor Knabe, for an 18 hole course on the landfill site near Palos Verdes Drive North and Crenshaw. The contract for the development process is scheduled to be signed on February 1, 2001 - around 5 months from now.

Many golfers that live in the primary market area will choose to play at an 18 hole, inexpensive public course instead of a 9 hole course with a $40.00 to $60.00 fee. The number of persons playing at the Long Point course will be reduced to much less than 9% of the general public - the percentage derived from the analysis made by Economic Research Associates. (See Table 6.) Our beautiful natural open space will be defaced to serve mostly hotel guests for the benefit of the developer. Wildlife and endangered species will be destroyed during the grading process and, if any should survive and return, by the activities closeby on the completed golf course.

If the golf contractor decides to discontinue operations because of diminished revenues, the city might be left holding a bag of 4 holes and an underused and unsightly practice facility. The financial liability to the city could be significant.

We hope the Long Point Hotel will be successful and an asset to the community. As you know, we believe that all its amenities, including golfing, should be built on the developer's own property.

(1737 Via Boronada, Palos Verdes Estates - (310) 378-2835)

IMPLEMENTATION SCHEDULE FOR A REQUEST FOR PROPOSALS ON A

GOLF COURSE DEVELOPMENT AT THE PALOS VERDES LANDFILL SITE

Draft Request For Proposals (RFP) Prepared	February , 2000
Final RFP Approved by Sanitation District	March 28
Final RFP Approved by County Counsel	April 5
Solicitation and Mailings Begin	April 10
Proposers' Conference and On-site Visit	May 18
Deadline to Submit Proposals	July 17
Completed Verification of Submitted Materials	July 31
Proposers' Interviews	August 14 - 18
All Proposals Rated	August 31
Recommendation Presented to Director	September 7
Director Authorizes Negotiations	September 14
Commence Negotiations with Proposer	September 28
Selected Proposer Executes Agreement	November 30
Circulate Board Letter and Agreement, for County Counsel, and Sanitation District Review	December 4
Clear County Counsel and Sanitation District Approvals	December 13
Circulate Board Letter to CAO and Board Office	December 14
Clear CAO and Board Office Approval	December 26
File Board Letter of Recommendation	December 28
Board of Supervisors Approves Option Agreement	January 9
Term of Option Agreement Commences	February 1, 2001

7Apr2000

TOTAL P.01

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PLANNING, BUILDING,
& CODE ENFORCEMENT

Additional comments to the Long Point Scoping letter dated Aug. 22, 2000

By: Jim Knight

After the scoping meeting August 22, I have some additional comments:

SCOPE OF EIR

The RPV Planning Director said during the Aug. 22 meeting that the developer is not bound to the NCCP program and could pull out of it at any time. As a result, they say , this EIR could move forward irrespective of the NCCP.

While the Planning Dept. might allow the process to move forward, the conservation planning principles of the NCCP cannot be ignored in this EIR.

If the developer does pull out of the NCCP, then his only choice is to ask the Resource Agencies under Section 10 of the ESA for a ITP to comply with his destruction of established CSS on Upper Point Vicente Park. But this would only be addressing this project, and this project alone. It would create yet another isolated conservation plan, yet another island, that looses all of the advantages of corridors and linkages to other habitat areas within the city.

It appears that the City ,who is the lead agency for the NCCP, could care less about the conservation planning principles of the NCCP. The inherent advantages for a master conservation plan coordinating <u>all</u> remaining habitat areas within the city limits as a connected , cohesive ecosystem must be addressed in this EIR. It cannot be a full analysis of impacts unless it does.

Since the city has taken no stance on which conservation plan the project falls under, the EIR must address the habitat value of an independent Habitat Conservation Plan (HCP) under the ESA compared with habitat value of a NCCP plan, with all of the corridor and linkage with other areas within the City. This cannot be outside the scope of the EIR as, according to the Planning Director, the developer does have a choice of which type of habitat conservation plan. Each type of conservation plan could have dramatically different outcomes and impact to wildlife in the area by virtue of their own unique scope of planning.

Biological resources in the real world do not distinguish man-made boundaries and areas such Amarag Canyon, Subregion 1, the stretches of P.V. coastline and areas with Parcel 4 and Portuguese Bend, and other areas, are not outside the boundaries of habitat needs and the corresponding linkage value used by target species. The impact to biological resources of this project EIR cannot be assessed without including a larger scope analysis such as been established with the NCCP.

EDGE EFFECTS

On my discussion of edge effects, this EIR must include, in addition to golf, the edge effect impact of the entire stretch along P.V. Dr. South where the developers plan to revegetate with CSS.

NIGHT LIGHTS AND NETTING

I was unaware the this project would be using night lights and netting. Environmental impacts of any nighttime lighting and netting must be addressed.

The City of RPV has regulations to protect nighttime sky viewing. Ocean Trails is currently in violation of these guidelines with their very bright lights on the golf greens for their dining room patrons. These lights impact the nighttime enjoyment all of the way down to Inspiration Point above Abalone Cove.

Night lighting can also have dramatic impacts on wildlife including their reproductive patterns.

Netting could have impacts on view corridors as well as serious impacts on target species loss and must be addressed.

With the availability of night lights, operating hours of resort and/or golf courses must be clearly stated to assess impacts.

TRAFFIC

Traffic patterns must take into consideration the real potential for habitation use of the project arrangements being provided. The casitas are triple keyed. With 1,800 sq. ft each, it would not be unreasonable to assume all three divisions being utilized at once. This translates into 150 rooms, not 50, and impacts should be addressed as such.

Also, with the 90 day limitation of private use, the "private" casitas should be included in the hotel room count.

I am not sure if, as the traffic commission suggested, using the old Marineland traffic patterns would be a good comparison. The hotel should be studied as to its own traffic impacts.

Since the Marineland site has been closed, an increase in ambient development has occurred.

The nature of Marineland use is not the same as a hotel/resort use. Most people arrived, parked and stayed until the afternoon closing time. There was no need for a traffic signal as an attendant/parking supervisor directed traffic at closing time. Fewer people were impacted as the ambient development level was lower.

Traffic corridors to Marineland were different than this hotel, especially from LAX,

Increased impacts to bicycling activities, which have increased tremendously since Marineland closed, are not comparable.

California Native Plant Society

SOUTH COAST CHAPTER

August 28, 2000

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PLANNING, BUILDING,
& CODE ENFORCEMENT

City of Rancho Palos Verdes,
Dept. of Planning, Building and Code
c/o Mr. David Snow
30940 Hawthorne Boulevard
Rancho Palos Verdes, CA 90275

Re: NOP for Long Point Resort

Dear Mr. Snow,

Thank you for giving us the opportunity to comment on the Notice of Preparation (NOP) for the proposed Long Point Resort.
We are extremely concerned that the project still incorporates Upper Point Vicente, 64.9 acres of public open space with spectacular views of the water, coast line, and islands and existing high quality CSS with associated habitat that is occupied by rare and sensitive species.
California gnatcatcher (federally listed as threatened) , cactus wren, and loggerhead shrike are sensitive bird species which inhabit this area. Additionally, members of our chapter have found ocean locoweed (*Astragalus trichopodus lonchus*) on the site. This is the food plant of the Palos Verdes blue butterfly, another federally listed species. While the PV blue has not recently been found on the south side of the peninsula, the more disturbed areas adjacent to existing quality CSS have the potential to be restored to provide habitat for this species.

It seems ironic that land which was given to the public by the federal government as open space, land that currently hosts a federally threatened species and could be restored to host a second endangered federally listed species should even be considered as a potential site for a so-called "public" golf course rather than being restored and protected as habitat.

We noticed that the maps shown in the Long Point Resort Permit Documentation (June 23, 2000), do not show all of the native habitat on the site. Coastal Sage Scrub (CSS) is defined as having a shrub cover of 50% or more, while a shrub density of 10-50 % is characterized as Disturbed CSS in the plant communities descriptions. This definition is not in accordance with the NCCP descriptions. The RPV NCCP mapping was based mainly on the vegetation map for the California gnatcatcher studies, which defines CSS areas with a native shrub cover of 30% or more. The developer's definition is unacceptable.

The plan also includes several errors. For example, it states on p.3-5 that the on-site CSS is typified, among other species, by white sage (*Salvia apiana*). This is not correct. We do not have *Salvia apiana* naturally occurring on the peninsula. The report also includes birdfoot trefoil (*Lotus corniculatus*), as a Coastal Bluff Scrub plant (see p. 3-6). This weedy non-native species can more commonly be observed in lawns, and along road sides. We wonder, if the plant was confused with the native annual *Lotus salsuginosus*, which is more typically found in this community as well as in CSS?

We would like to see locally sensitive species addressed in the plan. For example, adjacent to the Nike site is the largest population of owlsclover (*Castilleja exserta*) on the peninsula. Catalina mariposa lily (*Calochortus catalinae*) also occurs at Upper Point Vicente.
We are concerned about the errors and inconsistencies in this report. The proposed project is not in conformity with the local draft NCCP.

The proposal mentions habitat restoration. However, according to the conceptual development plan, all "habitat" areas are extremely narrow. Even the most compact existing CSS block in the southwest part of Upper Pt. Vicente would be fragmented by the proposal and reduced to linear elements. The scale indication on the map was extremely difficult to read. Units of measurement are not indicated. Assuming that the measurement is in feet, the habitat strips are about 275 ft wide at the most, the majority are much narrower. A strip approximately 40' wide by 220' long between the existing public facilities and the golf course is claimed to be habitat! That is a ridiculous statement.

Additionally, the habitat areas in the plan are limited to steep slopes, making them even more vulnerable for edge effects and adverse indirect impacts from the active recreational use above. The already existing edge effects of the area would be severely increased if the active golf areas were implemented.
How can an artificially landscaped area that is watered year round, fertilized and treated with pesticides and herbicides for the purpose of a golf course possibly be a better neighbor to quality habitat than a site which may be disturbed but still contains remnants of native plants and native wildlife? The DEIR needs to address these issues.
Additionally, according to a statement made by California gnatcatcher expert Jon Atwood at one of the NCCP meetings, the City Hall site is a very important gnatcatcher dispersal area that was found to have the best survival rate of gnatcatcher offspring in the city. The EIR needs to address the remaining quality of habitat connections and dispersal possibilities after implementation of the project. The DEIR also has to show the functionality of the proposed habitat. As an example in regards to the California gnatcatcher, Jonathan Atwood showed in his Analysis of Edge Effects on California Gnatcatcher Reproductive Success (September 28, 1998) that the pairs on the peninsula were found to nest at a straight line distance away from the nearest edge with non-natural vegetation of at least 100 m (300 feet) (see Table 1, p.3).

Besides its importance as occupied habitat, the Upper Point Vicente area is important to connect habitat from the east to habitat farther north in Rancho Palos Verdes, as well as in Palos Verdes Estates. The impacts and consequences of the proposed project to the habitat connection also has to be explained.

The DEIR needs to address in detail its compliance with the NCCP. The City has repeatedly assured us, that it is committed to the Natural Community Conservation Plan (NCCP) that is being developed for Rancho Palos Verdes. Therefore it came as an extreme disappointment to us, that the city is willing to jeopardize the local NCCP, by allowing this project to go forwards outside of the NCCP process and by even allowing publicly owned land with existing occupied CSS habitat to be included in the proposal.

The RPV NCCP Subarea Plan Phase I shows this site as having moderate restoration potential. Interestingly, it shows large parts of the Long Point site as having high restoration potential, although it is indicated that most of it is existing non-native vegetation. We would like the DEIR to elaborate on these habitat restoration potentials and the functionality of the proposed measures.

Besides the above addressed concerns, a DEIR must not only clearly analyze and address the direct, but also the indirect impacts of a project. For example potential runoff of irrigation water, fertilizers, pesticides or herbicides can damage rare plants or plant communities down slope.
We are also concerned about erosion problems along the bluffs. We noticed that, for example, the buildings at Long Point are proposed extremely close to the bluff edge. We suggest a sufficiently wide buffer along the whole edge of the bluffs to protect the bluff faces from adverse impacts. This would also give more protection to one of the rare plants on the site, the Bright green Dudleya (*Dudleya virens*), which grows along the bluffs from Point Vicente to approximately the San Pedro city border, as well as to existing coastal bluff scrub, one of the rarest plant communities in the state of California.

The South Coast Chapter of the California Native Plant Society vehemently opposes the use of public land for a private development . Unless a NCCP is in place no further take and impacts on habitat should be allowed. We urge you to protect our public open spaces and to make sure that proposed developments do not block the successful completion of current wildlife and open space planning.

Sincerely,

Angelika Brinkmann-Busi
Conservation Chair, South Coast Chapter
2141 West 35th Street, San Pedro, CA 90732
(310) 519-8164

United States Department of the Interior

NATIONAL PARK SERVICE
Pacific West Region
Pacific Great Basin Support Office
600 Harrison Street, Suite 600
San Francisco, California 94107-1372

IN REPLY REFER TO:

L2623(PGSO-PP)

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PLANNING, BUILDING, & CODE ENFORCEMENT

Joel Rojas, Director
Planning, Building and Code Enforcement
City of Rancho Palos Verdes
30940 Hawthorne Boulevard
Rancho Palos Verdes, CA 90275

Re: Input for Scoping to Long Point Resort Project Environmental Impact Report

Dear Mr. Rojas:

In response to your notice of a Draft Environmental Impact Report for the Long Point Project, the National Park Service offers the following input to help facilitate the use of your Environmental Impact Report (EIR) in our National Environmental Policy Act (NEPA compliance for the above project.

1. As we expressed to you in our letter of June 26, 2000, the National Park Service is legally prohibited from approving any change of use to the parcel of land which we transferred to the City of Rancho Palos Verdes that would jeopardize the California coastal gnatcatcher, federally listed as an endangered species. We encourage the proponents of the Long Point Development to develop and analyze a full range of alternatives for their project, including those, which will not jeopardize existing gnatcatcher habitat.

2. Because of concerns regarding the proposed change of use of the land we transferred, the National Park Service requests that the EIR address the impacts that this proposal will have on public access to open space and coastal access in your community.

We appreciate the opportunity to participate in your environmental impact report.

Sincerely,

Jeff McCusker
Outdoor Recreation Planner

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& CODE ENFORCEMENT

August 28, 2000

To: David Snow
Rancho Palos Verdes Planning Department

From: Barbara Walch
Member of Save Our Coastline II

Re: Long Point Resort Golf Course
Initial Study/Environmental Checklist - Agriculture

Agriculture has been part of the Peninsula scene for over a century. In the 1960's and 1970's and later, there were fields of garbanzo beans, flowers, and other crops. Now one of the last remaining farms, existing on about 8.5 acres leased from the city, is scheduled for destruction. It occupies space desired by the Long Point Resort developer for a golf hole. The people that tilled and planted this land since the city's incorporation - and even before - will be forced to find other locations for their work.

Agricultural fields have been appreciated by local residents for their appearance and fresh produce. They have given the Peninsula a beautiful unique quality and have contributed to the semi-rural atmosphere that has attracted so many homeowners and visitors to this area.

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Rancho Palos Verdes

377-9528

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PLANNING, BUILDING,
& CODE ENFORCEMENT

August 28, 2000

To: David Snow
Planning Department
Rancho Palos Verdes

From: Don Johnson
Member of Save Our Coastline II

Re: Long Point Resort Golf Course
Initial Study/Environmental Checklist - Traffic

How long will it take to construct the pedestrian tunnel under Palos Verdes Drive South? How much dirt will be moved? How will the tunnel be braced?

How long will traffic be disrupted on Palos Verdes Drive South?

How many vehicles will be able to take alternate routes?

Which alternate routes will be taken?

How will traffic patterns be affected in Rancho Palos Verdes and in neighboring cities?

Would signals and crosswalks be better for the community?

When completed, how will the tunnel be monitored during non-golfing hours? For several years in Palos Verdes Estates, there were social problems caused by the misuse of the storm-drain passage under Palos Verdes Drive West by teenagers and other young adults.

29707 Island View Drive, Number 6
Rancho Palos Verdes
Phone: 541-3451

United States Department of the Interior

Fish and Wildlife Service
Ecological Services
Carlsbad Fish and Wildlife Office
2730 Loker Avenue, West
Carlsbad, CA 92008

Date Sent: 8/29/00 **Time Sent PST:**

# of Pages including cover sheet [ ]

TO: David Drew **Fax No.:**

FROM: Mary Kate Walsh **Fax Number** (760) 930-0846
Phone Number (760) 431-9440

SUBJECT: Long Point

COMMENTS:

Please _____ **if you have problems receiving this fax.**

[Revised 5/00]

US Fish and Wildlife Service
Carlsbad Fish and Wildlife Office
2730 Loker Avenue, West
Carlsbad, California 92008
(760) 431-9440

CA Dept. of Fish & Game
4949 Viewridge Avenue
San Diego, California 92123-1662
(619) 467-4201
FAX (619) 467-4235

AUG 29 2000

David Snow
City of Rancho Palos Verdes
30940 Hawthorne Boulevard
Rancho Palos Verdes, California 90275-5391

Notice of Preparation of a Draft Environmental Impact Report for the Long Point Resort Project in the City of Rancho Palos Verdes County of Los Angeles (SCH#2000071076)

Dear Mr. Snow:

The California Department of Fish and Game (Department) and U. S. Fish and Wildlife Service (Service) (collectively, "Wildlife Agencies") staffs have reviewed the above Notice of Preparation (NOP) for the Draft Environmental Impact Report (DEIR) for the Long Point Resort project. This project is within the planning area for the Palos Verdes Natural Community Conservation Plan (NCCP) that is currently being prepared by the City of Rancho Palos Verdes (City). The proposed project is generally located along Palos Verdes Drive South and Palos Verdes Drive West and consists of improvements in two areas identified as the Resort Hotel Area and Upper Point Vicente Area. We understand that the proposed project is the development of a resort hotel, golf course and associated accommodations. The Wildlife Agencies have met with representatives of the City of Rancho Palos Verdes and the project applicant for pre-project planning and are available to continue discussions to ensure the protection, conservation and management of resources on the Palos Verdes Peninsula. The Wildlife Agencies offer additional comments regarding the property's biological values and its value to the NCCP that should be addressed in the DEIR.

At issue are project related impacts to the federally threatened coastal California gnatcatcher (*Polioptila californica californica*), endangered Palos Verdes blue butterfly (*Glaucopsyche lygdamus palosverdesensis*), and the sensitive loggerhead shrike (*Lanius ludovicianus*), cactus wren (*Campylorhynchus brunneicapillus*), bright green dudleya (*Dudleya virens*), coastal bluff scrub, coastal sage scrub and other sensitive plant and animal species which occur in these habitat types. Due to urban encroachment and fragmentation of natural habitat, many species are declining at a rapid rate throughout Los Angeles County and particularly the Palos Verdes Peninsula. As indicated to the City and the project proponent, the project area has been identified as being important for a reserve system within the City's NCCP subarea.

Fish and Game Code §1802 establishes the Department's jurisdiction over conservation, protection, and management of fish and wildlife, native plants, and habitats necessary for biologically sustainable populations. Under §15386 of the California Environmental Quality Act (CEQA), the Department is a Trustee Agency and must be consulted by the lead agency during preparations and public review for project specific CEQA documents. Pursuant to §2800 *et. seq.* of the Fish and Game Code, (the Natural Community Conservation Planning [NCCP] program), the Wildlife Agencies are coordinating with the City of Rancho Palos Verdes, local jurisdictions, landowners, and other state and federal agencies, to preserve local and regional biological diversity. This coordination involves project evaluation during the NCCP interim period. Through the review process, the City can ensure that proposed projects do not preclude long-term preserve planning options and are consistent with the objectives of the NCCP Planning Agreement.

If the proposed project has the potential to result in "take" of species of plants or animals listed under California Endangered Species Act (CESA), either during construction or over the life of the project, then a Permit (§2081 of the Fish and Game Code) must be obtained. CESA Permits are issued to conserve, protect, enhance, and restore State-listed threatened or endangered species and their habitats. Early consultation is encouraged, as significant modification to a project and mitigation measures may be required to obtain a CESA Permit. Alternatively, if the project is processed under an approved NCCP/MSHCP plan, then the incidental take permit may be obtained through the §2835 permit issued to the signatory jurisdiction.

The primary concern of the Service is the protection of fish, wildlife, and plant resources and their associated habitats. Moreover, we provide comments on public notices issued for a Federal permit or license affecting the Nation's waters pursuant to the Clean Water Act. We also administer the Endangered Species Act (Act) of 1973, as amended. Section 7 of the Act requires Federal agencies to consult with us, the Service, should it be determined that their actions may affect federally listed threatened or endangered species. Section 9 of the Act prohibits the "take" (e.g., harm, harassment, pursuit, injury, kill) of federally listed wildlife. "Harm" is further defined to include habitat modification or degradation where it kills or injures wildlife by impairing essential behavioral patterns including breeding, feeding, or sheltering. Take incidental to otherwise lawful activities can be obtained under sections 7 (Federal consultations), (habitat conservation plans)10, and 4(d) of the Act.

Under the special 4(d) rule, incidental take of the coastal California gnatcatcher as a result of land-use activities addressed in an approved NCCP plan would not be considered a violation of Section 9 of the Act, provided the Service determines that the plan meets the issuance criteria for a "take" permit pursuant to section 10(a)(1)(B) of the Act and 50 CFR 17.32(b)(2). Limited incidental take of the coastal California gnatcatcher within subregions actively engaged in the preparation of the NCCP plan would also not be considered a violation of section 9 of the Act under the rule, provided that such take resulted from activities conducted consistent with the State's Natural Community Conservation Planning (NCCP) Conservation and Process Guidelines (Conservation Guidelines). Take of coastal California gnatcatchers during the plan preparation phase is authorized by local jurisdictions through habitat loss permits. The

Conservation Guidelines limit interim habitat loss to no more than 5 percent of existing coastal sage scrub.

Coastal sage scrub is the first natural community to be planned for under the NCCP program. The Wildlife Agencies recommend that the City ensures that the development of this project does not preclude long-term preserve planning options and that they conform with the requirements of the NCCP program. The City should assess this project for consistency with the NCCP Conservation Guidelines. The proposed project would need to seek appropriate authorization under the Act for the take of the coastal California gnatcatcher.

To enable the Wildlife Agencies to adequately review and comment on the proposed project and its potential effects on the NCCP effort, we recommend the following information be included in the DEIR.

1. A complete assessment of the flora and fauna within and next to the project area, with particular emphasis upon identifying NCCP target species and state and federally listed endangered, threatened, proposed candidate, California species-of-special concern and any locally unique species and sensitive habitats. Please provide a list of Federal and State candidate, proposed or listed species, state-listed species and locally sensitive species that are on or near the project site. A detailed discussion of these species, including information pertaining to their local status and distribution, should be included in this report. The anticipated or real impacts of the project on these species should be fully addressed. The Wildlife Agencies are particularly interested in any all pertinent information and data pertaining to potential or real impacts to: (a) currently listed species including the Palos Verdes blue butterfly and coastal California gnatcatcher, (b) species proposed for listing, (c) the sensitive loggerhead shrike, cactus wren, south coast saltscale (*Atriplex pacifica*), and aphanisma (*Aphanisma blitoides*) and (d) raptors. If proposed candidate species are subsequently listed as threatened or endangered, the publishing of the final rule designating official listing could occur during the course of the planning or implementation phases of the various proposed project activities. The following specific issues should be included in the DEIR:

a. A thorough assessment should be made of rare natural communities, following the Department's May 1984 Guidelines for Assessing Impacts to Rare Plants and Rare Natural Communities.

b. A complete assessment including both qualitative and quantitative analysis of sensitive fish, wildlife, reptile, and amphibian species should be made. Seasonal variations in use of the project area should also be addressed. Focused species-specific surveys, conducted at the appropriate time of year and time of day when the sensitive species are active or otherwise identifiable, are required. The DEIR should develop acceptable species-specific survey procedures in consultation with the Wildlife Agencies.

c. A complete inventory of the biological resources associated with each habitat type should be provided. These inventories should include both qualitative and

quantitative assessments of the resources present on the proposed project site and alternatives. The Department's California Natural Diversity Data Base in Sacramento should be contacted at (916) 327-5960 to obtain current information on any previously reported sensitive species and habitat, including Significant Natural Areas identified under Chapter 12 of the Fish and Game Code. A list of Federal or State candidate, proposed or listed species, as well as locally sensitive species that occur on or near the project site should be included in the DEIR. A detailed discussion of these species, including information pertaining to their local status and distribution, should be included in the DEIR. The Wildlife Agencies are particularly interested in any and all pertinent information and data pertaining to potential or actual impacts to federal and/or state listed species and designated rare natural communities as defined under CEQA (per CEQA Guidelines, §15380).

2. A thorough discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources including specific measures to offset such impacts. All facets of the project should be included in this assessment. The following specific issues should be included in the DEIR:

a. A discussion pursuant to CEQA Guidelines §15125(a) of the regional setting with special emphasis placed on resources that are rare or unique to the region that would be affected by the proposed project.

b. Project impacts should be analyzed as to their effects on offsite habitats. Specifically, this should include nearby public lands, open space, adjacent natural habitats, riparian ecosystems, and any designated and/or proposed NCCP reserve lands. Impacts to and maintenance of wildlife corridor/movement areas, including access to undisturbed habitats in adjacent areas, should be fully evaluated. Existing habitat on and near the City Hall property supports an important population of coastal California gnatcatchers. The proposed project site also functions as an essential habitat connection from the Agua Amara Canyon gnatcatcher population to the Portuguese Bend population. Conservation of this core population of coastal California gnatcatchers at this site and its connectivity function must be maintained. Any impacts to sage scrub within this area must be minimized and fully mitigated to the maximum extent practicable. The Wildlife Agencies have concerns about losing productive gnatcatcher habitat on the City Hall property. Even though sage scrub habitat is proposed to remain onsite or be revegetated in the area, these areas will be a patchwork surrounding the proposed fairways within the golf course, thereby decreasing the function and value of the sage scrub habitat and existing buffer areas, that will be remaining.

c. Development or other uses that are nearby or next to natural areas may inadvertently contribute to wildlife-human interactions that could degrade habitat values. A discussion of possible conflicts and mitigation measures to reduce these conflicts should be included in the DEIR.

d. A cumulative effects analysis should be developed as described under CEQA Guidelines, §15130. General and specific plans, and past, present, and anticipated future projects, should be analyzed concerning their impacts on similar plant communities and wildlife habitats. Specific acreage and descriptions of the types of wetland, coastal sage scrub, and other sensitive habitats that will or may be affected by the proposed project or project alternatives should be provided in the DEIR. Maps and tables should be used to summarize such information.

e. The document must include an analysis of the affect that the project may have on completion and implementation of regional and/or subregional conservation programs. The NCCP program requires that the lead agency ensure that the development of this and other proposed projects do not preclude long-term preserve planning options and that projects conform with other requirements of the NCCP program. Jurisdictions participating in the NCCP program must assess specific projects for consistency with the NCCP Conservation Guidelines. The interim habitat loss permit would not be available for this project because the amount of habitat proposed to be impacted would exceed the 5 percent and the proposed project would not meet 4(d) findings criteria. Therefore, if there is no federal nexus, the project proponent would need to obtain a section 10 permit prior to any site disturbance. Because of the significance of the potential effects of the project on NCCP planning, we strongly recommend that any decision regarding the subject project be delayed until the Palos Verdes NCCP process is completed.

3. The alternatives analysis must include a range of alternatives that avoid or otherwise reduce impacts to sensitive biological resources. Specific alternative locations should also be evaluated in areas of lower resource sensitivity where appropriate. Please include a complete discussion of the purpose and need for the project or each of the projects alternatives. Also, include a complete description of the proposed project, and all practical alternatives that have been fully considered and evaluated to reduce project impacts to coastal sage scrub, coastal bluff scrub, other sensitive habitat types, and biological resources. The following specific issues should be included in the DEIR:

a. Mitigation measures for project impacts to sensitive plants, animals, and habitats should emphasize evaluation and selection of alternatives that avoid or otherwise reduce project impacts. Offsite compensation for unavoidable impacts through acquisition and protection of a high-quality habitat elsewhere should be addressed. Adverse project related impacts should be mitigated through permanent preservation and management of impacted habitat types.

b. Measures should be taken to perpetually protect habitat values that are preserved or restored. Issues that should be addressed include restrictions on access, proposed land dedications, monitoring and management programs, control of illegal dumping, water pollution, increased human intrusion, etc.

c. The Department considers Rare Natural Communities as threatened habitats having both regional and local significance. Thus, these communities should be fully avoided and otherwise protected from project-related impacts. The Department's California Natural Diversity Data Base identifies the Rare Natural Communities list.

d. The Wildlife Agencies generally do not support the use of relocation, salvage, and/or transplantation as mitigation for impacts to rare, threatened, or endangered species. Studies have shown that these efforts are experimental in nature and largely unsuccessful.

4. If the proposed project has the potential to result in take of listed species under CESA and the Act, and proceeds prior to an approved NCCP, then a section 2081 CESA permit and section 10 permit under the Act will be required. If the project is processed under an approved NCCP/MSHCP plan, then the incidental take permit may be obtained through the 2835 permit and section 10 permit issued to the signatory jurisdiction. The following specific issues should be included in the DEIR:

a. Biological mitigation proposals should be of sufficient detail and resolution to satisfy the requirements for issuance of a take permits and be consistent with the objectives of the City of Rancho Palos Verdes NCCP/MSHCP Planning Agreement.

b. A Department-approved Mitigation Agreement and Mitigation Plan are required for plants listed as rare under the Native Plant Protection Act. The Agreement and Plan should be consistent with the objectives of the NCCP/MSHCP Planning Agreement.

5. The Wildlife Agencies oppose the elimination of watercourses and/or their channelization or conversion to subsurface drains. All wetlands and watercourses, whether intermittent or perennial, must be retained and provided with substantial setbacks that preserve the riparian and aquatic values and maintain their value to on-site and offsite wildlife populations. The following specific issues should be included in the DEIR:

a. The Department has direct authority under Fish and Game Code §1600 *et. seq.* regarding any proposed activity that would divert, obstruct, or affect the natural flow or change the bed, channel, or bank of any river, stream, or lake. The project could also require an Army Corps of Engineers permit pursuant to section 404 of the Clean Water Act. The Clean Water Act prohibits the discharge of dredged or fill material into wetlands unless permitted by section 404, or unless that discharge is exempt from regulation in certain narrowly drawn circumstances designated in section 404. A wetland delineation should be performed on the project site using Unified Federal Method (56 FR 40446) to determine the amount of wetlands under Corps jurisdiction. Early consultation is recommended since

modification of the proposed project may be required to avoid or reduce impacts to fish and wildlife resources.

b. A discussion of potential adverse impacts from any increased runoff, soil erosion, sedimentation, and/or urban pollutants on streams and water courses on or near the project site, with mitigation measures proposed to alleviate such impacts.

The Wildlife Agencies appreciate the opportunity to comment on the NOP. We are available to work with the City and their consultants to obtain any necessary permits for the proposed project and to ensure that any interim project is consistent with the City's NCCP. Please contact Warren Wong of the Department at (858) 636-3167, or Mary Beth Woulfe of the Service at (760) 431-9440,if you have any questions or comments concerning this letter.

Sincerely,

Jim A. Bartel
for Assistant Field Supervisor
U.S. Fish and Wildlife Service

William E. Tippets
Habitat Conservation Supervisor
California Department of Fish and Game

1-6-00-NFTA-436

cc: U.S. Army Corps of Engineers

California Coastal Commission
Pam Emerson

State Clearinghouse

TRANSACTION REPORT

AUG-29-00 TUE 01:49 PM

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DATE	START	SENDER	RX TIME	PAGES	TYPE	NOTE	M#	DP
AUG-29	01:46 PM	760 431 9624	3′04″	8	RECEIVE	OK		

PUBLIC COMMENT FORM

RECEIVED
AUG 29 2000
PLANNING, BUILDING,
& CODE ENFORCEMENT

PROJECT NAME:

Program Environmental Impact Report (EIR) for the Long Point Resort Project.

NAME AND ADDRESS OF COMMENTOR: (include group or public agency affiliation, as applicable)
PAUL A. PAYNE, VILLA CAPRI HOMEOWNERS ASSOCIATION

Telephone Number: _____

COMMENTS:

Please provide your comments on potential environmental issues/impacts which you feel should be addressed in further detail in the subject Program EIR. Attach additional pieces of paper, as needed.

This form and/or additional comments can be submitted to City Staff at the Scoping Meeting or mailed to the City of Rancho Palos Verdes, 30940 Hawthorne Boulevard, Rancho Palos Verdes, California 90275, Attention: Mr. Dave Snow, AICP, Principal Planner.

IN ADDITION TO THE COMMENTS NOTED IN THE ATTACHED LETTER, THE HOMEOWNERS OF VILLA CAPRI BELIEVE THAT THE GOLF DRIVING RANGE PLANNED FOR THE FIELD BEHIND OUR HOMES WILL HAVE A MAJOR NEGATIVE IMPACT UPON OUR HOME VALUES & QUALITY OF LIFE. THE FIELD IS A VERY INNAPROPRIATE LOCATION FOR THIS FACILITY, IT WOULD BE BETTER FOR THE DEVELOPER, THE CITY & OURSELVES TO HAVE LOCATED ON LONG POINT ADJACENT TO THE HOTEL COMPLEX.

26 August 2000

President
Villa Capri Home Owners Association
52 Via Capri
Rancho Palos Verdes, CA 90275

Homeowners
Villa Capri

Dear Homeowner,

As you know the hotel golf course project planned for Long Point and Upper Point Vicente is now working its way through the review and public comment process. Last Tuesday, 22 August, there was a meeting at Hesse Park on the draft Environmental Impact Report. At this meeting the developer, Lowes Development Company, discussed their plan for the project. Just over two weeks ago the Lowes Company hosted a session for the Villa Capri Homeowners at the Catalina Room at Long Point where they showed us their plan and solicited comments. The major features of the project as currently envisioned are for a hotel/conference/spa complex, privately owned casitas and five holes of a nine hole golf course to be built on Long Point. The remaining four holes of golf and a public golf practice facility are planned for Upper Point Vicente.

The golf practice facility is planned to be constructed in the field behind our townhomes and by any other name it is a driving range. The plan calls for twenty tees, putting and chipping areas, a small park, and a parking area with a club house that will sit right at the entrance to the cul-de-sac. We were promised by the developer when they were considering an eighteen hole golf course that they would not put a driving range behind us. Objections to this facility were voiced at the meeting at the Catalina Room and at the Hesse Park meeting. Our objections are:

The facility will generate a significant level of noise and the surrounding hillsides will act as an amphitheater to amplify this noise, there will be additional noise from the tractor that will have to be used to gather up the range balls and also there will be noise from the parking area. This will be in addition to the the additional traffic and noise generated by expanding activity between Upper Point Vicente and Golden Cove(i.e. 12 month Montessori School and additional Church activities).

The facility will constitute a safety hazard from golf balls that go astray. We can expect damage to the exterior of our homes, broken windows and possible injuries. The current plan calls for a berm covered with vegetation as a barrier between our homes and the driving range. We do not feel that this will be adequate and that at some future time they will be forced to erect nets and possibly lights. The vegetated berm could constitute a serious fire hazard.

Operating hours for the facility are not yet firm. They would likely operate from dawn to dusk or from approximately 6:00 am to 7:30 pm during the summer. There is a potential for lights being added to extend the operating hours during the fall and winter.

For the reasons stated above we strenuously oppose the current plan to put a driving range in the field adjacent to our homes.

We ask your support in opposing the location of this facility and request that you fill out the attached comment sheet and mail it to city hall to the attention of Dave Snow in the planning department.

For further information on the schedule of meetings that will be held on this project and others that impact our community the webpage for the city of Rancho Palos Verdes is: http://www.palosverdes.com/rpv/. You are encouraged to bookmark this site and visit it frequently.

Sincerely,

Paul A. Payne, President
Villa Capri HOA

COASTAL CONSERVATION COALITION

1 Peppertree Drive, Rancho Palos Verdes, CA 90275 (310) 541-1914, FAX (310) 541-4807

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PLANNING, BUILDING, & CODE ENFORCEMENT

August 29, 2000

Supporting Organizations

Sierra Club Angeles Chapter

South Bay Peninsula Audubon Society

California Native Plant Society South Coast Chapter

Save Our Coastline 2000

PVP Horsemens Association

Endangered Habitats League

Peninsula Preservation

Friends of the Madrona Marsh

City of Rancho Palos Verdes,
Dept. of Planning, Building and Code
c/o Mr. David Snow
30940 Hawthorne Boulevard
Rancho Palos Verdes, CA 90275

Re: Notice of Preparation (NOP) for Long Point Resort

It is the mission of The Coastal Conservation Coalition and its member organizations to insure the preservation of open space for passive public recreational use, and to protect natural habitats. We strongly oppose the use of public land for private development. In the case of Long Point, public input years ago resulted in an approved plan for the parcel. Conditions have changed little since then and we are unable to understand why the City of Rancho Palos Verdes (RPV) would consider approving this unsuitable new proposal.

As pointed out in our letter dated February 5, 1999, we are strongly opposed to the inclusion of City Hall open space in a private development. The current revision to that proposal still includes the Upper Point Vicente property. Back then, the developer insisted that without an 18 hole golf course his project would not be viable. Now, in this new version, the project is reduced to a 9 hole golf course and a driving range, much of it still on public land.

We would like to remind you that the developer already has an approved plan for a hotel plus a 9 hole golf course—though all on his own property. And the permits for it are kept
up to date. That project could have been build years ago. However, the new proposal includes bungalows and casitas where golf holes once were. Facilities that will bring more revenues to the project applicant, but not the City. So why is the city willing to give up about 65 acres of public open space for the benefit of a single developer? Especially when the City would have to change the General Plan, which only allows for
passive recreational use of the site, to fit this project. With such an action, we believe that RPV is setting a dangerous precedent.

Still worse, the City seems willing to jeopardize the local NCCP program, for which it is the lead agency, by allowing this project to go forwards outside of the NCCP process. It seems clear that the proposed project will significantly impact existing CSS habitat occupied by sensitive species on the site.
Important habitat connections and the restoration potential of the 65 acres site will also disappear. We urge the city to finalize the local NCCP before any development is allowed in areas important for this plan.

We are also extremely concerned about public access, an issue which needs to be thoroughly discussed in the DEIR. With the proposed project, passive recreational users will now be limited to the few public parking areas and parks that are identified in the conceptual development plan. The majority of the Upper Pt. Vicente site will be restricted to paying golf course users, not passive users. Additionally, we are concerned about the beach access. Currently there is access through the old Marineland site, which we expect to see maintained and made evident to the public. Recently implemented coastline projects have made public beach trails hard to find and then, potential users are intimidated by sign-in sheets and guard houses in "public parking lots with beach access". We see the same potential problem at Long Point, where massive development would be clustered right along the bluffs, blocking the view of the ocean.

Also, we wonder about the old Nike site and bunkers. Recently efforts are underway to preserve these sites, especially if they are, like in this case also associated with older WWII bunkers. The EIR needs to address these issues and get input from military and interested local sources. The issue of how this is a "public" golf course should be clarified. It is not clear whether or not most of the tee-off slots will not be reserved by the hotel for its patrons.

Sincerely,

Gar Goodson
Project Monitor

PUBLIC COMMENT FORM

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29 Aug 00

AUG 30 2000

PLANNING, BUILDING, & CODE ENFORCEMENT

PROJECT NAME:

Program Environmental Impact Report (EIR) for the Long Point Resort Project

NAME AND ADDRESS OF COMMENTOR: (include group or public agency affiliation, as applicable)

Mr. & Mrs. Mark Oliver Payne
44 Via Capri
Rancho Palos Verdes CA 90275
Members of the Villa Capri Home Owners Association

Telephone Number: (310) 377-6678

COMMENTS:

Please provide your comments on potential environmental issues/impacts which you feel should be addressed in further detail in the subject Program EIR. Attach additional pieces of paper, as needed.

This form and/or additional comments can be submitted to City Staff at the Scoping Meeting or mailed to the City of Rancho Palos Verdes, 30940 Hawthorne Boulevard, Rancho Palos Verdes, California 90275, Attention: Mr. Dave Snow, AICP, Principal Planner.

Dear Mr. Snow,

My wife and I, together with all of the local neighbors with whom we have been in contact, vigorously oppose the building of a driving range on the land adjacent the South border of the Villa Capri Town Homes. A facility such as this would be a serious detriment to the environment and well being of the families who live here. The noise from driven balls, voices, ball retrieving machinery and grounds maintenance would be quite excessive. Any sound produced in this area as far as R.P.V. City Hall is amplified by the shape of the terrain and carried down the hill directly to the town houses by the prevailing winds.

There would be a constant danger to the residents and properly from stray golf balls, even if the layout of the range encouraged people to hit them away from the buildings. (The harder a person drives a golf ball, the less directional control he is able to exersize over it.) This problem would eventually require the erection of unsightly safety nets. It is likely that bright ugly out door lights would have to be installed to allow for late afternoon and evening operations during Fall and Winter.

For these environmental (and for obvious security reasons) we strongly urge you not to approve the proposed driving range.

Sincerely, Mark O. Payne

PUBLIC COMMENT FORM

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AUG 30 2000
PLANNING, BUILDING,
& CODE ENFORCEMENT

PROJECT NAME:

Program Environmental Impact Report (EIR) for the Long Point Resort Project.

NAME AND ADDRESS OF COMMENTOR: (include group or public agency affiliation, as applicable)

Kolbas Eugene
66 Via Capri
Rancho Palos Verdes,CA 90275-5372

Telephone Number: (310) 541-9860

COMMENTS:

Please provide your comments on potential environmental issues/impacts which you feel should be addressed in further detail in the subject Program EIR. Attach additional pieces of paper, as needed.

This form and/or additional comments can be submitted to City Staff at the Scoping Meeting or mailed to the City of Rancho Palos Verdes, 30940 Hawthorne Boulevard, Rancho Palos Verdes, California 90275, Attention: Mr. Dave Snow, AICP, Principal Planner.

Thank you very much for sending to me this letter,with all explanations. They are all correct and there's no way that anybody can say the oposite!!!...

For all of us ,who are living in this area and the place of Rancho Palos Verdes another problem will eventually happen,namely that the value of our homes may DROP sharpely for just enumerated reasons (some individuals feel that the value could increase) I feel that some arrangemens and mechanisme should be established that this drop in value of our property should be compensated by this gulf course establishements,who created all this mess and problems.

PUBLIC COMMENT FORM

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AUG 30 2000

PLANNING, BUILDING,
& CODE ENFORCEMENT

PROJECT NAME:

Program Environmental Impact Report (EIR) for the Long Point Resort Project.

NAME AND ADDRESS OF COMMENTOR: (include group or public agency affiliation, as applicable)

Beth M. Lewis
24 Via Capri
Rancho Palos Verdes
California 90275

Telephone Number: 310 377 7419

COMMENTS:

Please provide your comments on potential environmental issues/impacts which you feel should be addressed in further detail in the subject Program EIR. Attach additional pieces of paper, as needed.

This form and/or additional comments can be submitted to City Staff at the Scoping Meeting or mailed to the City of Rancho Palos Verdes, 30940 Hawthorne Boulevard, Rancho Palos Verdes, California 90275, Attention: Mr. Dave Snow, AICP, Principal Planner.

As a homeowner in Villa Capri, I am STRONGLY against the driving range being constructed on PUBLIC land. Los Verdes has a fantastic, recently re-done, driving range + it is less than one mile away. The noise, potential injuries + lack of real need for this driving range are some of the reasons I oppose this project. I have a 3 year old daughter that I won't be able to let her play in my rear yard because a stray ball ~~can~~ could hit her, injure or even kill her. THIS PLAN is ridiculous! I can't imagine the city of RPV would approve this driving range except out of tax revenue greed. This facility will also directly impact the value of my home - negatively. No one ~~that~~ wants a driving range in their back yard. I invite you to my home to see the impact this driving/practice range will have on my quality of life. I am a single mother and can not afford to move, but I may be forced to if the City approves this project.

Beth Lewis
24 Via Capri

PUBLIC COMMENT FORM

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AUG 30 2000
PLANNING, BUILDING,
& CODE ENFORCEMENT

PROJECT NAME: VILLA CAPRI

Program Environmental Impact Report (EIR) for the Long Point Resort Project.

NAME AND ADDRESS OF COMMENTOR: (include group or public agency affiliation, as applicable)

PAULA BERNSTEIN
3 VIA SAN REMO
RPV, CA 90275

Telephone Number: 310 541-2622

COMMENTS:

Please provide your comments on potential environmental issues/impacts which you feel should be addressed in further detail in the subject Program EIR. Attach additional pieces of paper, as needed.

This form and/or additional comments can be submitted to City Staff at the Scoping Meeting or mailed to the City of Rancho Palos Verdes, 30940 Hawthorne Boulevard, Rancho Palos Verdes, California 90275, Attention: Mr. Dave Snow, AICP, Principal Planner.

I am opposed to a driving range on Upper Point Vicente. As a home owner I feel the noise traffic, hazards (balls) lights would decrease my property value as well as quality of life. There is much traffic on Hawthorne Blvd & PVDW already. This driving range would exceherate this problem.
I moved to this area for the elegance peace + quiet PV affords. This plan would not enhance the area. People from all over LA would use this facility. This in turn may compound theft robbery's etc. Please do not use this space as a driving range.

PALOS VERDES/SOUTH BAY AUDUBON SOCIETY
P.O. BOX 2582, PALOS VERDES PENINSULA, CA 90274

August 30, 2000

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PLANNING, BUILDING,
& CODE ENFORCEMENT

City of Rancho Palos Verdes
Dept. of Planning, Building and Code
c/o Mr. David Snow
30940 Hawthorne Boulevard
Rancho Palos Verdes, CA 90275

Re: LONG POINT N.O.P.

Dear Mr. Snow,

The main concern of the Palos Verdes/South Bay Audubon Society with respect to this project, and all studies that relate to it, is the preservation of natural open spaces and the valuable wildlife which lives around City Hall. For the last two years, proposals for Long Point's development have included some configuration of golf course placed on publicly owned open space where rare species live. As a result, Audubon has opposed to each proposal. The project described in this Notice of Preparation is no different. Therefore we are especially concerned that issues relating to open spaces, the Natural Communities Conservation Plan (NCCP) and wildlife be fully addressed.

The one-time federal land around City Hall, called the "Upper Point Vicente Area" in the N.O.P., is being looked to for off-site acreage for a nine-hole golf course, which we believe should be confined to Long Point per existing development permits. This land is a critical piece in the puzzle which will eventually become the NCCP preserve on the south side of the PV Peninsula. Yet, on page 4 of the N.O.P., the site's natural value is missing from the description of the project's setting and location. If this important fact is missing in something so basic, we fear that this and other critical factors will be missed elsewhere as well. One need only look at the bottom of page 10 of the N.O.P., where the impression is given that all habitat values there would be created virtually *de novo*, to see that this fear is not unfounded.

It is well known that the area around RPV City Hall has been the site of successful nesting populations of California Gnatcatchers and Cactus Wrens for many years. In studies by Jon Atwood and his Manomet Bird Observatory team, this population has been shown to be an important source of breeding birds for the peninsula's eventual NCCP Preserve. It seems unlikely that these could survive the intensive development planned for the area, however carefully it might be done. Edge effects due to the long thin strips of habitat resulting under the proposed project, could well prove fatal to many species initially present. Therefore, the EIR for this project must demonstrate how each project alternative will affect existing populations and their viability.

The EIR must also show how other aspects of the NCCP will be affected by this project and how an adequate evaluation can be made independently of a completed NCCP. The City, as lead

agency for the NCCP, has an obligation to see that no project is approved which prevents the NCCP from accomplishing its objectives. In this case, the likely effects on an eventual NCCP are great. Therefore, we expect to see a full discussion of how this EIR can be an adequate document without a completed NCCP. Audubon will also be interested to see what sorts of mitigation are proposed for use of existing open space, especially as it relates to the NCCP.

Although part of the existing permitted plan, the coastal bluffs do harbor valuable natural resources. We expect the EIR to address their presence and how damage to them will be mitigated. The immediate coastal area will also bear the brunt of the effects of most building and human use. Therefore, the ways in which ocean pollution are to be prevented and the means by which beach uses can be made compatible with current marine mammals use will be of great interest to us.

As part of the currently approved Long Point project (and a result of hard work by local environmental groups) are a 1.5-acre park adjacent to the Pt. Vicente Fishing Access and $500,000 to be set aside for environmental improvements. We believe those approval conditions still govern, and the current owners of the property must abide by their terms. Otherwise a complete redesign would result, initiating a new round of public review and approvals from the City, the Coastal Commission and other agencies. A related issue is what changes would be needed for the City General Plan under each alternative, and whether such changes would constitute a project redesign.

Thank you for your consideration of this matter.

Sincerely yours,

Jess Morton
President

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PLANNING, BUILDING,
& CODE ENFORCEMENT

August 30, 2000

To: David Snow
Planning Department
Rancho Palos Verdes

From: Don Johnson
A member of Save Our Coastline II

Re: Long Point Resort Golf Course
Initial Study/Environmental Checklist
Scenic Vistas

The enclosed photographs show beautiful ocean views that are currently available to everyone. They were taken from locations that will be occupied by the proposed golf course and golf cart paths on Point Vicente Park. If the course is built on city-owned land, these scenes will be enjoyed only by golfers. Golfers make up a very small percentage of the general public.

29707 Island View Drive, Number 6
Rancho Palos Verdes

Phone: 541-3451

VIEWS FROM PROPOSED PEDESTRIAN-PATH AREAS

THE NET AT NUMBER 2 TEE AT LOS VERDES GOLF COURSE
TO PROTECT HOUSES ON THE LEFT SIDE OF THE FAIRWAY
(AS SEEN FROM POINT VICENTE PARK)

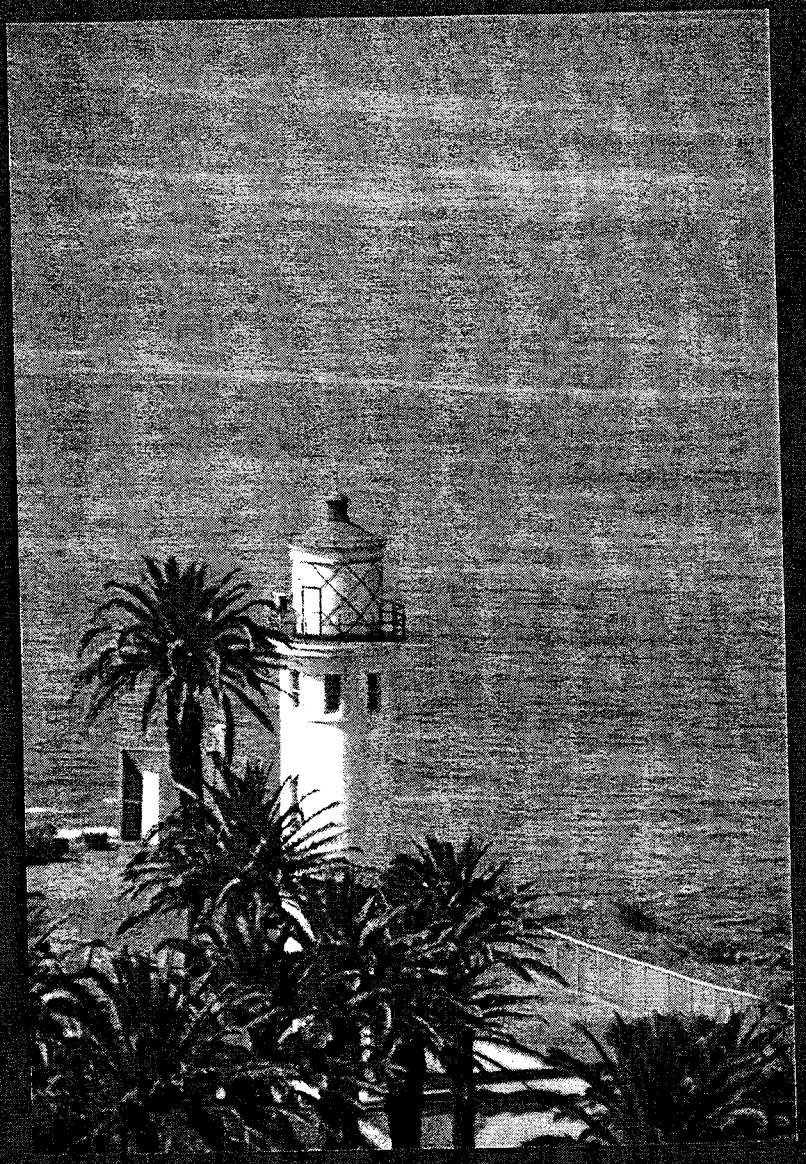
VIEWS ONLY GOLFERS WILL SEE

FOR GOLFERS ONLY

FOR GOLFERS ONLY

FOR GOLFERS ONLY

FOR
GOLFERS
ONLY



FOR GOLFERS ONLY

DOUGLAS W. STERN

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SEP 03 2000
PLANNING, BUILDING,
& CODE ENFORCEMENT

September 3, 2000

David Snow, AICP
City of Rancho Palos Verdes
Department of Planning, Building and Code Enforcement
30940 Hawthorne Blvd.
Rancho Palos Verdes, California 90275
(310) 544-5293

Re: Long Point Resort Initial Study/Environmental checklist

Dear Mr. Snow

I am submitting the following comments regarding the Long Point Resort Initial Study/Environmental checklist.

The present plan involves not only the use of the privately owned Long Point (102.1 acres) but also includes 64.9 acres of land owned by the city of Rancho Palos Verdes. The purported "need" for the use of city property is the lack of land on the Long Point site for the proposed 9 hole golf course. In order to free up additional land on the Long Point site, the owner should be required to provide all parking by way of subterranean parking.

Subterranean parking will have a number of beneficial impacts upon the environment.

- It will reduce the surface area used for parking, freeing up additional acreage for the owner to place its proposed golf course on its own property,
- It will reduce the need for exterior parking lighting, thereby eliminating the light pollution that has the potential to dramatically change the character of that part of our city and coastline,
- It would reduce the noise emanating from the property, as cars will be located in such a manner that engine noise will not be as easily heard as cars and buses start their engines,
- Reduce the distance at which noise can be heard, by providing "soft" areas of vegetation rather than the hard, flat areas of parking which would tend to allow the sound to carry greater distances,
- It will reduce the impact of polluted storm water run-off, adversely impacted by materials that would be deposited on the parking lot,
- It would eliminate the visual blight caused by a parking lot, thereby

2731 CORAL RIDGE ROAD · RANCHO PALOS VERDES, CALIFORNIA 90275 · (310) 519-0553
FACSIMILE (310) 519-8275 · E-MAIL: DOUGLASSTERN@HOTMAIL.COM · DSTERN@FULBRIGHT.COM

enhancing the view across the property.

The owner should also eliminate the 50 casitas and the 32 individually owned Resort Villas, similarly freeing up additional privately owned Long Point acreage for use as the proposed golf course. This would have at least the following beneficial impacts upon the environment.

- It will reduce the surface area used for buildings, freeing up additional acreage for the owner to place its proposed golf course on its own property,
- It would enhance the view across the property,
- Reduce potential noise impacting other neighbors.

Thank you for your consideration.

Sincerely,

Douglas W. Stern

>From janetdriskell@earthlink.net Sun Sep 03 14:35:46 2000
Date: Sun, 03 Sep 2000 14:37:21 -0700
From: Janet Driskell <janetdriskell@earthlink.net>
Reply-To: janetdriskell@earthlink.net
X-Mailer: Mozilla 4.05 [en] (Win95; U)
To: planning@rpv.com
Subject: opposition to longpoint dev save open space

RECEIVED
SEP 05 2000
PLANNING, BUILDING,
& CODE ENFORCEMENT

To: Mr. Dave Snow AICP Principal Planner City of RPV 9.3.2000
Mayor and Members of the City Council and Planning Commission
From: Rowland & Janet Driskell 30 Via Capri RPV 90275

Regarding: OPPOSITION TO LONG POINT RESORT PROJECT (Jim York & Associates)

1. Existing, undeveloped OPEN SPACE thru out the City: The limited remaining open space, that is the cherished possession of current and FUTURE RPV citizens, CANNOT BE GIVEN OR TRADED AWAY to anyone or any developer. What does not belong to you cannot be given away !! I question that this proposed give-away follows the principal guide lines of the original General Plan developed when the City was incorporated in the fall of 1973.

2. Undeveloped Open Space between City Hall and Villa Capri Homeowners:
A. There are 17 homes that adjoin the open field and all 49 homeowners in this complex would be adversely affected by ANY development of this field.
1. Our views of open space and the ocean would be compromised; we do not want to see "golf nets" , lighting that would washout the beauty of the stars at night and parking lots full of cars. Non-residential development On the Peninsula should be limited to the existing non-residential areas.
Let " the Hill" remain as rural as possible and be a place for home owners and families. There are already 5 golf courses on " the Hill" !!!
2. All 17 homes have living rooms and bedrooms six feet from the property line, with no easement. We do not want to lay in bed, look out our bedroom windows, and see people or machinery 6 feet from us.
3.The open space is currently home to: Peacocks, rabbits, raccoons, hawks, fox and other native species. Where will these Peninsula Natives be displaced to ???? Realizing the numerous other developments nearby have also displaced

native species , will these native "citizens" be exterminated ?
4. In our 14 years living here we have bought many post cards to send to friends and family who live elsewhere; almost all of these postcards feature the rolling hills and open space so unique to the greater L.A. area.
Please don't let these postcards become obsolete and a vestige of the last remaining Open Space on "the Hill". Please.

B. TRAFFIC: We have lived here for 14 years and have noticed a dramatic increase in traffic. Developing Open Space would further increase the undesirable effect of MORE TRAFFIC !! Our current roads should not

Page 2

have to be widened, stop lights added or city bus routes increased to accommodate more non-residential developments and the traffic they bring with them. Hawthorne Blvd. going downhill is one of the most beautiful of California roads AND one of the most DANGEROUS ! Adding unnecessary traffic can only make this scenic route MORE DANGEROUS !!!
Being aware of all the numerous developments built in the last three years, new traffic to the Long Point Project would utilize Hawthorne Blvd and/or Palos Verdes Drive West to PV Drive South. Both of these routes would go thru the heart of our residential enclave. Traffic from San Pedro to the Long Point area would be limited to small trucks and cars due to the shifting road thru the Portuguese Bend area--- so large trucks , buses and other large vehicles would travel thru already highly congested residential areas of "the Hill".

3. The Marketing and Public Relations SALESMEN associated with this project have often compared their future development to the established resorts of
the Del Coronado (San Diego) and the Ritz-Carlton (Laguna Hills) in regards to quality and amenities that will be duplicated. Neither resort has a golf course -so if the City of RPV is going to issue a building permit to Jim York (which I disagree with) then I think the PERMIT SHOULD NOT
INCLUDE a golf course or driving range . This is a residential community.

4. Our Peninsula is a fragile entity, subject to Mother Nature's blessings and curses; earthquakes, landslides, wind and water erosion, droughts and floods to name a few of the

curses. The recent calamities experienced by the Ocean Trails Golf and housing project should be ample warning to us of the inherent danger of projects developed to close to the worlds largest ocean. I'm reminded of the child who while fascinated and mesmerized by his first experience with fire, should be burned by the fire. Can we afford to be childish and not heed the recent warnings?

5. I almost didn't write this letter. If our Home Owner Association representative had not notified me of this forum and deadline for viewpoints to be expressed then our objections to this proposed development would not have been heard. So please be aware of the many area homeowners who have not expressed their objections to losing any of our remaining Open Space

Page 3

and the continuing non-residential development; such as what the Long Point Resort Project is.

6. Maybe this last point should be the topic of another letter, but I'll include it anyway. I would like to propose a Building Moratorium thru out the Peninsula 1000 feet inland from the ocean effect immediately. There has been so much recent development that without a moratorium to delay future projects we will not be able to realize the increased traffic, congestion and erosion to our quality of life until it's too late . I'm hopeful that the current City officials will share the far-sighted vision of the first elected City Council members who, when elected in the Fall of 1973, declared a building moratorium and began work on preparing the City's General Plan; realizing that the prudent development of the City was entrusted to them for all future residents to enjoy.

Please let quality prevail over quantity; less is more.

Sincerely,

Rowland and

Janet Driskell

Existing Golf Courses:

Ocean Trails Golf Club
Palos Verdes Golf Club
Harbor Park Golf Course
PVDrSouth
Los Verdes Golf Course
Hawthorne
Rolling Hills Country Club

Cove Center

Recent Developments:

Ocean Trails Housing
Over 100 homes on each side of Crest Road

Peninsula Pointe on

Many homes at the "end" of

Proposed remodel and additions to Golden

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SEP 05 2000

PLANNING, BUILDING,
& CODE ENFORCEMENT

>From expresley@hotmail.com Tue Sep 05 17:26:12 2000
X-Originating-IP: [172.167.57.212]
From: "Steve Carpenter" <expresley@hotmail.com>
To: davids@rpv.com
Subject: EIR
Date: Tue, 05 Sep 2000 17:31:30 PDT
X-OriginalArrivalTime: 06 Sep 2000 00:31:30.0384 (UTC) FILETIME=[CD0AB500:01C01799]

Submitted by:

Stephen Carpenter
6230 Scotmist Drive
Rancho Palos Verdes, CA 90275

I am a private citizen with no financial interest or connection with the proposed release of city parkland in the Upper Pt. Vicente area for use as a portion of a 9-hole golf course accompanying the Long Point hotel project.

What motivates me to write is a sense of deep dismay and betrayal that the city of Rancho Palos Verdes is considering releasing this property so as to let private landowners make a profit off of their investment.

Bottom line, if the hotel can't make a profit without a golf course, the developers must re-think their project.

The very idea that an exclusive 9-hole golf course, on a peninsula that already has at least 4 full-size courses, would be the drawing card that would make or break the hotel project, is Pollyanna-ish at best, purposely deceptive at worst.

There is no constitutional right to make money off of real-estate investment. City parkland is held in trust to prevent those who believe in this "right" from covering Palos Verdes in buildings and asphalt - and golf courses. When the western frontier was open and land was up for grabs, anything was possible. With so little of this resource left today, this unlimited "right" is no longer feasible. What of grandchildren? What of future generations who will look back on us as a selfish generation that built out the rest of the natural landscape?

I am a 30-year Peninsula resident who has seen the steady disappearance of the open space that made P.V. so special. The last 2 years have seen an unprecedented flood of development that has destroyed many places of solitude and beauty and left me sad, angry and sick to my stomach. Just in the last 2 years we have lost:

1. The entire "fun-zone" coastal plain at the ocean end of Hawthorne. Bikers, kids, hikers, lovers and all, have lost a coastal resource.

2. Ocean Trails: The destruction of the dense coastal sage scrub habitat, the historic military bunkers and Palos Verdes Blue Butterfly food plants that I personally found and monitored on the Ocean Trails site, not to mention the loss of the peaceful and lightly populated hiking trails and loss of cliff-side solitude is a horrible scar that will never fade, from the land or from my heart. This was

the most beautiful tract remaining in Palos Verdes, and future generations will never get to watch the Peregrine falcons and kestrels hunt for field mice at sunset, as I once did.

3. Fox Canyon off of Crest Rd. has been filled with unsightly clusters of cookie-cutter houses.

4. Pt. Vicente Park has been lost due to lead contamination, with no re-opening in sight.

5. There has been talk of closing and/or limiting access to the Forrestal property, now that the city has taken possession, due to "unsafe" trails. These trails have been traditionally accessed for untold decades. Any "improvement" should be limited to notice that users proceed at their own risk. RPV's traditional approach to parkland, such as indiscriminately gouging dusty, freeway-type trails as the city did last year on the Forrestal property, needs to be much more "hands-off" when approaching undeveloped parks such as this.

6. Access to the beach to fish or to watch a sunset has been effectively barred on the south side of the Peninsula, from Long Point to Abalone Cove. Traditional fishing trails have been fenced and gated shut in several luxury developments along this stretch, so that the old Long Point access is now the only point of access.
This access is grudging, and the parking lot closes at 4p.m.
In a Daily Breeze headline, Developer Jim York used the excuse that "miners" were destabilizing the cliffs along the traditional beach access trail to the spectacular cove below the Marineland site, to obtain an emergency closure order from the California Coastal Commission. York illegally barred access for 6 months after the emergency order expired, and only commendable pressure from Councilman John McTaggart reopened the gates. Access is still barred after the gates close, well before sunset - violating citizen rights under Coastal Commission statues regarding beach access. Before and during this emergency closure York allowed to proceed the filming of several TV shows and films, whose crews were apparently not in danger from the collapsing cliffs. One week before the emergency order was filed, I was yelled at on the beach trail by film crews who said I was "not supposed to be (there)." The next week I tried to access the beach, and the gates were shiny and new.

I give the preceding as examples of the impact development as had on Peninsula residents who wish to enjoy its natural component. These losses of open space were hard to prevent, because private property was involved.

Here with the proposed golf-course land swap, we are talking about city land. There must be more protection for remaining open space, and it really should go without saying that city-owned (read: citizen-owned) open space must be handled with the care of a brain surgeon. The Upper Pt. Vicente property is currently undeveloped - and should remain so. The idea that all city parkland should be "developed" parkland is too narrow and ignores the interest of those citizens who would like to go to a park to get AWAY from crowds of people. There are plenty of developed parks that provide amenities for those with strollers or infirmities. The parkland remaining for Peninsula residents such as me is small and quickly vanishing.
The walk through the Upper Pt. Vicente property to the scenic overlook above the lighthouse leads through remaining areas of sage scrub, by the remains of a 6" gun emplacement and a closed 21-room World War II bunker. Upon reaching the overlook, the view is gorgeous. Best of all, it is quiet.

This leads to my last point. As remaining open space in Palos Verdes in chewed up by the earthmovers, those who appreciate the solitude that P.V. has always offered are forced together

into smaller and smaller tracts when they go for a hike. Now it is uncommon to hike the Forrestal property without running across plenty of other folks, who are also unsuccessfully seeking the solitude that was there only 2 short years ago. Continued development and concentration of hikers in smaller areas destroys the solitude of these remaining small areas. A good case in point is how peacocks displaced by the Golden Cove luxury home project are being driven back into R.P.V. neighborhoods such as Stoneridge, where they had not been seen for 25 years.

All this will do is tear up more of the Peninsula and give it to golfers.
We have plenty of golf courses, and with Ocean Trails have permanently disfigured and sacrificed our southern coastline on the altar of the property tax and the little white ball. Elbow room is growing too scarce to let a developer justify his hotel project with a pathetic 9-hole golf course. This truncated course cannot supply an authentic 18-hole experience, and cannot be considered in the same economic breath as 18-hole courses. Golfers will not treat it as a "serious" course, and it certainly won't be a drawing card for a hotel.

No, the hotel and housing projects must stand on their own. This is the public trust developers are trying to break when they try to woo the city with visions of golf.

A deal with the Long Point developers will provide John Q. Public with what? A golf course he can't afford to play on? Hiking "trails" that have been groomed into manicured parkways with occasional golf-ball hail?

Please leave this public parkland as it is - undeveloped. In this format it can continue to serve the needs of those of us who have suffered the most from this 2-year development spree - lovers of the natural beauty of Palos Verdes.

Get Your Private, Free E-mail from MSN Hotmail at http://www.hotmail.com.

Share information about yourself, create your own public profile at http://profiles.msn.com.

PUBLIC COMMENT FORM

RECEIVED

SEP 05 2000

PLANNING, BUILDING, & CODE ENFORCEMENT

PROJECT NAME: Long Point & Upper Point Vicente

Program Environmental Impact Report (EIR) for the Long Point Resort Project

NAME AND ADDRESS OF COMMENTOR: (include group or public agency affiliation, as applicable)

Tim Hibsman
3 via Capri
Rancho Palos Verdes, CA 90275

Telephone Number: (310) 377-0376.

COMMENTS:

Please provide your comments on potential environmental issues/impacts which you feel should be addressed in further detail in the subject Program EIR. Attach additional pieces of paper, as needed.

This form and/or additional comments can be submitted to City Staff at the Scoping Meeting or mailed to the City of Rancho Palos Verdes, 30940 Hawthorne Boulevard, Rancho Palos Verdes, California 90275, Attention: Mr. Dave Snow, AICP, Principal Planner.

Dear Mr. Snow:

I moved into via Capri because it was quiet and attractive. The thought of a driving range horrifies me. The sound of balls being hit all day is a disgusting thought. Huge nets by Hawthorne blvd. and by our complex is just a matter of time.

I strenuously oppose the current plan to put a driving range in the field adjacent to our homes.

I appreciate your help in this crucial matter.

Sincerely,

Tim Hibsman

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SEP 05 2000

PLANNING, BUILDING,
& CODE ENFORCEMENT

September 5, 2000

Russell & Diana Hudak
38 Via Capri
Rancho Palos Verdes, Ca. 90275
310-544-7874

City of Rancho Palos Verdes
30940 Hawthorne Boulevard
Rancho Palos Verdes, Ca. 90275

Attention: Dave Snow
AICP, Principal Planner

When reviewing a project that will have a permanent impact on the beautiful coastline of Rancho Palos Verdes we must keep in mind the peace and tranquility that are currently enjoyed by both visitors and residents. As residents of Villa Capri, we feel that a driving range in Upper Point Vicente will have a detrimental effect on the quality of life in the area as a whole, and upon our lives in particular.

While considering the proposed driving range the Planning Commission must question the purpose and necessity of this "practice facility." Mike Mohler, in a meeting hosted by the developer at Long Point, explained that by placing a revenue generating portion of the project on public land they (Lowes Development Company) hope to make a good impression and win support from the public and City Council. In other words, they are using it as a marketing tool to gain support for the project. When asked if the developer could place the "practice facility" on the Long Point property, he said, " we would love to do that". He also stated that by having the driving range closer to the hotel it would facilitate it's use as a "teaching college", which is another marketing tool that they hope will draw people to the resort. That is understandable, but placing a driving range on precious city owned parkland along the California coast for the purpose of marketing a private hotel is unacceptable.

The driving range will generate significant noise that will be amplified by the surrounding hillside. Noise from normal conversation, loud speakers for announcements, tractors used to manicure the facility and machines used to pick up golf balls, either before opening or after closing hours, will disturb surrounding residential areas. This type of activity is better suited for, and would be well received the by developer, closer to the hotel on the Long Point property,

Traffic and parking generate significant noise too, and would constitute a significant safety hazard for children that attend day camp at St. Paul's church. The proposed Montessori School on the adjacent property and the tutoring program at the Golden Cove center bring many children into the area. The property cannot be accessed by a left hand turn and the constant flow of cross traffic with cars making U-turns at Point Vicente or Long Point will pose a hazard. Robert J. Lowe, in a letter to Long Point Resort Supporters, states that because of it's "isolated location and many amenities, visitors will enjoy their stay with little need to get into their cars." However, under the existing plan, visitors will need to be shuttled or drive to the driving range. By moving the facility to the Long Point property, where Lowe stated, "the developer will fund a signal at the Resort entry on Palos Verdes Drive South," the traffic problem will be solved and the driving range will be in an isolated location safe for both children and nearby residents.

The proposed driving range will also be the site of a building and parking lot to be constructed in full view of our homes and other residents. This will significantly alter the landscape and impede our existing view. Furthermore, while fencing is not called for in the original plan, we feel that it may be necessary later as the only solution to prevent errant golf balls from damaging passing cars and our homes. Errant balls would not cause a problem in the isolated location at Long Point.

In addition to the traffic hazards, view impairments and the safety of our children, we must consider the condition of the land itself. What assurances do we have that the land contamination in lower Point Vicente does not exist in Upper Point Vicente? Is the developer going to pay for the clean up in that situation? Would they have to drastically

change the design of the course in the middle of development, thereby, placing the driving range even closer to our homes? And what about drainage? Via Capri recently settled a multi million-dollar lawsuit concerning drainage, and ground water continues to be a major issue, not just for our homes but for the coast as well. The Planning Commission should seek answers to all of these questions so that public land does not become the center of expensive litigation.

The isolated location of Long Point with it's already existing capacity to facilitate traffic and parking is an easy choice for a driving range, as opposed to building near a church, a school, a shopping center, existing homes and on land that many be contaminated in the same manner as a nearby location. The developer has already indicated that he would welcome the facility as both a convenience and attraction, and the safety of all would be assured by directing traffic to the hotel resort at the Long Point location.

Respectfully,

R Hudak

Russell and Diana Hudak

PUBLIC COMMENT FORM

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SEP 05 2000

PLANNING, BUILDING, & CODE ENFORCEMENT

PROJECT NAME:

Program Environmental Impact Report (EIR) for the Long Point Resort Project.

NAME AND ADDRESS OF COMMENTOR: (include group or public agency affiliation, as applicable)

SUZANNE GULCHER
ST. Paul's Lutheran Church
31290 Palos Verdes Dr. W. RPV

Telephone Number: 310-377-6806 - Church
home 541-0889

COMMENTS:

Please provide your comments on potential environmental issues/impacts which you feel should be addressed in further detail in the subject Program EIR. Attach additional pieces of paper, as needed.

This form and/or additional comments can be submitted to City Staff at the Scoping Meeting or mailed to the City of Rancho Palos Verdes, 30940 Hawthorne Boulevard, Rancho Palos Verdes, California 90275, Attention: Mr. Dave Snow, AICP, Principal Planner.

see attached

COMMENTS AND CONCERNS RELATED TO THE LONG POINT PROJECT

ST. PAUL'S LUTHERAN CHURCH
31290 Palos Verdes Drive West
Rancho Palos Verdes

Submitted by Suzanne Gulcher
Church Council President

We would appreciate consideration being given to the following points which fall in the areas of visual, noise and air pollution. Perhaps some of our concerns would have been addressed if the developers of Long Point had met with us as they have other groups.

- Where will the maintenance facilities, employee parking, rest rooms and refreshment areas be located? When the plans were approved in 1989-1990 for the lot adjunct to St. Paul's, a restaurant was not permitted.

- Will all employees be parking in this area?

- Will the unnamed roadway between St. Paul's and the proposed facility be widened?

- What type of refreshments will available? How large will the facility be? (Note: In addition to our church, there plans have submitted for approval on the vacant lot next to St. Paul's.)

- How much additional traffic will be created around St. Paul's?

- What will be the hours of operation?

- Will there be outdoor lighing?

- We have concerns about golf ball hazards. What will be the placement of nets? It is bad enough to look up and see the massive nets above us at Los Verdes but another to have them next door to us.

- What will the effects of drainage be with all the additional watering?

St. Paul's is an active church with many weekday programs, in addition to Sunday, including children activities. We appreciate your consideration.

SIERRA CLUB
Palos Verdes - South Bay Group / Angeles Chapter

September 5, 2000

RANCHO PALOS VERDES PLANNING COMMISSION
MEETING OF 22 AUGUST 2000 AT HESSE PARK

SIERRA CLUB PRESENTATION

Mr. Chairman, Commission Members and Staff:

The following is my testimony regarding Item #3 on your agenda, the Long Point "EIR" Scoping or "NOP" Report.

Perhaps the most basic issue, that of "Public Recreational Land Use", has been just previously addressed by Mr. Al Sattler, who is the Conservation Chairman for our Angeles Chapter of the Sierra Club, which covers the Greater L.A. Basin. My personal comments are in behalf of the local Palos Verdes/South bay Group of the Sierra Club.

As previously addressed by Mr. Sattler, "Public Land Use for Recreational Purposes" --- of the former Federal Land is an overriding issue! However, upon reviewing the "NOP" Document dated 7-18-00 from the City, I did come up with two or three additional questions.

First: The subject of ownership for the proposed Golf Course: The Upper Point Vicente City-owned acreage represents over 1/3rd (38.5%) of the whole development! The Developers (York Long Point Associates, etc.) own less than 2/3s (61.5%) of all the land proposed for development! (And upon rechecking the numbers for the golf course itself, the City seems to own well over ½ the land for the whole golf course!) Who will own the completed golf course? Will the City share in the profits? Will the City share in the liabilities? Will the City sell, lease or allow the Developers to operate the Golf Course on behalf of the City? This needs serious clarification.

Second: Whatever happened to the N.C.C.P.? Does not the City have a commitment to the N.C.C.P. Program? I have been the Sierra Club Representative that attends these meetings, but there hasn't been a meeting for 8 or 9 months! Existing habitat in the Upper Point Vicente Area is perhaps the best habitat on the whole Peninsula! The proposed project locates four (4) golf holes and a driving range in this area. (Holes # 2, 3, 4, and 5)... which in my view can no longer then be considered to be habitat with all the human activities (players, maintenance, lights, equipment, etc.) even if the areas between the holes will be landscaped somehow with new "native plants".

P.O. Box 2464 • Palos Verdes Peninsula, California 90274

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Third: I leave with you the Corps of Engineer's understanding of N.C.C.P.'s... "N.C.C.P.'s are intended to result in Land Use Plans and Management Programs for long-term protection of designated habitats and their component species. The ultimate objective is to provide for regional protection and perpetration of natural wildlife diversity in a given area covered by the plan, while allowing compatible land use and appropriate development and growth." Is the proposed golf course development compatible with existing habitat and wildlife?

Thank you,

L.D. Vivian
Conservation Chairman
Sierra Club PV/So. Bay Group

Postscript:

We are not opposed to a hotel and a 9-hole golf course on the old Marineland Property. We are seriously opposed to the use of public parkland for a private development. We are concerned about runoff from any golf course or landscaping... as well as the effect of "safety nets" upon flying birds and esthetics of the site.

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PLANNING, BUILDING, & CODE ENFORCEMENT

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
900 SOUTH FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331
Telephone: (626) 458-5100

HARRY W. STONE, Director

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 1460
ALHAMBRA, CALIFORNIA 91802-1460

IN REPLY PLEASE REFER TO FILE: WM-0

October 12, 2000

Mr. David Snow, AICP
City of Rancho Palos Verdes
Department of Planning
Building and Code Enforcement
30940 Hawthorne Boulevard
Rancho Palos Verdes, CA 90275

Dear Mr. Snow:

RESPONSE TO A NOTICE OF PREPARATION/DRAFT ENVIRONMENTAL IMPACT REPORT (NOP/DEIR) - LONG POINT RESORT

Thank you for the opportunity to provide comments on the NOP/DEIR for the proposed Long Point Resort. We have reviewed the NOP/DEIR and offer the following comments:

Environmental Programs

As projected in the Los Angeles County Countywide Siting Element, which was approved by a majority of the cities in Los Angeles County in late 1997 and by the County Board of Supervisors in January 1998, a shortfall in permitted daily landfill capacity may be experienced in the County within the next few years. The construction and demolition activities and post-development operations associated with the proposed project may increase the generation of solid waste, and may negatively impact solid waste management infrastructure in the County. Therefore, the proposed Environmental Impact Report (EIR) must identify what measures the project proponent may implement to mitigate the impact. Mitigation measures may include, but are not limited to, implementation of waste reduction and recycling programs to divert the solid waste, including construction and demolition waste, from landfills.

The California Solid Waste Reuse and Recycling Access Act on 1991, as amended, requires each "development project" to provide an adequate storage area for collection and removal of recyclable materials. The proposed EIR should include/discuss standards to provide adequate "waste storage areas" for collection/storage of recyclable and green waste materials for this project.

The existing hazardous waste management (HWM) facilities in this County are inadequate to handle the hazardous waste currently being generated. The proposed project will generate hazardous waste and household hazardous waste which could adversely impact existing HWM facilities. This issue should be addressed and mitigation measures provided.

The proposed EIR will need to fully assess the impact of this project on the quality of stormwater runoff. The municipal stormwater National Pollutant Discharge Elimination System Permit issued to Los Angeles County and 85 cities (Permittees) by the Los Angeles Regional Water Quality Control Board on July 15, 1996, required the development and implementation of a program addressing stormwater pollution issues in development planning for private projects. Part of the resulting program to address these stormwater pollution issues is a Standard Urban Stormwater Mitigation Plan (SUSMP) to be used by the Permittees and the City of Rancho Palos Verdes was approved on March 8, 2000.

The appropriate post construction Best Management Practices selected and incorporated into the project plans should be in compliance with the local jurisdiction's Development Planning Program and SUSMP.

If any connections are made to any County storm drains, channels, creeks or other water bodies, a permit is required from this Department's Construction Division.

Should any operation within the subject project include the construction/installation, modification, or removal of underground storage tanks and/or industrial waste control or disposal facilities, Public Works' Environmental Programs Division must be contacted for required approvals and operating permits. POSSIBLE ON DPVA

If you have any questions regarding the above comments, please contact Ms. Rosa Moreno at (626) 458-6974.

Land Development

to whom?

DS? TBC IN LIST.

The applicant shall submit a drainage concept for review and approval prior to approval of these environmental documents. This project has impact to water quality and should incorporate permanent post construction Best Management Practices to mitigate this impact. We, therefore, recommend that sufficient information be submitted to Public Works showing the extent of drainage problems and proposed solutions for review.

If you have any questions, please contact Mr. Perfecto Tobias at (626) 458-4921.

Traffic and Lighting

We do not expect the proposed project will have a significant impact on County roadways in the area.

We recommend that adjoining cities review this document for significant impacts/mitigations within their jurisdictions.

If you have any questions, please contact Mr. Garland Seto of our Traffic Studies Section at (626) 300-4848.

If you have any questions regarding the environmental reviewing process of this Department, please contact Ms. Carrie Inciong at the address on the first page or at (626) 458-4346.

Very truly yours,

HARRY W. STONE
Director of Public Works

C.O.Ig

for ROD H. KUBOMOTO
Assistant Deputy Director
Watershed Management Division

SS:ro
A:\SS474.wpd

CORRESPONDENCE

WATER RECLAMATION
SOLID WASTE MANAGEMENT

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (562) 699-7411, FAX: (562) 699-5422
www.lacsd.org

JAMES F. STAHL
Chief Engineer and General Manager

August 7, 2000

File No: 05-00.04-00

Mr. David Snow, AICP
City of Rancho Palos Verdes
30940 Hawthorne Boulevard
Rancho Palos Verdes, CA 90275

Dear Mr. Snow:

Long Point Resort, Tentative Parcel Map No. 26073,
Coastal Permit No. 166, Conditional Use Permits Nos. 215 and 216

The County Sanitation Districts of Los Angeles County (Districts) received a Notice of Preparation of a Draft Environmental Impact Report for the subject project on July 20, 2000. The proposed development is located within the jurisdictional boundaries of District No. 5. We offer the following comments regarding sewerage service:

1. Because of the project's location, the flow originating from the proposed project would have to be transported to the Districts' trunk sewer by local sewer(s) which are not maintained by the Districts. If no local sewer lines currently exist, it is the responsibility of the developer to convey any wastewater generated by the project to the nearest local sewer and/or Districts' trunk sewer.

2. The nearest Districts' trunk sewer is the Joint Outfall "J" Unit 1G Trunk Sewer, located in a right of way north of Palos Verdes Drive South and west of Crestmont Lane. This 21-inch diameter trunk sewer has a peak capacity of 5.2 million gallons per day (mgd) and conveyed a peak flow of 2.3 mgd when last measured in 1996.

3. The wastewater generated by the proposed project will be treated at the Joint Water Pollution Control Plant (JWPCP) located in the City of Carson. The JWPCP has a design capacity of 385.0 mgd and currently processes an average flow of 332.4 mgd.

4. The following table contains a breakdown of the expected average wastewater flow from the project site.

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constitute a guarantee of wastewater service, but is to advise you that the Districts intend to provide this service up to the levels which are legally permitted and to inform you of the currently existing capacity and any proposed expansion of the Districts' facilities.

If you have any questions, please contact the undersigned at (562) 699-7411, extension 2717.

Very truly yours,

James F. Stahl

Ruth I. Frazen

Ruth I. Frazen
Engineering Technician
Planning & Property Management Section

RIF:eg

(323) 890-4330

August 14, 2000

David Snow, AICP
City of Rancho Palos Verdes
30940 Hawthorne Boulevard
Rancho Palos Verdes, CA 90275

Dear Mr. Snow:

SUBJECT: ENVIRONMENTAL IMPACT REPORT – (CITY OF RANCHO PALOS VERDES) INITIAL STUDY/ENVIRONMENTAL CHECKLIST, "LONG POINT RESORT" (COASTAL PERMIT #166, CUPS #215 & #216, TPM #26073, AND GRADING PERMIT #2229 & #2230) - EIR #943/2000

The Initial Study/Environmental Checklist for the Long Point Resort Project has been reviewed by the Planning, Subdivision, and Forestry Divisions of the County of Los Angeles Fire Department. The following are their comments:

PLANNING:

Fire protection serving the area appears to be adequate for the existing development/land use; however, each additional development creates greater demands on existing resources. Consequently, the impact that this project will have on the adequacy of the Fire Department's level of service remains uncertain.

It would be helpful if the environmental document specifies the square footage of all proposed structures and of any existing structures in the former Marineland site that are scheduled for demolition.

DESIGN AND CONSTRUCTION -- GENERAL REQUIREMENTS:

Size, complexity, and projected use of the proposed development may necessitate multiple ingress/egress access for the circulation of traffic, and emergency response issues. The development of this project must comply with all applicable code and ordinance requirements for construction, access, water main, fire flows and hydrants.

This property is located within the area described by the Forester and Fire Warden as a Fire Zone 4, Very High Fire Hazard Severity Zone (VHFHSZ). All applicable fire code and ordinance requirements for construction, access, water mains, fire hydrants, fire flows, brush clearance and fuel modification plans, must be met.

Specific fire and life safety requirements for the construction phase will be addressed at the building fire plan check. There may be additional fire and life safety requirements during this time.

Every building constructed shall be accessible to fire department apparatus by way of access roadways, with an all weather surface of not less than the prescribed width, unobstructed, clear to the sky. The roadway shall be extended to within 150 feet of all portions of the exterior walls when measured by an unobstructed route around the exterior of the building.

Any bridges to be constructed shall be constructed and maintained in accordance with nationally recognized standards and designed for a live load sufficient to carry a minimum of 70,000 pounds.

When involved with subdivision, Fire Department requirements for access, fire flows and hydrants are addressed during the subdivision tentative map stage.

It is strongly suggested that fire sprinkler systems be installed in all commercial and residential buildings. This will reduce potential fire and life losses. Systems are now technically and economically feasible for residential use.

COMMERCIAL OR INDUSTRIAL:

Development may require fire flows up to 5,000 gallons per minute at 20 pounds per square inch residual pressure for up to a five hour duration. Final fire flows will be based on the size of the buildings, their relationship to other structures, property lines, and types of construction used. Fire hydrant spacing shall be 300 feet and shall meet the following requirements:

1. No portion of lot frontage shall be more than 200 feet via vehicular access from a public fire hydrant.

2. No portion of a building should exceed 400 feet via vehicular access from a properly spaced public fire hydrant.

All on-site driveways shall provide a minimum unobstructed width of 26 feet, clear-to-sky. The on-site driveway is to be within 150 feet of all portions of the exterior walls of the first story of any building. Driveway width for commercial or industrial developments shall be increased when any of the following conditions will exist:

1. Provide 28 feet width when buildings are three stories or more than 35 feet in height above access level. Also, for using fire truck ladders, the centerline of the access roadway shall be located parallel to, and within 30 feet of the exterior wall on one side of the proposed structure.

2. Provide 34 feet width when parallel parking is allowed on one side of the access roadway/driveway. Preference is that such parking is not adjacent to the structure.

3. Provide 42 feet width when parallel parking is allowed on each side of the access roadway/driveway.

4. All "Fire Lanes" will be depicted on the final map, and will be designated with the appropriate signage. "Fire Lanes" are any ingress/egress roadway/driveway with paving less than 34 feet in width, and will be clear-to-sky.

HIGH-DENSITY RESIDENTIAL:

Development may require fire flows up to 5,000 gallons per minute at 20 pounds per square inch residual pressure for up to a five-hour duration. Final fire flows will be based on the size of the buildings, their relationship to other structures, property lines, and types of construction used. Fire hydrant spacing shall be 300 feet and shall meet the following requirements:

1. No portion of lot frontage shall be more than 200 feet via vehicular access from a public fire hydrant.

2. No portion of a building should exceed 400 feet via vehicular access from a properly spaced fire hydrant.

All on-site driveways shall provide a minimum unobstructed width of 26 feet, clear-to-sky. The on-site driveway is to be within 150 feet of all portions of the exterior walls of the first story of any building. The 26 feet width does not allow for parking, and shall be designated as a "Fire Lane," and have appropriate signage. The 26 feet width shall be increased to:

1. Provide 34 feet width when parallel parking is allowed on one side of the access way.

2. Provide 36 feet width when parallel parking is allowed on both sides of the access way.

3. Any access way less than 34 feet in width shall be labeled "Fire Lane" on the final recording map, and final building plans. Driveway labeling is necessary to ensure access for Fire Department use.

Should any questions arise regarding design and construction, and/or water and access, please contact Inspector Mike McHargue at (323) 890-4243.

OTHER ENVIRONMENTAL CONCERNS:

The statutory responsibilities of the County of Los Angeles Fire Department Forestry Division include erosion control, watershed management, rare and endangered species, vegetation, fuel modification for Very High Fire Hazard Severity Zones or Fire Zone 4, archeological and cultural resources and the County Oak Tree Ordinance. Potential impacts in these areas should be addressed in the Draft EIR.

Oak trees are known to exist in the proposed project area. Further field studies should be conducted to determine the presence of this species on the project site. The applicant should incorporate innovative design to reduce or eliminate the impact to any Oak resources and the loss of any Oak tree habitat should be mitigated for pursuant to the provisions of the City's Tree Management Policy.

As required by Section 1117.2.1 of the County Fire Code a fuel modification plan, a landscape plan and an irrigation plan shall be submitted with any subdivision of land or prior to any new construction, remodeling, modification or reconstruction where such activities increase the square footage of the existing structure by at least

50% within a 12-month period and where said structure or subdivision is located within an area designated as a Very High Fire Hazard Severity Zone or within Fire Zone 4. Said plans shall be reviewed and approved by the Forestry Division of the County of Los Angeles Fire Department for reasonable fire safety. Specific questions regarding fuel modification requirements should be directed to the Brush Clearance Office at (626) 969-2375.

If you have any additional questions, please contact this office at (323) 890-4330.

Very truly yours,

David R. Leininger

DAVID R. LEININGER, ACTING CHIEF, FORESTRY DIVISION
PREVENTION BUREAU

DRL:lc

WATER RECLAMATION
SOLID WASTE MANAGEMENT

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (562) 699-7411, FAX: (562) 699-5422
www.lacsd.org

JAMES F. STAHL
Chief Engineer and General Manager

RECEIVED
AUG 18 2000
RBF CONSULTING

August 15, 2000

File No: 05-00.00-00

Ms. Adrianne Fasone
Environmental Analyst
RBF Consulting
14725 Alton Parkway
Irvine, CA 92618-2027

Dear Ms. Fasone:

Long Point Resort, Tentative Parcel Map No. 26073,
Coastal Permit No. 166, Conditional Use Permits Nos. 215 and 216

This is in reply to your letter which was received by the County Sanitation Districts of Los Angeles County (Districts) on August 14, 2000. The proposed development is located within the jurisdictional boundaries of District No. 5. We offer the following comment regarding sewerage service:

- Previous comments submitted by the Districts in correspondence dated August 7, 2000 (copy enclosed), to Mr. David Snow of the City of Rancho Palos Verdes, still apply to the subject project.

If you have any questions, please contact the undersigned at (562) 699-7411, extension 2717.

Very truly yours,

James F. Stahl

Ruth I. Frazen

Ruth I. Frazen
Engineering Technician
Planning & Property Management Section

RIF:eg

Enclosure

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WATER RECLAMATION
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JAMES F. STAHL
Chief Engineer and General Manager

August 16, 2000
File: 31R-100.20

RECEIVED
AUG 21 2000
RBF CONSULTING

Ms. Adrianne Fasone
Robert Bein, William Frost & Associates
14725 Alton Parkway
Irvine, CA 92618-2027

Dear Ms. Fasone:

Long Point Resort Program Environmental Impact Report

The Sanitation Districts have received your letter, dated August 10, 2000, and offer the following comments in regard to solid waste management for the above-mentioned project within the City of Rancho Palos Verdes:

1. The Puente Hills Landfill is the closest solid waste disposal facility, operated by the Sanitation Districts, that would accept waste originating from the Long Point Resort project. The Sanitation Districts also operate the South Gate Transfer Station in the vicinity of the Long Point Resort project.

   The Puente Hills Landfill is a publicly owned and operated disposal facility open to the public. Currently, the Puente Hills Landfill closes early due to permit-imposed tonnage restrictions. The existing local land permit authorizes the disposal of a maximum of 13,200 tons per day, not to exceed 72,000 tons per week. This permit is valid through November 1, 2003, at which time it will have to be renewed to continue operations. The South Gate Transfer Station is a publicly owned and operated municipal solid waste transfer facility open to the public. The transfer station currently accepts approximately 545 tons per day of refuse. Permitted capacity and other information for both facilities are detailed in the enclosed fact sheets.

2. The Sanitation Districts do not develop solid waste generation rates. For this information, please contact the California Integrated Waste Management Board.

3. For information concerning solid waste collection in the project area, please contact the City of Rancho Palos Verdes Public Works Department at (310) 544-5252.

4. The County of Los Angeles is facing a serious disposal crisis, both in terms of the daily capacity and long term disposal capacity available, that requires every effort to minimize the amount of wastes generated. Any new development exacerbates an already serious disposal capacity shortfall. Wastes

generated from new development projects may displace the wastes already coming to regional landfills, accelerate the landfill closures, or cause a more distant site to be used. As a result, the environmental documentation should evaluate whether this project could have a significant cumulative impact on solid waste management in Los Angeles County.

5. The California Integrated Waste Management Act, AB 939, requires cities to divert 25 percent and 50 percent of the wastestream away from land disposal by the years 1995 and 2000, respectively. In order to assist in meeting these goals, the Sanitation Districts recommend that the proposed development incorporate storage and collection of recyclables into each project design. It is recommended that refuse collection contracts include collection of recyclables. All occupants should be encouraged to recycle, at a minimum, newspaper, glass bottles, aluminum and bimetal cans, and P.E.T. bottles. Recycling should be included in the design of the project by reserving space appropriate for the support of recycling, such as adequate storage areas and access for recycling vehicles. In addition, all contractors should be urged to recycle construction and demolition wastes to the extent feasible. It should be recognized that, even with recycling, adequate regional disposal capacity is needed to accommodate new developments. If you have any further questions about recycling, please contact Bill George, who is the Recycling Coordinator for the Sanitation Districts, at extension 2427.

If you have any questions regarding these comments, please contact the undersigned at (562) 699-7411, extension 2456.

Very truly yours,

James F. Stahl

Felicia Ursitti
Project Engineer
Solid Waste Management Department

FAU:ksc
Enclosures

FACT SHEET
PUENTE HILLS LANDFILL

LOCATION:

2800 South Workman Mill Road
Whittier, CA 90601

Immediately southeast of the intersection of the San Gabriel Valley (I-605) Freeway and the Pomona (SR-60) Freeway, in unincorporated Los Angeles County.

PROJECT DESCRIPTION:

The 1365-acre Puente Hills Landfill site is owned and operated by the Sanitation Districts of Los Angeles County (Sanitation Districts) in compliance with federal, state and local standards. With the exception of certain holidays, the site is open to the public six days a week (Monday through Saturday) from 6:00 a.m. to 5:00 p.m.

The landfill operation is designed to eliminate or minimize any potential impacts on nearby residents. Refuse accepted for disposal is compacted by crawler tractors and covered at the end of each workday. All refuse receives daily cover 9 to 12 inches in depth. Various specific measures are employed to control potential nuisances due to noise, odor, litter, dust, and vectors and to minimize landfill traffic impacts and overall visual impacts.

BACKGROUND:

The site was first permitted as a privately owned landfill in 1957. In 1970, the Sanitation Districts purchased the site and took over operation of the landfill. Puente Hills Landfill accepts only non-hazardous solid and inert waste; the disposal of hazardous or liquid waste is not allowed. Over 80 million tons of refuse have been disposed of at the site.

The existing local land use permit, which was issued on August 30, 1994, authorizes a fill design of 37 million tons. This permit is valid through November 1, 2003, at which time it will have to be renewed in order to continue operations.

Puente Hills Landfill operates in compliance with the following permits and requirements:

- Conditional Use Permit (CUP No. 92-250-(4)) issued by the Los Angeles County Board of Supervisors.
- Solid Waste Facilities Permit (No. 19-AA-053) issued by the County of Los Angeles - Department of Health Services.
- Waste Discharge Requirements (Order No. 90-046, 91-035, 93-062 and 93-070) issued by the California Regional Water Quality Control Board, Los Angeles Region.
- Air quality permits issued by the South Coast Air Quality Management District.

PROJECT DESIGN FEATURES:

The Sanitation Districts have constructed engineered environmental control systems to eliminate, or reduce to minimal levels, potential impacts on the environment and surrounding areas from landfill activity, including:

- Gas Collection and Monitoring Systems. Landfill gas and odor control and monitoring systems have been installed and will be maintained throughout the filling period, and after landfill closure, to minimize gas migration and odor releases. These systems include: gas collection wells on the slope areas, a series of horizontal gas collection trenches on the deck area, and thirty-two (32) gas monitoring probes around the perimeter of the landfill. A landfill gas-to-energy facility has been constructed at the site which recovers energy from the gas collected on site. Landfill gas is burned in a boiler, and a steam turbine-generator is used to generate up to 50 megawatts (gross) of electricity. This is equivalent to the electricity consumed by approximately 100,000 homes.

- Groundwater Protection System. Sophisticated liner systems are constructed over the bedrock and canyon bottoms to prevent potential contact of moisture contained in the refuse from groundwater. Subsurface barrier systems have also been installed to prevent water from moving off-site. Water that collects at a barrier is removed and treated before being discharged to the Sanitation Districts' sewer system. Thirty (30) groundwater monitoring wells have been installed at and around the landfill to sample groundwater quality. These wells are routinely monitored and the water quality is evaluated on an on-going basis.

- Dust and Litter Control. Control of dust and litter is carried out on a continuous basis. Water trucks spray the access roads and excavation areas to control dust from truck traffic and landfill operations. Litter is controlled by litter fences and by the daily application of cover material. Sanitation Districts employees routinely police the area for litter and debris. The Sanitation Districts enacted an ordinance which requires vehicles using Puente Hills Landfill to cover their loads or pay an additional surcharge and be cited. Following three citations for uncovered loads, the customer faces suspension of disposal privileges. This ordinance acts as a deterrent to the littering of roadways on and off the Sanitation Districts' property.

- Illegally Deposited Wastes. The Sanitation Districts and the County of Los Angeles - Department of Health Services monitor the disposal area on a continuous basis for illegally deposited hazardous, toxic or infectious wastes. The Sanitation Districts have also instituted a load checking program consisting of a random selection of at least seven loads each day for a thorough search. If illegal wastes are found, they are transferred to appropriate off-site disposal facilities. The hauler whose load contained the illegal waste is charged for proper disposal and, for repeated violations, faces suspension of disposal privileges. This program acts as a strong deterrent to illegal disposal of wastes at the Puente Hills Landfill.

- Landscape and Irrigation System. Finished slopes of the landfill are landscaped, and irrigation systems are installed. Additional landscaping and irrigation systems will be installed as landfill operations progress. The Sanitation Districts have worked actively with surrounding communities to develop appropriate landscaping.

- Resource Recovery. The Sanitation Districts have instituted a comprehensive resource recovery program at Puente Hills Landfill. Asphalt and clean dirt are accepted free of charge for reuse on site. Asphalt is used for road construction, and clean dirt is used as daily cover. Clean loads of green waste (grass and tree trimmings) are accepted at a reduced rate at the landfill. The Sanitation Districts grind the green waste and use it for daily cover. The green waste recovery program saves valuable landfill capacity and cover soil and provides an immediate market for cities implementing separate green waste collection.

  The Sanitation Districts also operate a recycling center at the west entrance to the landfill. The recycling center, which is open to the public Wednesday through Saturday from 8:30 a.m. to 4:00 p.m., accepts glass, aluminum and tin cans, paper, plastic beverage containers, and waste oil.

NATIVE HABITAT PRESERVATION AUTHORITY:

The Puente Hills Landfill Native Habitat Preservation Joint Powers Authority (JPA) has been established for the purpose of acquiring, restoring and/or maintaining open space lands in the La Puente/Whittier Hills/Hacienda Heights area, adjacent to the landfill. The JPA, which is governed by a Board of Directors composed of representatives from the Sanitation Districts, the County of Los Angeles, the City of Whittier and the Hacienda Heights Improvement Association, is funded by an annual payment by the Sanitation Districts of one dollar per ton of refuse disposed of at the landfill during the landfill operation under CUP No. 92-250-(4). To date, over 921 acres of valuable native habitat within the region surrounding the landfill have been preserved and are being maintained by the Authority.

ULTIMATE USE OF THE SITE:

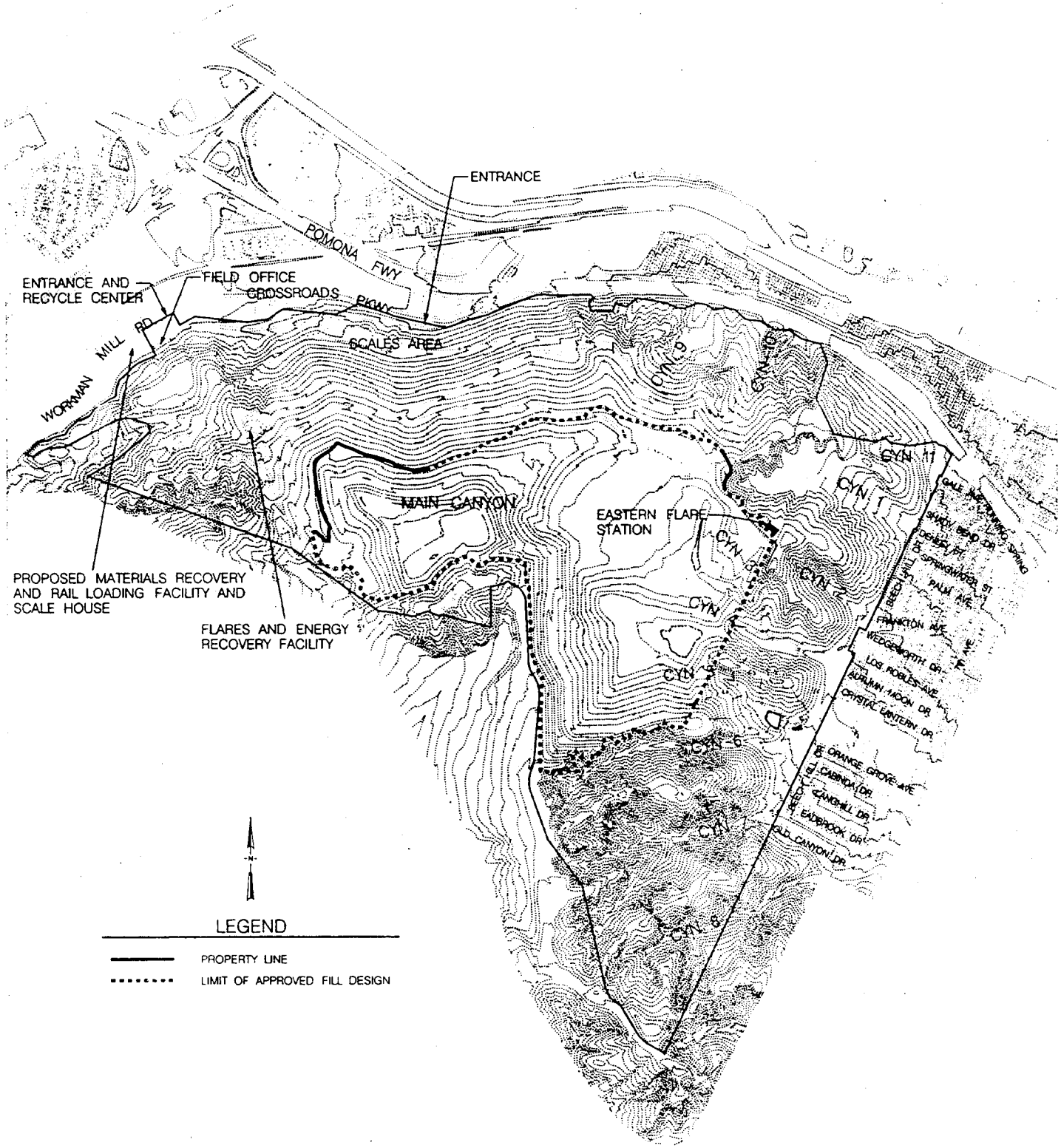
After landfilling is completed, the site will be ultimately dedicated for park and recreational use, the specifics of which will be the subject of future planning between the surrounding community and the County Department of Parks and Recreation. Funding for park planning and development will be provided by the Sanitation Districts through the tipping fee charged at the landfill.

Despite the fact that top priority must be given to recycling and waste diversion activities (programs which are encouraged and supported by the Sanitation Districts through the resource recovery programs at the Puente Hills Landfill), adequate disposal capacity must be provided for those materials not recycled or diverted. The Puente Hills Landfill is an important disposal facility in the regional solid waste management system.

FOR ADDITIONAL INFORMATION, CONTACT:

Sanitation Districts of Los Angeles County
Solid Waste Management Department
1955 Workman Mill Road
P. O. Box 4998
Whittier, CA 90607
(562) 699-7411

Revised June 1998



PUENTE HILLS LANDFILL

SCALE 1" = 2000'
TOPOGRAPHY DATE: OCT 1998

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FACT SHEET
SOUTH GATE TRANSFER STATION

LOCATION:

9530 South Garfield
South Gate, CA 90280

In the City of South Gate, east of the Long Beach Freeway (I -710) at the Firestone Blvd exit (see attached map).

PROJECT DESCRIPTION:

South Gate Transfer Station is owned and operated by the Sanitation Districts of Los Angeles County (Districts). The site is open to public access from 6:00 a.m. to 5:00 p.m., six days a week (Monday through Saturday), with the exception of certain holidays.

The transfer station is operated in compliance with Federal, State, and local standards, and to eliminate or minimize any potential impacts on nearby residents. Various specific measures are employed to control potential nuisances due to noise, odor, litter, dust, and vectors and to minimize traffic impacts and overall visual impacts.

BACKGROUND:

South Gate Transfer Station opened in 1958 and accepts only non-hazardous municipal solid and inert waste. The acceptance of liquid or hazardous waste is not allowed. The transfer station currently accepts approximately 545 tons per day of refuse.

PERMITS:

South Gate Transfer Station is operated in compliance with the following permits and requirements:

- Solid Waste Facilities Permit (No. 19-AA-0005), issued by the County of Los Angeles- Department of Health Services.
- State Water Resources Control Board Water Quality Order (No. 97-03-DWQ) and National Pollution Discharge Elimination System General Permit (No. CAS000001)

PROJECT DESIGN FEATURES:

The Sanitation Districts employ several environmental control systems, which are expanded as necessary, to eliminate or reduce to minimal levels potential impacts on the environment and surrounding areas from transfer station activity. These measures include:

- **Litter and Odor Control** Walls and fences have been constructed around the site perimeter to contain litter. The yard, driveways, and internal roads are cleaned daily by facility personnel. All transfer trailers are covered when traveling to and from the site to prevent windblown litter.

The majority of incoming refuse contains relatively few organics or materials that produce odors. The Districts remove the waste in the holding area rapidly minimizing the potential for odor generation.

- **Dust Control** South Gate Transfer Station is designed and operated to minimize the creation, emission and accumulation of excessive dust and particulates, and to prevent other safety hazards to the public caused by obscured visibility. Measures to control dust include handling the waste only as necessary, spraying the waste with water as needed, periodic sweeping and cleaning, and ventilation control.

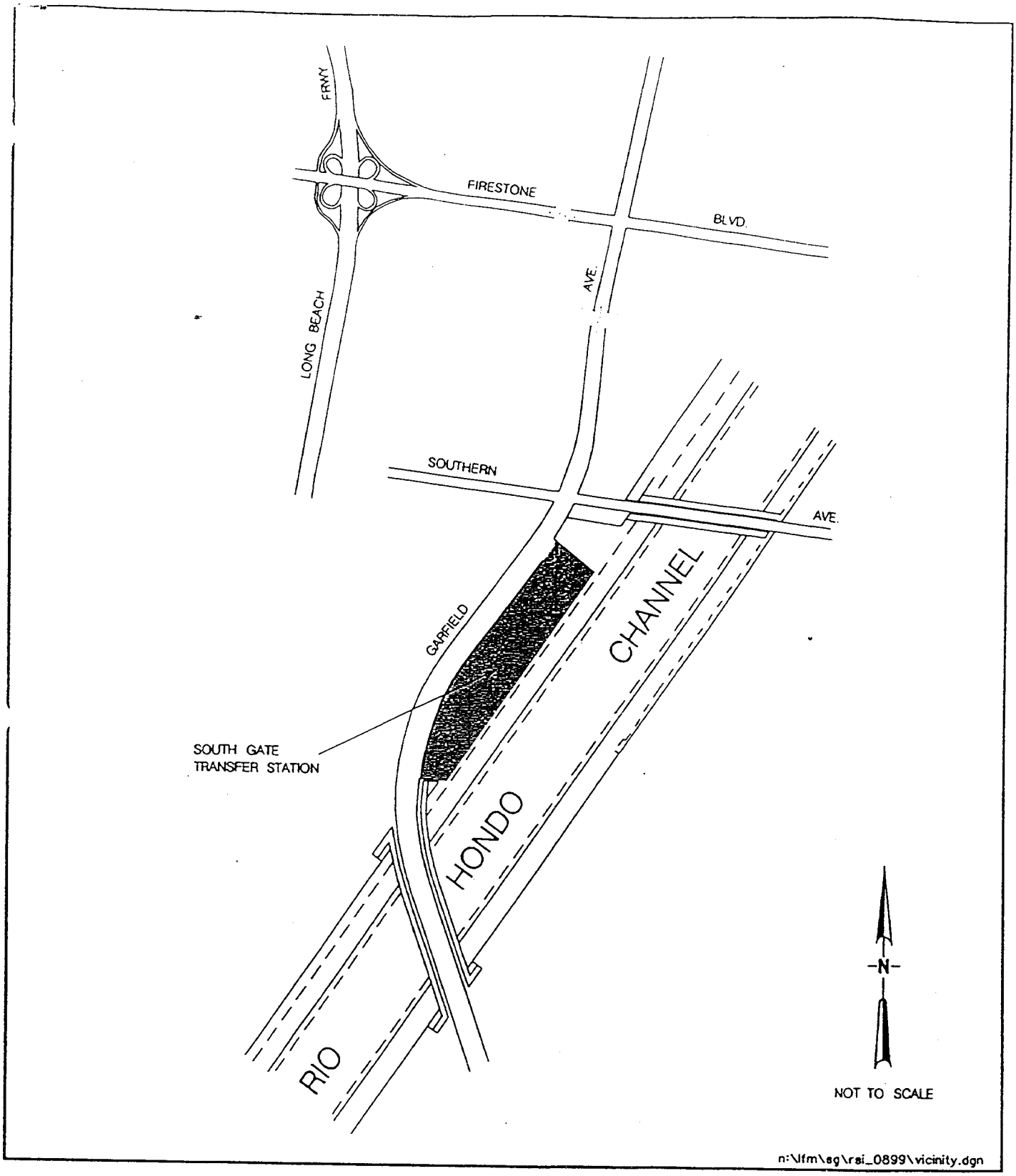
- **Illegally Deposited Wastes** The Sanitation Districts continuously monitor the tipping area for illegally deposited hazardous, toxic, or infectious wastes. The Sanitation Districts have also instituted a load checking program consisting of a random selection of at least one load each day for a thorough search. If unacceptable wastes are found, they are transferred to appropriate off-site disposal facilities. The hauler whose load contained the waste is charged for the cost of proper disposal, and in the case of repeat violations, faces suspension of disposal privileges. This program acts as a strong deterrent to delivery of illegal wastes to the transfer station by haulers.

- **Resource Recovery** The Districts conduct a resource recovery program that consists of removal of scrap metals such as refrigerators and pipes from the refuse for recycling. Currently, an average of approximately 10 tons of scrap metal is recovered at South Gate Transfer Station each month.

FOR ADDITIONAL INFORMATION CONTACT:

Sanitation Districts of Los Angeles County
Solid Waste Management Department
1955 Workman Mill Road
P.O. Box 4998
Whittier, CA 90607
(562) 699-7411

Revised April 4, 2000



COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

SOLID WASTE MANAGEMENT DEPARTMENT

SOUTH GATE TRANSFER STATION

VICINITY MAP

Palos Verdes Library District
701 Silver Spur Road, Rolling Hills Estates, California 90274
(310) 377-9584 FAX (310) 541-6807

TO: Adrianne Fasone

FAX: 949-837-4122

DATE: August 17, 2000

RE: Long Point Project

Please be advised that the Miraleste Library, part of the Palos Verdes Library District, is not physically close to the Long Point Project. Therefore, there would be no impact to the structure of the library. However, the population of Long Point could choose to use either the Miraleste Library or San Pedro Library. Therefore, this project could increase demand and usage of Miraleste Library.

Sincerely,

Diana Moreno.

Diana Moreno
Director

SOUTHERN CALIFORNIA
EDISON

An *EDISON INTERNATIONAL*℠ Company

SOUTH BAY PLANNING DEPARTMENT
505 MAPLE AVENUE, TORRANCE, CA 90503
FAX NUMBER (310) 783-9323, PAX 33323

DATE: 8/23/00

TO: ADRIANNE FASONE

DEPARTMENT/COMPANY: RBF CONSULTING

FAX NUMBER: 949-837-4122

PAX/PHONE NUMBER:

FROM: DAVID GUTIERREZ

PAX/PHONE NUMBER: 310-783-9340

NUMBER OF PAGES (INCLUDING COVER SHEET): 2

NOTES:

FACSIMILE

LONG POINT RESORT

ELECTRIC SERVICE
QUESTIONNAIRE

Please respond to the following questions on your agency/company letterhead and provide maps to illustrate facility locations.

1. What is the present service area and/or locations of your facilities? Are any of these facilities within the proposed project boundaries as shown on the attached Site Vicinity map? SCE CURRENTLY HAS BOTH OVERHEAD AND UNDERGROUND FACILITIES ON THE PROPERTY AND ON PALOS VERDES DRIVE

2. What is the present capacity and/or nature of your facilities? (Please provide any available information necessary to evaluate existing conditions in the project area and potential impacts). 16 KV CIRCUITS

3. What is the projected electrical demand for the project based upon the information provided? DONT KNOW. YOU SEND US PLANS --- LOAD SCHEDULE ETC. AND WE'LL FIGURE OUT DEMAND. WE HAVE RECEIVED NO ELECTRICAL PLANS.

4. Can your facilities in the service area supply the required additional electricity currently or on project completion? YES. SEND PLANS AND WE'LL CONF

5. Do you anticipate any project related impacts to your facilities? Specifically, will the proposed project impact service or require new or modified facilities? If so, please list/summarize additions or modifications. YES. POSSIBLE RELOCATION OF FACILITIES, POSSIBLE UPGRADE OF FACILITIES.

6. Do you anticipate any short-term construction or related impacts, such as a possible disruption of service? DONT KNOW YET.

7. Do you require or recommend any mitigation measures for any project impacts noted in Items 3, 4, or 5? THE SOONER YOU SEND YOUR DESIGNS, THE SOONER SCE CAN DETERMINE YOUR PROJECTS IMPACT ON OUR SYSTEM.

8. Is there any other relevant information regarding potential significant impacts of the project? _____

Dave Gutierrez
310-783-9340

CALIFORNIA WATER SERVICE COMPANY
5837 CREST ROAD WEST • RANCHO PALOS VERDES, CA 90274-5701 • (310) 377-5525

PALOS VERDES DISTRICT

August 25, 2000

Ms. Adrianne Fasone
RBF Consulting
14725 Alton Parkway
Irvine, California 92618-2027

Re: Water Service Questionnaire (Long Point Resort-Rancho Palos Verdes)

Dear Ms. Fasone:

As requested, we have compiled information to answer your water service questionnaire. Enclosed you will find data for the items listed in the questionnaire. Please note that the district is requiring additional storage capacity, as we are vulnerable on the West Side of the Peninsula.

Should you require additional information please contact the district at 310-377-5525 or our maintenance division at 310-541-2438 and ask to speak with our General Superintendent, Peter Akhotnikoff.

Sincerely,

CALIFORNIA WATER SERVICE COMPANY

Donald B. Jensen
District Manager

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AUG 30 2000
RBF CONSULTING

DBJ/md

CALIFORNIA WATER SERVICE COMPANY

WATER SERVICE QUESTIONNAIRE

1. **What is the current and projected water capacity for the District; annual use in acre-feet, daily flow in cfs and peak demand in MGD?**
   See attached charts.

2. **What is the projected water demand for the project based on the information provided?**
   See attached consumption history for golf courses in the Palos Verdes District.

3. **Please indicate any existing facilities on/near the project site.**
   See attached map.

4. **What is the current rate of local groundwater extraction and existing groundwater quality? Will the proposed project have an impact on groundwater quality?**
   None/No

5. **Will the proposal require new facilities or additions to existing facilities? If so, please list/summarize any changes.**
   Relocation of 12" and new interconnections on/for the project.

6. **Do you have any required assessment fees or other required or recommended mitigation measures for project impacts?**
   Relocation costs. Location/site for storage (5 million gallon reservoir).

7. **According to SB 901 requires a "water supply assessment" be provided by the affected water agency for incorporation into the EIR? As such, please identify whether the demand created by the proposed project has been considered in your agency's most recently adopted water management plan. The assessment should indicate whether the water demand associated with the proposed project can be served by your agency's supplies available during "normal, single-dry, and multiple-dry water years", in addition to the demand for water from existing and other planned uses.**

   Our last Urban Water Management Plan was done in 1995 using data through 1994. The plan examined the service connection growth trends, known large developments and established demand conditions to forecast demand in the future. At the time this project was not identified as a known future development. At that time the residential services category was the only customer class that was showing a positive trend. To date the actual growth in residential services has lagged behind forecasted growth; thus the residential portion of the proposed development can easily be accommodated by the forecasted demand.

   It is the commercial segment of the proposed project, the hotel and golf course that is not included in the last UWMP forecasts. While the demand from this portion of the proposed project (300 AFY?) is only 1.5 percent of the total district demand, it has not been included in the demand forecasts. It is however an amount that would fit within the high range forecast and current demand levels.

   It should be noted that the Palos Verdes district is 100 percent reliant on imported water deliveries from the Metropolitan Water District, which are purchased through the West Basin Municipal Water District. There are no local supplies currently available to this district. As a result the availability of water to existing uses, as well as this proposed project would be completely dependent on the supply conditions of MWD. There are several local projects in design in other Cal Water districts, which are within MWD" service area that will increase local supply availability and reduce reliance on MWD in those areas. These will of course free up additional imported supplies for use in Palos Verdes and other similarly reliant communities.

8. **Does your agency have sufficient water supplies available to serve the project from existing entitlement and resources, or are new or expended entitlement needed?**

   As Palos Verdes is 100% dependent on deliveries from MWD – sufficient supplies are available.

9. **Is there any other relevant information regarding potential significant effects of the project?**

   No, not at this time.

CALIFORNIA WATER SERVICE COMPANY

Part of Question 1 with attached charts.

30.7 million gallon storage capacity
No current plans for expanding storage.
Annual use in Acre-Feet 1999 – 22,286 Acre-Feet.
Usage January 1, 2000 through August 21, 2000 14,418 Acre Feet.
Daily flow in cfs average for 2000 through August 21st 31.06 cfs.
Peak demand in MGD
29.0 MGD – 1999 – thus far in 2000 29.0

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Pump Capacity - Palos Verdes District

Production Capacity for Pump Station 23 - Water Delivery From Station 23 to Reservoir 20

PUMP	GPM	GPHFHR	GPH	MG WINTER	MG SUMMER	MG DAY	CFS
A	2,420	72,600	145,200	1,524,600	2,541,000	3,484,800	5.39
B	2,454	73,620	147,240	1,546,020	2,576,700	3,533,760	5.47
C	2,290	68,700	137,400	1,442,700	2,404,500	3,297,600	5.10
D	2,253	67,590	135,180	1,419,390	2,365,650	3,244,320	5.02
E	2,285	68,550	137,100	1,439,550	2,399,250	3,290,400	5.09
F	2,274	68,220	136,440	1,432,620	2,387,700	3,274,560	5.07
G	3,246	97,380	194,760	2,044,980	3,408,300	4,674,240	7.23
H	3,459	103,770	207,540	2,179,170	3,631,950	4,980,960	7.71
TOTALS	20,681	620,430	1,240,860	13,029,030	21,715,050	29,780,640	46.08

Production Capacity for Pump Station 22 - Water Delivery From Station 22 to Reservoir 19

PUMP	GPM	GPHFHR	GPH	MG WINTER	MG SUMMER	MG DAY	CFS
A	2,720	81,600	163,200	1,713,600	2,856,000	3,916,800	6.06
B	2,669	80,070	160,140	1,681,470	2,802,450	3,843,360	5.95
C	2,409	72,270	144,540	1,517,670	2,529,450	3,468,960	5.37
D	2,960	88,800	177,600	1,864,800	3,108,000	4,262,400	6.60
E	3,889	116,670	233,340	2,450,070	4,083,450	5,600,160	8.67
F	4,000	120,000	240,000	2,520,000	4,200,000	5,760,000	8.91
G	3,417	102,510	205,020	2,152,710	3,587,850	4,920,480	7.61
H	3,495	104,850	209,700	2,201,850	3,669,750	5,032,800	7.79
TOTALS	25,559	766,770	1,533,540	16,102,170	26,836,950	36,804,960	56.95

Production Capacity for Pump Station 30 - Water Delivery From Station 30 to Reservoir 19

PUMP	GPM	GPHFHR	GPH	MG WINTER	MG SUMMER	MG DAY	CFS
B	2,396	71,880	143,760	1,509,480	2,515,800	3,450,240	5.34
C	2,149	64,470	128,940	1,353,870	2,256,450	3,094,560	4.79
D	2,309	69,270	138,540	1,454,670	2,424,450	3,324,960	5.14
E	3,500	105,000	210,000	2,205,000	3,675,000	5,040,000	7.80
TOTALS	10,354	310,620	621,240	6,523,020	10,871,700	14,909,760	23.07

Production Capacity for Pump Station 15 - Water Delivery From Station 15 to Reservoir 5

PUMP	GPM	GPHFHR	GPH	MG WINTER	MG SUMMER	MG DAY	CFS
A	1,935	58,050	116,100	1,219,050	2,031,750	2,786,400	4.31
B	1,613	48,390	96,780	1,016,190	1,693,650	2,322,720	3.59
C	1,433	42,990	85,980	902,790	1,504,650	2,063,520	3.19
D	3,291	98,730	197,460	2,073,330	3,455,550	4,739,040	7.33
TOTALS	8,272	248,160	496,320	5,211,360	8,685,600	11,911,680	18.43

Production Capacity for Palos Verdes System - Water Delivery From Metropolitan Connections

	GPM	GPHFHR	GPH	MG WINTER	MG SUMMER	MG DAY	CFS
TOTALS	44,185	1,325,550	2,651,100	27,836,550	46,394,250	63,626,400	98.45

Million Gallons Produced Throughout 1999

Date	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Totals
1	13.5	9.9	21.8	15.6	19.2	23.1	23.0	19.3	26.4	23.3	20.9	17.8	
2	16.0	10.9	14.0	10.1	27.9	12.8	22.3	24.2	24.8	21.2	23.0	17.0	
3	18.7	8.0	20.6	17.1	19.7	13.6	21.3	27.8	28.2	27.0	20.6	11.3	
4	18.4	12.0	16.2	19.8	21.5	15.0	22.9	27.4	15.8	21.9	19.3	23.6	
5	18.5	11.5	10.4	18.0	25.1	16.4	34.0	25.3	20.1	21.4	15.1	22.8	
6	18.1	11.9	16.4	12.4	22.1	25.1	25.1	22.2	34.1	20.8	23.6	21.5	
7	14.3	13.4	20.8	11.8	19.5	21.7	24.3	22.8	23.1	20.0	21.2	16.5	
8	13.1	6.2	10.5	12.5	19.4	22.2	18.4	33.2	24.2	22.1	14.6	17.2	
9	18.5	11.0	17.2	9.4	26.3	23.0	20.6	24.6	23.7	26.6	15.1	15.1	
10	21.3	9.2	14.6	13.6	22.1	17.0	24.4	24.5	21.6	27.6	16.0	14.0	
11	16.6	12.9	12.1	15.1	24.4	20.7	30.6	25.7	23.5	25.0	15.9	23.5	
12	17.9	8.9	8.4	12.8	18.8	24.0	29.0	26.7	28.6	24.3	15.3	23.6	
13	16.5	11.4	15.2	11.4	19.7	26.8	27.5	25.5	23.6	24.6	22.1	16.9	
14	16.8	13.2	16.3	13.9	17.3	25.3	27.3	23.6	24.6	22.2	20.3	17.9	
15	16.9	16.6	11.7	14.5	18.4	19.2	25.3	28.7	23.5	17.7	17.4	18.6	
16	16.6	12.7	10.7	14.6	24.9	26.8	19.5	27.0	21.6	22.4	16.4	18.4	
17	17.8	15.3	14.0	25.3	28.6	19.9	29.6	26.1	17.9	29.7	14.6	18.0	
18	15.9	12.0	11.7	25.3	18.2	19.6	31.3	27.6	18.1	24.3	16.0	19.3	
19	12.6	8.7	7.2	23.1	22.8	26.7	27.5	25.8	29.3	23.5	16.4	23.7	
20	13.4	16.6	9.7	19.5	21.3	28.3	26.8	22.0	21.7	26.6	11.9	20.3	
21	12.9	18.2	10.2	19.4	16.6	20.2	27.2	24.4	21.1	24.7	20.5	20.6	
22	11.0	17.9	13.8	20.5	17.6	27.0	26.8	33.3	23.5	22.9	17.0	20.5	
23	12.4	16.8	11.2	18.0	25.7	25.4	19.3	25.6	20.9	15.1	17.9	16.7	
24	13.2	15.4	12.8	16.1	23.9	23.4	29.5	25.9	18.6	30.8	15.7	21.9	
25	9.3	20.0	10.2	26.1	21.3	21.2	30.5	26.4	18.6	23.6	21.6	17.3	
26	9.6	10.8	6.8	21.6	21.4	24.3	24.1	26.6	23.5	20.8	16.8	23.9	
27	12.4	20.2	12.0	18.9	24.3	35.4	24.8	23.2	22.1	20.8	18.4	21.7	
28	10.2	20.3	14.9	20.6	13.7	17.8	23.5	29.7	19.5	20.9	20.9	22.0	
29	8.6		14.6	22.4	19.2	26.9	24.2	31.4	25.0	19.5	18.2	22.6	
30	11.1		13.3	13.8	26.3	26.2	21.3	26.8	27.1	26.4	18.4	20.2	
31	12.0		16.7		27.6		27.7	24.8		28.9		12.2	
Totals	454.1	371.9	416.0	513.2	674.8	675.0	789.6	808.1	694.3	726.6	541.1	596.6	7261.3
Average	14.6	13.3	13.4	17.1	21.8	22.5	25.5	26.1	23.1	23.4	18.0	19.2	
			Blue = C.W.S. Holiday						Red = Weekend's				
											Average Per Day		19.9

Million Gallons Produced Throughout 2000

Date	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Totals
1	13.7	14.7	9.1	17.8	24.4	24.4	24.4	25.9					
2	20.8	13.2	9.0	26.5	21.5	22.0	30.7	26.5					
3	16.5	13.0	9.0	20.7	21.1	27.1	21.7	26.4					
4	18.9	9.5	8.7	19.6	19.1	28.7	31.3	25.7					
5	19.3	12.4	11.3	19.9	15.4	25.6	25.3	21.8					
6	20.0	17.9	8.5	18.2	17.0	24.6	23.6	30.9					
7	17.7	15.4	8.7	14.9	31.5	25.6	18.0	23.9					
8	18.3	13.6	8.2	17.8	24.9	25.7	22.2	24.2					
9	23.2	13.7	9.3	28.8	21.6	23.2	34.2	24.7					
10	18.8	10.2	6.5	20.9	24.1	21.5	25.8	27.3					
11	14.9	8.0	11.4	19.1	22.1	32.1	25.7	25.9					
12	18.0	11.5	14.3	23.1	17.7	24.9	25.7	23.1					
13	16.3	11.5	13.5	16.8	31.3	25.7	26.0	35.9					
14	16.9	8.8	12.6	17.4	25.8	28.3	22.4	27.1					
15	19.8	10.6	14.0	19.0	22.9	22.8	22.3	26.9					
16	15.7	9.9	13.5	24.9	20.2	25.0	31.8	29.0					
17	14.3	10.2	11.4	13.7	22.0	18.1	26.3	28.3					
18	18.5	8.6	20.2	12.1	21.4	32.0	26.4	24.7					
19	20.4	8.4	23.2	13.7	19.1	26.5	26.7	26.1					
20	14.8	8.8	16.8	13.2	28.2	24.5	27.5	35.3					
21	10.4	12.2	18.9	10.3	27.1	25.6	24.1	25.4					
22	19.0	7.8	20.5	19.8	23.6	25.0	26.1						
23	25.3	10.3	17.8	22.5	21.2	23.1	34.9						
24	15.6	9.8	11.6	18.0	20.9	21.3	26.5						
25	13.0	4.4	16.8	23.1	19.8	34.5	25.2						
26	13.3	13.8	26.3	21.6	13.9	26.5	25.4						
27	9.7	10.4	18.5	19.1	26.1	25.8	25.8						
28	13.0	8.7	17.4	12.9	22.3	26.4	22.0						
29	12.4	8.6	18.9	22.1	29.1	26.6	29.3						
30	18.6		16.8	28.3	22.2	22.3	32.0						
31	11.4		19.6		22.9		25.2						
Totals	518.5	315.9	442.3	575.8	700.4	765.4	814.5	565.0	0.0	0.0	0.0	0.0	4697.8
Average	16.7	10.9	14.3	19.2	22.6	25.5	26.3	26.9	0.0	0.0	0.0	0.0	
			Blue = C.W.S. Holiday						Red = Weekend's				
											Average Per Day		20.1

3833 PASEO DEL CAMPO CONSUMP HIST. 22-52-12-3615-1
BY LAKE N GLF CR P V GOLF COURSE

	CURR	ALLOC	1999	1998	1997	1996	1995
JAN	8119 B	3266	2980	1079 L	333 L	1388	1556
FEB	3496 B	3294 A	2372 B	545 L	86 L	1202	260 L
MAR	954 L	3321	3127	65 L	2759	618 L	2034
APR	4341 B	6578	3176	2259	4547	2750	2103
MAY	8260 D	7438	6314	6080	8388	8538	7442
JUN	7908	11504	11866	87 L	6782	9396	8463
JUL	16485	11579	15007	24363 B	18242	9115	8134
AUG	21197 A	16589	11578	16818	16261	8334	9844
SEP	0	12825	15338	14265	5935	7387	10403
OCT	0	9395	10959	10723	19891 H	4625	8618
NOV	0	6085	12386 B	7111	12462	3028	4828
DEC	0	5051	5060	4186	1444 L	1727	2880
	70760	96925	100163	87581	97130	58108	66565

OPTION: 0BAS 1TRH 2ADR 3DL1 4DSM 5CLC 6SRV 7RDH 8MSC 9FMH

F1=HELP 2=PAGE PF3=END PF4=RETURN 6=ALT-PATH
PF7=BACKWARD 8=FORWARD 10=PRINTSCR 12=SAVE ENT=OPTION

HAW & LOS VERDES DR CONSUMP HIST. **22-66-07-6127-2**
AMERICAN GOLF CORP

	CURR	ALLOC	1999	1998	1997	1996	1995
JAN	5366	2453	4432	2083	351 L	226 L	436 L
FEB	848 L	2594	828 L	164 L	1344 H	17 L	665 L
MAR	1466 L	6095	2201	2230	4205 H	423 L	529 L
APR	5391	6439	2817	2695	5055 L	89 B	3294 H
MAY	7980	10001	7162	5069	8443 B	119 L	4091 H
JUN	9430	11443	6376	8184	10721 H	206 L	5515 H
JUL	11543	14919	11829	10335	10271 L	150 L	6724 A
AUG	0	11893	10188	9309	8181 L	2086 L	8010 L
SEP	0	13333	7380	19204 B	6842 L	20811 A	7864 B
OCT	0	9405	7893	7765	8304	5117 L	3579
NOV	0	7845	4341	3695 L	4633	3449 L	1657 L
DEC	0	6237	4519	3134	1087 B	1344 L	1850
	42024	102657	69966	73867	69437	34037	44214

OPTION: 0BAS 1TRH 2ADR 3DL1 4DSM 5CLC 6SRV 7RDH 8MSC 9FMH

F1=HELP 2=PAGE PF3=END PF4=RETURN 6=ALT-PATH
PF7=BACKWARD 8=FORWARD 10=PRINTSCR 12=SAVE ENT=OPTION

HAWTHRNE SO/DUPRE RD CONSUMP HIST. 22-66-07-7100-2
LOS VRDS GOLFCRS AMERICAN GOLF CORP

	CURR	ALLOC	1999	1998	1997	1996	1995
JAN	2852	27	2656	516 L	401 L	1945	998
FEB	734 B	252	670 L	410 L	1970	1029	1972
MAR	1276 D	91	1259	1951	2924	1469	924 L
APR	2594	57 A	1636	2488	3596	3585	4267
MAY	4074	23	3430	3300	3063	4139	5486
JUN	4406 M	16 A	3724	4336	4105	3833	5847
JUL	5308 D	9	5476	4944	3017	4851	6467
AUG	0	36	4772	5252	4573	5278	6904
SEP	0	20	3651	4532	4709	5169	8313 B
OCT	0	15	3874	3991	5614	3770	5512
NOV	0	18 A	2300	2167	2522	2571	3366
DEC	0	20	2530	1813	2167	1607	2055
	21244	584	35978	35700	38661	39246	52111

OPTION: 0BAS 1TRH 2ADR 3DL1 4DSM 5CLC 6SRV 7RDH 8MSC 9FMH

F1=HELP 2=PAGE PF3=END PF4=RETURN 6=ALT-PATH
PF7=BACKWARD 8=FORWARD 10=PRINTSCR 12=SAVE ENT=OPTION

27000 PALOS VERDES DR E CONSUMP HIST. 22-69-07-5640-1
2 2#MTR IN BANK R H COUNTRY CLUB

	CURR	ALLOC	1999	1998	1997	1996	1995
JAN	4238	428	3184	179	160	120 L	96
FEB	1035 L	641 A	2465	151	223	113 L	1223 H
MAR	3876	855	2965	158	280	122	47 L
APR	9334	349	6949 H	147 L	343	122	254-A
MAY	12923	1209 A	13747 H	361	355	865 H	126
JUN	16162	2070	14523	6044 H	314	94 L	154
JUL	14858	1755	8332 B	0	265	185	146
AUG	0	1462	9141	24956 H	518	300	95
SEP	0	1854	13950	8824	325	538 H	417 H
OCT	0	1479 A	11888	3989	298	1198 H	125
NOV	0	1104	0	10550 H	302	371	132
DEC	0	1018	12944 H	3219	186	188	114 L
	62426	14224	100088	58578	3569	4216	2421

OPTION: 0BAS 1TRH 2ADR 3DL1 4DSM 5CLC 6SRV 7RDH 8MSC 9FMH

F1=HELP 2=PAGE PF3=END PF4=RETURN 6=ALT-PATH
PF7=BACKWARD 8=FORWARD 10=PRINTSCR 12=SAVE ENT=OPTION

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AUG 2 5 2000
RBF CONSULTING

RANCHO PALOS VERDES
RECREATION & PARKS DEPARTMENT

PARK AND RECREATIONAL FACILITIES QUESTIONNAIRE

1. See the attached map for locations of City parks in the vicinity of the proposed project.

2. The standard is four (4) acres of parkland per 1,000 persons residing in the City. This factor should be taken into account because the proposed facility would generate persons using the site. Municipal Code 16.20.100

3. The events held at this site rely on the existing parking areas including the City maintenance yard and large flat field area. Arrangements would have to be made to offset this impact.

4. To meet Municipal Code requirements.

5. Does not appear to at this time.

6. Arrangements for alternate parking and shuttle service for events held at the site; i.e., the annual July 4th celebration with approximately 5,000 in attendance.

7. Refer to the Public Works Department for any maintenance impacts.

8. No

30940 Hawthorne Boulevard / Rancho Palos Verdes, CA 90275-5391 / (310) 544-5260 / FAX (310) 544-5294
Printed on Recycled Paper

From: "Blood, Paul - TPPIB" <PBlood@socalgas.com>
To: "'Adrianne Fasone'" <afasone@rbf.com>
Date: Fri, Aug 25, 2000 3:09 PM
Subject: RE: Long Point Gas Service Questionnaire

> ----------
> From: Adrianne Fasone[SMTP:afasone@rbf.com]
> Sent: Thursday, August 24, 2000 4:14PM
> To: pblood@socalgas.com
> Subject: Long Point Gas Service Questionnaire
>
> GAS SERVICE
> QUESTIONNAIRE
>
>
> Please respond to the following questions on your agency/company
> letterhead and provide maps to illustrate facility locations.
>
> 1. What is the present service area and/or locations of
> your facilities? Are any of these facilities within the proposed project
> boundaries as shown on the attached Site Vicinity map?
>
> Gas facilities in the area of your project are in Palos Verdes Dr. South
> and in Palos Verdes Dr. West.
>
> 2. What is the present capacity and/or nature of your
> facilities? (Please provide any available information necessary to
> evaluate existing conditions in the project area and potential impacts).
>
> The Facilities in Palos Verdes Dr. South and Palos Verdes Dr. West. is an
> eight inch gas main.
>
> 3. Please provide estimated gas consumption factors on
> the basis of the information provided.
>
> The information provided is inadequate for an accurate response.
>
> 4. Do you anticipate any project related impacts to
> your facilities in the service area? If so, please list/summarize
> additions or modifications.
>
> There is no foreseeable impact on our gas facilities.
>
> 5. Do you anticipate any short-term construction
> related impacts to the service area, such as the possible disruption of
> services?
>
> No
>
> 6. Do you require or recommend any mitigation measures
> for any project impacts noted above?
>

> No
>
> 7. Is there any other relevant information regarding
> potential impacts of the project?
>
> Gas service to the project could be provided without any significant
> impact on the environment.
>
>
>
> These responses are not to be interpreted as a commitment to serve the
> proposed project, but only as an informational service. I
>
> Responses are provided by Paul Blood, Lead Planning Associate, of the
> Southern California Gas Company.
>

The Gas Company®

August 30, 2000

RECEIVED
SEP - 5 2000
RBF CONSULTING

RBF Consulting
14725 Alton Parkway
Irvine, CA 92618-2027

Attn: Adrianne Fasone

Southern California Gas Company
701 N. Bullis Road
Compton, CA
Mailing Address:
Box 9099
Compton, CA
90224-9099

Subject: Long Point Resort (CP#166, CUP #215 & 216, TPM #26073, & GP #2229 & 2230) Program Environmental Impact Report, City of Rancho Palos Verdes

Gas Co. Plan file No.: *00-385* refer to this number in future correspondence.

Enclosed please find copies of Gas Co. atlas maps for the area outlined in your letter dated August 10, 2000. These maps show the approximate location of our gas facilities in relation to the public property lines. If after review of these maps it appears gas facilities may be in conflict with future construction please notify this office as soon as possible.

It is extremely important that you furnish us with final plans and subsequent plan revisions as soon as they are available. A minimum of (8) weeks will be needed to analyze plans and design alterations for any conflicting facilities. Depending on the magnitude of the work involved, additional time will be required to clear the conflict. Please keep us informed of Construction Schedules, Pre-Construction meetings, etc., so that we can schedule our work accordingly.

Please notify Underground Service Alert (USA) at (800) 422-4133 at least two (2) working days prior to start of any construction so we may mark our facilities.

Sincerely,

For

David McKibben
Technical Services Dept.
Phone (310) 687-2032
Fax (310) 605-7988

Enclosures: GAS CO. Atlas Sheets

Palos Verdes Peninsula Unified School District

VALMONTE
ADMINISTRATION
CENTER

3801 Via La Selva
Palos Verdes Estates
California 90274
(310) 378-9966
FAX (310) 378-0732

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SEP - 8 2000
RBF CONSULTING

September 5, 2000

Ms. Adrianne Fasone
Environmental Analyst
RBF Consulting
14725 Alton Parkway
Irvine, California 92618-2027

Dear Ms. Fasone:

REFERENCE: LONG POINT RESORT (CP#166, CUP #215 & 216, TPM #26073, & GP #2229 & 2230) PROGRAM ENVIRONMENTAL IMPACT REPORT, CITY OF RANCHO PALOS VERDES

This is in response to your letter dated August 10, 2000. The following information is provided as shown in your questionnaire:

1. Please indicate the name and location of schools, which are available to serve the project site.

   Presently, there are three schools that can serve the project site: Point Vicente Elementary School, 30540 Rue de la Pierre, Rancho Palos Verdes (Kindergarten - 5th grade), Miraleste Intermediate School, 29323 Palos Verdes Drive East, Rancho Palos Verdes (6th - 8th grade), and Palos Verdes Peninsula High School, 27118 Silver Spur Road, Rolling Hills Estates (9th - 12th grade). Palos Verdes Peninsula High School is presently severely overcrowded and a decision about having another secondary school is in the making. This new development would exasperate that problem.

2. What is the current enrollment of each school in the vicinity of the project, and what is the distance of the school from the project site?

There are two elementary schools in the vicinity of the project: Point Vicente Elementary and Lunada Bay Elementary schools. Both schools are totally impacted at this time and require relocatable classrooms in order to accommodate the now existing attendance area enrollments. The enrollments of the four schools as of June 30, 2000 are: Point Vicente Elementary - 373 students, Lunada Bay Elementary - 470 students, Miraleste Intermediate - 1,158 students and Palos Verdes Peninsula High School - 2,989 students. Again, the high school is extremely overcrowded. It is anticipated that the District will be making a decision within the next six months with regard to additional secondary housing space.

3. What is the student generation rates for the proposed project? Will new facilities be required?

   We are estimating the generation rates to be .496 students per household.

4. In consideration of A.B. 2926, are there any assessment fees or other required or recommended mitigation measures for the project?

   The Developer Fees for residential housing is presently set at $1.50 square foot and for commercial square footage it is $.25. We anticipate that the Developer Fees will not cover the cost of the additional classrooms required for Point Vicente Elementary School.

5. Is there any other relevant information regarding significant project impacts?

   Presently there are five relocatable classrooms on the Point Vicente Elementary school campus. This is the elementary campus closest to the project and would be within the attendance area of the project. The recent legislation for class size reduction at the primary grade level requires us to staff classes at a 20:1 ratio. The 4th and 5th grade classes are staffed at approximately 30:1 ratio. In addition, we have opened a new intermediate school (Ridgecrest) and have projected the enrollment without your development to exceed the capacity. With additional students expected at the secondary level (9th -12th) there will be additional facility requirements

The following matrix shows the capacity of permanent and relocatable classrooms for the schools that would be serving Long Point Resort.

School	Permanent Classroom Capacity	Relocatable Classroom Capacity	Total
Lunada Bay Elementary	428	74	502
Point Vicente Elementary	322	72	394
Miraleste Intermediate	1774	34	1808
Palos Verdes Peninsula High School	2352	1324	3676

All of these schools are operating with relocatable classrooms, which in our philosophy and standard are considered unacceptable. We have been forced into this decision with recent legislation that has reduced class sizes and thus increased the need for more classroom capacity. The permanent capacity of each of these schools is not adequate for handling the overcrowded conditions that now exist at Palos Verdes Peninsula High School. When the Board makes a decision, in the next few months, about opening another secondary high school (grades 9-12) we will be beyond our permanent facility capacity at all of the schools.

If you have any questions, please do not hesitate to contact me at (310) 378-9966, Extension 227.

Sincerely,

Dennis R. Welsh, Ed.D.
Assistant Superintendent, Business Services

DRW/ld

verizon

Verizon Communications
2819 W. 182nd Street
CAY06NC
Redondo Beach, CA 90278

RECEIVED
SEP 18 2000
RBF CONSULTING

DATE: September 13, 2000

TO: ADRIANNE FASCONE

SUBJECT: LONG POINT RESORT EIR

PER OUR CONVERSATION ON SEPTEMBER 12, 2000, THE FOLLOWING IS THE INFORMATION YOU REQUESTED.

1. THE ENCLOSED MAP WILL SHOW THE LOCATIONS OF OUR FACILITIES, HOWEVER, THERE ARE CUSTOMER OWNED CONDUIT THAT RUNS THROUGH OUT THIS LOCATION.

2. WE HAVE NO RECOMMENDED MIGIGATION MEASURES THAT WOULD IMPACT YOUR SITE.
3. THERE SHOULD BE NO IMPACT ON PHONE SERVICES FOR THIS SITE, BUT WE DO HAVE A DMARK (MPOE) ESTABLISHED AT THIS SITE AND IF IT IS TO BE RELOCATED, ADDITIONAL CHARGES WILL OCCUR. VERIZON IS PREPARED TO FACILATE SERVICES TO THIS SITE..
4. MPOE MINIMUM POINT OF ENTRY INTO CUSTOMER'S FACILITIES.

ANY FURTHER QUESTIONS OR CONCERNS PLEASE CALL

D Hayes

DAN HAYES
DESIGN ENGINEER/ACCESS DESIGN
310 793 4159

15.2 Air Quality Data

URBEMIS 7G: Version 3.2

File Name: rpvcons.URB
Project Name: Long Point Construction Emissions
Project Location: South Coast Air Basin (Los Angeles area)

SUMMARY REPORT
(Pounds/Day - Winter)

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	PM10
TOTALS (ppd, unmitigated)	40.42	392.63	3.34	605.80
TOTALS (ppd, mitigated)	38.64	373.24	3.34	235.69

URBEMIS 7G: Version 3.2

File Name: rpvcons.URB
Project Name: Long Point Construction Emissions
Project Location: South Coast Air Basin (Los Angeles area)

DETAILED REPORT
(Pounds/Day - Winter)

Total Land Use Area to be Developed (Estimated): 21 acres
Retail/Office/Institutional Square Footage: 269520
Single Family Units 0 Multi-family Units 182

CONSTRUCTION EMISSION ESTIMATES

Source	ROG	NOx	CO	PM10
Demolition				63.00
Site Grading	22.70	273.02	-	531.36
Const. Worker Trips	1.24	1.76	3.34	0.34
Stationary Equip.	3.70	3.01	-	0.18
Mobile Equip. - Gas	0.00	0.00	-	0.00
Mobile Equip. - Diesel	11.59	114.83	-	10.93
Architectural Coatings	0.00			
Asphalt Offgasing	1.18			
TOTALS (ppd, unmitigated)	40.42	392.63	3.34	605.80

CONSTRUCTION EMISSION ESTIMATES

Source	ROG	NOx	CO	PM10
Demolition				63.00
Site Grading	21.57	259.37	-	224.79
Const. Worker Trips	1.24	1.76	3.34	0.34
Stationary Equip.	3.70	3.01	-	0.18
Mobile Equip. - Gas	0.00	0.00	-	0.00
Mobile Equip. - Diesel	11.01	109.09	-	10.38
Architectural Coatings	0.00			
Asphalt Offgasing	1.12			
TOTALS (ppd, mitigated)	38.64	373.24	3.34	235.69

Construction-Related Mitigation Measures

Soil Erosion Measures: Replace Ground Cover in Disturbed Areas Quickly:
Percent Reduction(ROG 0% NOx 0% CO 0% PM10 49%)
Properly Maintain Equipment:
Percent Reduction(ROG 5% NOx 5% CO 0% PM10 5%)
Implement Water/Paved Road Measures: Water All Haul Roads 2x Per Day:
Percent Reduction(ROG 0% NOx 0% CO 0% PM10 3%)
Reduce Speeds on Unpaved Roads to 15 mph or less:
Percent Reduction(ROG 0% NOx 0% CO 0% PM10 70%)
Mobile Equipment: Properly Maintain Equipment:
Percent Reduction(ROG 5% NOx 5% CO 5% PM10 5%)
Architectural Coatings: Use Low VOC Coatings:
Percent Reduction(ROG 5% NOx 0% CO 0% PM10 0%)
Asphalt Paving: Use Low VOC Asphalt:
Percent Reduction(ROG 5% NOx 0% CO 0% PM10 0%)

URBEMIS 7G: Version 3.2

File Name: rpvcons.URB
Project Name: Long Point Construction Emissions
Project Location: South Coast Air Basin (Los Angeles area)

SUMMARY REPORT
(Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	PM10
TOTALS (ppd, unmitigated)	40.42	392.63	3.34	605.80
TOTALS (ppd, mitigated)	38.64	373.24	3.34	235.69

URBEMIS 7G: Version 3.2

File Name: rpvcons.URB
Project Name: Long Point Construction Emissions
Project Location: South Coast Air Basin (Los Angeles area)

DETAILED REPORT
(Pounds/Day - Summer)

Total Land Use Area to be Developed (Estimated): 21 acres
Retail/Office/Institutional Square Footage: 269520
Single Family Units 0 Multi-family Units 182

CONSTRUCTION EMISSION ESTIMATES

Source	ROG	NOx	CO	PM10
Demolition				63.00
Site Grading	22.70	273.02	-	531.36
Const. Worker Trips	1.24	1.76	3.34	0.34
Stationary Equip.	3.70	3.01	-	0.18
Mobile Equip. - Gas	0.00	0.00	-	0.00
Mobile Equip. - Diesel	11.59	114.83	-	10.93
Architectural Coatings	0.00			
Asphalt Offgasing	1.18			
TOTALS (ppd, unmitigated)	40.42	392.63	3.34	605.80

CONSTRUCTION EMISSION ESTIMATES

Source	ROG	NOx	CO	PM10
Demolition				63.00
Site Grading	21.57	259.37	-	224.79
Const. Worker Trips	1.24	1.76	3.34	0.34
Stationary Equip.	3.70	3.01	-	0.18
Mobile Equip. - Gas	0.00	0.00	-	0.00
Mobile Equip. - Diesel	11.01	109.09	-	10.38
Architectural Coatings	0.00			
Asphalt Offgasing	1.12			
TOTALS (ppd, mitigated)	38.64	373.24	3.34	235.69

Construction-Related Mitigation Measures

Soil Erosion Measures: Replace Ground Cover in Disturbed Areas Quickly:
Percent Reduction(ROG 0% NOx 0% CO 0% PM10 49%)
Properly Maintain Equipment:
Percent Reduction(ROG 5% NOx 5% CO 0% PM10 5%)
Implement Water/Paved Road Measures: Water All Haul Roads 2x Per Day:
Percent Reduction(ROG 0% NOx 0% CO 0% PM10 3%)
Reduce Speeds on Unpaved Roads to 15 mph or less:
Percent Reduction(ROG 0% NOx 0% CO 0% PM10 70%)
Mobile Equipment: Properly Maintain Equipment:
Percent Reduction(ROG 5% NOx 5% CO 5% PM10 5%)
Architectural Coatings: Use Low VOC Coatings:
Percent Reduction(ROG 5% NOx 0% CO 0% PM10 0%)
Asphalt Paving: Use Low VOC Asphalt:
Percent Reduction(ROG 5% NOx 0% CO 0% PM10 0%)

URBEMIS 7G: Version 3.2

File Name: rpv.URB
Project Name: Longpointe Area Source Emissions
Project Location: South Coast Air Basin (Los Angeles area)

SUMMARY REPORT
(Pounds/Day - Summer)

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	PM10
TOTALS (ppd, unmitigated)	9.96	4.93	6.82	0.02

URBEMIS 7G: Version 3.2

File Name: rpv.URB
Project Name: Longpointe Area Source Emissions
Project Location: South Coast Air Basin (Los Angeles area)

SUMMARY REPORT
(Pounds/Day - Winter)

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	PM10
TOTALS (ppd, unmitigated)	9.27	4.89	2.02	0.01

URBEMIS 7G: Version 3.2

File Name: rpv.URB
Project Name: Longpointe Area Source Emissions
Project Location: South Coast Air Basin (Los Angeles area)

DETAILED REPORT
(Pounds/Day - Winter)

AREA SOURCE EMISSION ESTIMATES (Winter Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	PM10
Natural Gas	0.37	4.89	2.02	0.01
Wood Stoves	0.00	0.00	0.00	0.00
Fireplaces	0.00	0.00	0.00	0.00
Landscaping - No winter emissions				
Consumer Prdcts	8.90			
TOTALS (ppd, unmitigated)	9.27	4.89	2.02	0.01

URBEMIS 7G: Version 3.2

File Name: rpv3.URB
Project Name: Long Pointe Mobile Emissions
Project Location: South Coast Air Basin (Los Angeles area)

SUMMARY REPORT
(Pounds/Day - Summer)

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	PM10
TOTALS (ppd, unmitigated)	74.53	138.89	494.14	45.64
TOTALS (ppd, mitigated)	74.53	138.89	494.14	45.64

URBEMIS 7G: Version 3.2

File Name: rpv3.URB
Project Name: Long Pointe Mobile Emissions
Project Location: South Coast Air Basin (Los Angeles area)

DETAILED REPORT
(Pounds/Day - Summer)

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2002 Temperature (F): 90 Season: Summer

EMFAC Version: EMFAC7G (10/96)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
Casitas	6.00 trips / room	150.00	900.00
Resort Villas	5.86 trips / room	32.00	187.52
Driving Range	31.50 trips / Acre	9.00	283.50
Golf Course	16.01 trips / Hole	9.00	144.09
Health Spa/Fitness	9.00 trips / 1000 sq. ft.	22.00	198.00
Quality resturant	52.10 trips / 1000 sq. ft.	22.50	1,172.25
Hotel	6.00 trips / Occupied room	400.00	2,400.00
Retail Facilities	48.40 trips / 1000 sq. ft.	20.00	968.00

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Duty Autos	75.00	1.16	98.58	0.26
Light Duty Trucks	10.00	0.13	99.54	0.33
Medium Duty Trucks	3.00	1.44	98.56	
Lite-Heavy Duty Trucks	1.00	19.56	40.00	40.44
Med.-Heavy Duty Trucks	1.00	19.56	40.00	40.44
Heavy-Heavy Trucks	5.00			100.00
Urban Buses	2.00			100.00
Motorcycles	3.00	100.00 % all fuels		

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.9
Rural Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.9
Trip Speeds (mph)	35	40	40	40	40	40
% of Trips - Residential	20.0	37.0	43.0			
% of Trips - Commercial (by land use)						
Driving Range				3.0	1.5	95.5
Golf Course				2.0	1.0	97.0
Health Spa/Fitness				5.0	2.5	92.5
Quality resturant				8.0	4.0	88.0
Hotel				5.0	2.5	92.5
Retail Facilities				2.0	1.0	97.0

UNMITIGATED EMISSIONS

	ROG	NOx	CO	PM10
Casitas	13.62	22.31	86.28	7.45
Resort Villas	2.85	4.65	17.98	1.55
Driving Range	2.77	6.05	21.03	1.98
Golf Course	1.49	3.05	10.60	1.00
Health Spa/Fitness	2.30	4.29	14.95	1.41
Quality resturant	11.55	26.01	90.87	8.53
Hotel	30.76	52.03	181.25	17.03
Retail Facilities	9.17	20.49	71.18	6.70
	ROG	NOx	CO	PM10
TOTAL EMISSIONS (lbs/day)	74.53	138.89	494.14	45.64

Does not include correction for passby trips.
Does not include double counting adjustment for internal trips.

MITIGATED EMISSIONS

	ROG	NOx	CO	PM10
Casitas	13.62	22.31	86.28	7.45
Resort Villas	2.85	4.65	17.98	1.55
Driving Range	2.77	6.05	21.03	1.98
Golf Course	1.49	3.05	10.60	1.00
Health Spa/Fitness	2.30	4.29	14.95	1.41
Quality resturant	11.55	26.01	90.87	8.53
Hotel	30.76	52.03	181.25	17.03
Retail Facilities	9.17	20.49	71.18	6.70
	ROG	NOx	CO	PM10
TOTAL EMISSIONS (lbs/day)	74.53	138.89	494.14	45.64

Does not include correction for passby trips.
Does not include double counting adjustment for internal trips.

ENVIRONMENTAL FACTORS APPLICABLE TO THE PROJECT

Pedestrian Environment

0 Side Walks/Paths: No Sidewalks
0 Street Trees Provide Shade: No Coverage
0 Pedestrian Circulation Access: No Destinations
0 Visually Interesting Uses: No Uses Within Walking Distance
0 Street System Enhances Safety: No Streets
0 Pedestrian Safety from Crime: No Degree of Safety
0 Visually Interesting Walking Routes: No Visual Interest

0.0 <- Pedestrian Environmental Credit
0.0 /19 = 0.00 <- Pedestrian Effectiveness Factor

Transit Service

0 Transit Service: Dial-A-Ride or No Transit Service

0.0 <- Transit Effectiveness
0.0 <- Pedestrian Factor
0.0 <-Total
0.0 /110 = 0.00 <-Transit Effectiveness Factor

Bicycle Environment

0 Interconnected Bikeways: No Bikeway Coverage
0 Bike Routes Provide Paved Shoulders: No Routes
0.0 Safe Vehicle Speed Limits: No Routes Provided
0 Safe School Routes: No Schools
0 Uses w/in Cycling Distance: No Uses w/in Cycling Distance
0 Bike Parking Ordinance: No Ordinance or Unenforceable

0.0 <- Bike Environmental Credit
0.0 /20 = 0.00 <- Bike Effectiveness Factor

MITIGATION MEASURES SELECTED FOR THIS PROJECT
(All mitigation measures are printed, even if
the selected land uses do not constitute a mixed use.)

Transit Infrastructure Measures

% Trips Reduced	Measure
15	Credit for Existing or Planned Community Transit Service
15	<- Totals

Pedestrian Enhancing Infrastructure Measures (Residential)

% Trips Reduced	Measure
2	Credit for Surrounding Pedestrian Environment
2	<- Totals

Pedestrian Enhancing Infrastructure Measures (Non-Residential)

% Trips Reduced	Measure
2	Credit for Surrounding Pedestrian Environment
2	<- Totals

Bicycle Enhancing Infratructure Measures (Residential)

% Trips Reduced	Measure
7	Credit for Surrounding Bicycle Environment
7	<- Totals

Bike Enhancing Infrastructure Measures (Non-Residential)

% Trips Reduced	Measure
5	Credit for Surrounding Area Bike Environment
5	<- Totals

Operational Measures (Applying to Commute Trips)

% Trips Reduced	Measure
0	<- Totals

Operational Measures (Applying to Employee Non-Commute Trips)

% Trips Reduced	Measure
0	<- Totals

Operational Measures (Applying to Customer Trips)

% Trips Reduced	Measure
0	<- Totals

Measures Reducing VMT (Non-Residential)

VMT Reduced	Measure
0	Park and Ride Lots
0	<- Totals

Measures Reducing VMT (Residential)

VMT Reduced	Measure
0	<- Totals

Total Percentage Trip Reduction
with Environmental Factors and Mitigation Measures

Travel Mode	Home-Work Trips	Home-Shop Trips	Home-Other Trips
Pedestrian	0.00	0.00	0.00
Transit	0.00	0.00	0.00
Bicycle	0.00	0.00	0.00
Totals	0.00	0.00	0.00
Travel Mode	**Work Trips**	**Employee Trips**	**Customer Trips**
Pedestrian	0.00	0.00	0.00
Transit	0.00	0.00	0.00
Bicycle	0.00	0.00	0.00
Other	0.00	0.00	0.00
Totals	0.00	0.00	0.00

Changes made to the default values

The user has turned off the construction emissions default switch.
The user has turned off the area source emissions default switch.
The passby option switch has been changed

URBEMIS 7G: Version 3.2

File Name: rpv3.URB
Project Name: Long Pointe Mobile Emissions
Project Location: South Coast Air Basin (Los Angeles area)

SUMMARY REPORT
(Pounds/Day - Winter)

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	PM10
TOTALS (ppd, unmitigated)	98.42	148.99	762.42	45.64
TOTALS (ppd, mitigated)	98.42	148.99	762.42	45.64

URBEMIS 7G: Version 3.2

File Name: rpv3.URB
Project Name: Long Pointe Mobile Emissions
Project Location: South Coast Air Basin (Los Angeles area)

DETAILED REPORT
(Pounds/Day - Winter)

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2002 Temperature (F): 50 Season: Winter

EMFAC Version: EMFAC7G (10/96)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
Casitas	6.00 trips / room	150.00	900.00
Resort Villas	5.86 trips / room	32.00	187.52
Driving Range	31.50 trips / Acre	9.00	283.50
Golf Course	16.01 trips / Hole	9.00	144.09
Health Spa/Fitness	9.00 trips / 1000 sq. ft.	22.00	198.00
Quality resturant	52.10 trips / 1000 sq. ft.	22.50	1,172.25
Hotel	6.00 trips / Occupied room	400.00	2,400.00
Retail Facilities	48.40 trips / 1000 sq. ft.	20.00	968.00

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Duty Autos	75.00	1.16	98.58	0.26
Light Duty Trucks	10.00	0.13	99.54	0.33
Medium Duty Trucks	3.00	1.44	98.56	
Lite-Heavy Duty Trucks	1.00	19.56	40.00	40.44
Med.-Heavy Duty Trucks	1.00	19.56	40.00	40.44
Heavy-Heavy Trucks	5.00			100.00
Urban Buses	2.00			100.00
Motorcycles	3.00	100.00 % all fuels		

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Custome
Urban Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Rural Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Trip Speeds (mph)	35	40	40	40	40	40
% of Trips - Residential	20.0	37.0	43.0			

% of Trips - Commercial (by land use)

Driving Range	3.0	1.5	95.5
Golf Course	2.0	1.0	97.0
Health Spa/Fitness	5.0	2.5	92.5
Quality resturant	8.0	4.0	88.0
Hotel	5.0	2.5	92.5
Retail Facilities	2.0	1.0	97.0

UNMITIGATED EMISSIONS

	ROG	NOx	CO	PM10
Casitas	18.03	23.90	138.14	7.45
Resort Villas	3.77	4.98	28.78	1.55
Driving Range	3.79	6.49	32.10	1.98
Golf Course	2.00	3.27	16.16	1.00
Health Spa/Fitness	3.01	4.61	22.84	1.41
Quality resturant	15.93	27.90	138.96	8.53
Hotel	39.28	55.84	276.85	17.03
Retail Facilities	12.61	22.00	108.58	6.70
	ROG	NOX	CO	PM10
TOTAL EMISSIONS (lbs/day)	98.42	148.99	762.42	45.64

Does not include correction for passby trips.
Does not include double counting adjustment for internal trips.

MITIGATED EMISSIONS

	ROG	NOx	CO	PM10
Casitas	18.03	23.90	138.14	7.45
Resort Villas	3.77	4.98	28.78	1.55
Driving Range	3.79	6.49	32.10	1.98
Golf Course	2.00	3.27	16.16	1.00
Health Spa/Fitness	3.01	4.61	22.84	1.41
Quality resturant	15.93	27.90	138.96	8.53
Hotel	39.28	55.84	276.85	17.03
Retail Facilities	12.61	22.00	108.58	6.70
	ROG	NOX	CO	PM10
TOTAL EMISSIONS (lbs/day)	98.42	148.99	762.42	45.64

Does not include correction for passby trips.
Does not include double counting adjustment for internal trips.

ENVIRONMENTAL FACTORS APPLICABLE TO THE PROJECT

Pedestrian Environment

0 Side Walks/Paths: No Sidewalks
0 Street Trees Provide Shade: No Coverage
0 Pedestrian Circulation Access: No Destinations
0 Visually Interesting Uses: No Uses Within Walking Distance
0 Street System Enhances Safety: No Streets
0 Pedestrian Safety from Crime: No Degree of Safety
0 Visually Interesting Walking Routes: No Visual Interest

0.0 <- Pedestrian Environmental Credit
0.0 /19 = 0.00 <- Pedestrian Effectiveness Factor

Transit Service

0 Transit Service: Dial-A-Ride or No Transit Service

0.0 <- Transit Effectiveness
0.0 <- Pedestrian Factor
0.0 <-Total
0.0 /110 = 0.00 <-Transit Effectiveness Factor

Bicycle Environment

0 Interconnected Bikeways: No Bikeway Coverage
0 Bike Routes Provide Paved Shoulders: No Routes
0.0 Safe Vehicle Speed Limits: No Routes Provided
0 Safe School Routes: No Schools
0 Uses w/in Cycling Distance: No Uses w/in Cycling Distance
0 Bike Parking Ordinance: No Ordinance or Unenforceable

0.0 <- Bike Environmental Credit
0.0 /20 = 0.00 <- Bike Effectiveness Factor

MITIGATION MEASURES SELECTED FOR THIS PROJECT
(All mitigation measures are printed, even if
the selected land uses do not constitute a mixed use.)

Transit Infrastructure Measures

% Trips Reduced	Measure
15	Credit for Existing or Planned Community Transit Service
15	<- Totals

Pedestrian Enhancing Infrastructure Measures (Residential)

% Trips Reduced	Measure
2	Credit for Surrounding Pedestrian Environment
2	<- Totals

Pedestrian Enhancing Infrastructure Measures (Non-Residential)

% Trips Reduced	Measure
2	Credit for Surrounding Pedestrian Environment
2	<- Totals

Bicycle Enhancing Infratructure Measures (Residential)

% Trips Reduced	Measure
7	Credit for Surrounding Bicycle Environment
7	<- Totals

Bike Enhancing Infrastructure Measures (Non-Residential)

% Trips Reduced	Measure
5	Credit for Surrounding Area Bike Environment
5	<- Totals

Operational Measures (Applying to Commute Trips)

% Trips Reduced	Measure
0	<- Totals

Operational Measures (Applying to Employee Non-Commute Trips)

% Trips Reduced	Measure
0	<- Totals

Operational Measures (Applying to Customer Trips)

% Trips Reduced	Measure
0	<- Totals

Measures Reducing VMT (Non-Residential)

VMT Reduced	Measure
0	Park and Ride Lots
0	<- Totals

Measures Reducing VMT (Residential)

VMT Reduced	Measure
0	<- Totals

Total Percentage Trip Reduction
with Environmental Factors and Mitigation Measures

Travel Mode	Home-Work Trips	Home-Shop Trips	Home-Other Trips
Pedestrian	0.00	0.00	0.00
Transit	0.00	0.00	0.00
Bicycle	0.00	0.00	0.00
Totals	0.00	0.00	0.00
Travel Mode	**Work Trips**	**Employee Trips**	**Customer Trips**
Pedestrian	0.00	0.00	0.00
Transit	0.00	0.00	0.00
Bicycle	0.00	0.00	0.00
Other	0.00	0.00	0.00
Totals	0.00	0.00	0.00

Changes made to the default values

The user has turned off the construction emissions default switch.
The user has turned off the area source emissions default switch.
The passby option switch has been changed

Estimate of Exhaust Emissions
from Stationary Heavy-Duty Engines
(Table A9-3 of AQ Handbook for Preparing EIRs)

E = F * G * H

Where:

F = Actual capacity used in horsepower
G = Daily actual hours of operation
H = Emission Factors in pounds per horsepower hour

	Aggregate Crusher				Other			
Pollutant	F (Horse-power)	G (Hours Per Day)	H (Emission Factor)[1]	Emissions	Un-mitigated	Mitigated	Total Un-mitigated	Total Mitigated
CO	700	10	0.0019	13.3	3.34	3.34	16.64	16.64
ROG	700	10	0.0006	4.2	40.42	38.64	44.62	42.84
NOX	700	10	0.0086	60.2	392.63	373.24	452.83	433.44
SOX	700	10	0.0006	4.2	0	0	4.2	4.2
PM10	700	10	0.0003	2.1	605.8	235.69	607.9	237.79

1. Emission factors are for reciprocating engines.

15.3 Biological Resources Report

Note to Reviewers:

The Technical Appendices for the Biological Resources Assessment were previously included in this section for the Draft EIR Public Review. Publication of the Final EIR includes four (4) separate volumes which include:

1. Final EIR
2. Technical Appendices
3. Draft EIR Response to Comments
4. Biological Resources

The Biological Resources Assessment and supporting Technical Appendices are inclusive in Volume IV for the Final EIR.

15.4 Cultural Resources Report

HISTORICAL/ARCHAEOLOGICAL RESOURCES SURVEY REPORT

LONG POINT RESORT PROPERTY

City of Rancho Palos Verdes
Los Angeles County, California

Submitted to:

Glenn Lajoie
RBF Consulting
14725 Alton Parkway
Irvine, CA 92618-2069

Submitted by:

Bruce Love, Principal
Bai "Tom" Tang, Historian
Mariam Dahdul, Archaeologist
Adrián Sánchez Moreno, Archaeologist
CRM TECH
2411 Sunset Drive
Riverside, CA 92506

October 24, 2000
Revised January 30, 2001

Conditional Use Permit Nos. 215 and 216
Coastal Development Permit No. 166
CRM TECH Contract No. 568
Approximately 168.4 Acres
Redondo Beach, Calif., 7.5' quadrangle
T5S R15W, San Bernardino Base Meridian

MANAGEMENT SUMMARY

In September and October, 2000, at the request of RBF Consulting, CRM TECH performed a cultural resources study on the project area of the proposed Long Point Resort in the City of Rancho Palos Verdes, Los Angeles County, California. The project area consists of two separate but adjacent tracts of land: a 103.5-acre tract between Palos Verdes Drive South and the coast line, known as the Resort Hotel Area, and a 64.9-acre tract between Hawthorne Boulevard and Palos Verdes Drive South, known as the Upper Point Vicente Area. Both tracts are located in a portion of the Los Palos Verdes land grant situated within T5S R15W, San Bernardino Base Meridian, as depicted in the USGS Redondo Beach, Calif., 7.5' quadrangle.

This study is a part of the environmental review process for the proposed Long Point Resort development, as required by the Lead Agency for the project, namely the City of Rancho Palos Verdes, pursuant to the California Environmental Quality Act (CEQA). The purpose of the study is to provide the City with the necessary information and analysis to determine whether the proposed development would cause substantial adverse changes to any historical/archaeological resources that may exist in or around the project area, as mandated by CEQA. In order to identify and evaluate such resources, CRM TECH pursued historical background research on the project area, conducted an historical/archaeological resources records search, and carried out an intensive-level field survey.

As a result of the study, six historical/archaeological sites are identified within the project area, as listed in the table below. Another site that was recorded during previous surveys for the proposed project, 19-180592, representing a 1936 survey monument, was found to be outside the project area as currently configured. Several other features that were noted but not recorded during the previous studies, such as the former Marineland Aquatic Park and the truck farms now in operation in the Upper Point Vicente Area, do not demonstrate any historic characteristics and require no further consideration in the cultural resources assessment process. A prehistoric isolate that was recorded in the project area in 1989, designated 19-100099 and consisting of two stone flakes, could not be located during any of three recent surveys of the project area, including the present study, and presumably is no longer in existence at the recorded location.

Based on the results and findings of the study, CRM TECH evaluated the historical significance of the six historical/archaeological sites in the project area against CEQA's definition of "historical resources" and the officially established criteria for inclusion in the California Register of Historical Resources. The results of the evaluation are presented in the table below, along with CRM TECH's assessment of potential project effects on sites that qualify as historical resources and specific recommendations on the treatment of each of these sites.

Site ID	Evaluation	Project Effects	Recommendations
CA-LAN-103 (rock shelter and shell midden)	Cannot be evaluated without testing	Cannot be determined without testing	Archaeological testing and evaluation
19-180589 (Base End Stations)	Historical resource	No effect	Preserve *in situ* as part of habitat conservation area
19-180590 (Battery 240)	Historical resource	Adverse effect unless mitigated	Preserve *in situ* (preferred) or HABS/HAER Level 2 recordation; archaeological monitoring
19-180591 (Nike Air Defense Site LA-55-L)	Historical resource	Adverse effect unless mitigated	Preserve *in situ* or HABS/HAER Level 2 recordation
19-180593 (Long Point Defense District)	Historical resource	Adverse effect unless mitigated	See specific recommendations for 19-180589, -180590, and -180591
6621 Beachview Drive (Ishibashi Farmhouse Complex)	Not a historical resource but of local historical interest	No effect on a historical resource	Photographic and documentary recordation prior to demolition

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INTRODUCTION

In September and October, 2000, at the request of RBF Consulting, CRM TECH performed a cultural resources study on the project area of the proposed Long Point Resort in the City of Rancho Palos Verdes, Los Angeles County, California (Fig. 1). The project area consists of two separate but adjacent tracts of land: a 103.5-acre tract between Palos Verdes Drive South and the coast line, known as the Resort Hotel Area, and a 64.9-acre tract between Hawthorne Boulevard and Palos Verdes Drive South, known as the Upper Point Vicente Area (Fig. 2). Both tracts are located in a portion of the Los Palos Verdes land grant situated within T5S R15W, San Bernardino Base Meridian, as depicted in the USGS Redondo Beach, Calif., 7.5' quadrangle (Fig. 2).

This study is a part of the environmental review process for the proposed Long Point Resort development, as required by the Lead Agency for the project, namely the City of Rancho Palos Verdes, pursuant to the California Environmental Quality Act (CEQA; PRC §21000, et seq.)). The purpose of the study is to provide the City with the necessary information and analysis to determine whether the proposed development would cause substantial adverse changes to any historical/archaeological resources that may exist in or around the project area, as mandated by CEQA. In order to identify and evaluate such resources, CRM TECH pursued historical background research on the project area, conducted a historical/archaeological resources records search, and carried out an intensive-level field survey. The following report is a complete account of the methods and results of the various avenues of research, and the final conclusion of this study.

SETTING

CURRENT NATURAL SETTING

The City of Rancho Palos Verdes is located on the Palos Verdes Peninsula in southwestern Los Angeles County, approximately 25 miles southwest of downtown Los Angeles. The project area lies in the coastal area of the city, on Long Point and the upper portion of Point Vicente overlooking the Catalina Channel. It incorporates the former site of the Marineland Aquatic Park, now largely demolished, and a former U.S. Army air defense missile site, which is no longer in service.

The terrain within the project area can be divided into three parts: the beach cliff, the slopes above the cliff, and a series of man-made terraces above the slopes. The beach cliff is rocky and steep with sparse grasses (Fig. 3). This area is heavily trafficked and contains trails, one of which leads to a large marine cave located on the southern boundary of the property. The slopes of the beach cliff have been leveled at various points for construction of buildings. Most of these are covered in tall grass and have been recently disked, greatly increasing visibility (Fig. 3). The west-facing slopes have dense cactus growth, such as the prickly pear and cholla, which have reduced visibility. Chayote, chiles, prickly pear cactus, and other crops are currently being grown on truck farms situated on two of these slopes (Fig. 3). A series of man-made terraces represents the topmost part of the project area and contain the former missile site, including the present Rancho Palos Verdes City Hall (Fig. 3).

CULTURAL SETTING

Ethnohistorical Context

The Palos Verdes Peninsula lies in the heart of the traditional homeland of the Gabrielino, a Takic-speaking people considered to be the most populous and most powerful ethnic nationality in aboriginal southern California (Bean and Smith 1978:538). The Gabrielino's territory was centered in the Los Angeles Basin, reaching from San Clemente Island to the present-day San Bernardino-Riverside area and south into southern Orange County, but their influence spread as far as the San Joaquin Valley, the Colorado River, and Baja California. Unfortunately, most Gabrielino cultural practices had declined long before systematic ethnographic studies were instituted. As a result, knowledge about them and their lifeways is meager. Today, the leading ethnographic sources on Gabrielino culture are Bean and Smith (1978) and McCawley (1996).

According to the archaeological record, the Gabrielino were not the first inhabitants of the Los Angeles Basin, but arrived around 500 B.C., slowly replacing the indigenous Hokan speakers. As early as 1542, the Gabrielino were in contact with the Spanish during the historic expedition of Juan Rodríguez Cabrillo. But it was not until 1769 that the Spaniards took steps to colonize Gabrielino territory. Shortly afterwards, most of the Gabrielino people were incorporated into Mission San Gabriel and other missions in southern California. Due to introduced diseases, dietary deficiencies, and forceful reduction, Gabrielino population dwindled rapidly. By 1900, they had almost ceased to exist as a culturally identifiable group (Bean and Smith 1978:540). In recent decades, however, there has been a renaissance of Native American activism and cultural revitalization among a number of groups of Gabrielino descendants.

Historical Context

The Palos Verdes Peninsula was first noted by Europeans in 1542, during Juan Cabrillo's historic exploration of the California coast. However, neither Cabrillo nor any of the subsequent early explorers is known to have set foot in the inland area of the peninsula, and no European colonization activities occurred until after 1769, when the Spanish authorities in Mexico began to take steps toward actual control of Alta California. In 1784, grazing rights to the peninsula, then a part of the 75,000-acre Rancho San Pedro, were granted to Juan José Domínguez (White et al. 1999:7). After Mexico gained independence from Spain in 1821, the peninsula became a part of the 31,626-acre Rancho de los Palos Verdes, which was carved out of Rancho San Pedro in 1827 and officially granted to José and Juan Sepúlveda in 1846 (Robinson 1939:20, 22).

By 1882, as the result of a lawsuit that brought about the partition of Rancho de los Palos Verdes, the Palos Verdes Peninsula was awarded to Jotham Bixby of the nearby Rancho Los Cerritos in present-day Long Beach (Morgan 1982:7). Although cattle raising continued to be the primary economic activity, Bixby's ownership marked the beginning of agriculture on the peninsula, especially after Harry Phillips was hired as the ranch manager in 1894 (*ibid.*). In the early 1900s, Phillips encouraged the establishments of small farms in the coastal area by offering to lease land for ten dollars an acre, and many farmers, most notably Japanese immigrants, took advantage of the offer (*ibid.*). In 1906, Kumekichi Ishibashi became to the first Japanese immigrant to lease land and begin farming on the peninsula. By the early 1940s, there were 185 Japanese-Americans living in the area and farming a total of 1,900 acres (Young n.d.:6).

In 1913, the Bixby family sold their Palos Verdes Peninsula holdings, and the property eventually came under the control of Frank A. Vanderlip, president of the National City Bank in New York (Morgan 1982:8). Recognizing the potential of the land for residential development, Vanderlip set the course for the peninsula's rapid growth since then in what became known as the Palos Verdes Project. This new era in local history commenced in the early 1920s, and continued into the present time, when the Palos Verdes Peninsula,

divided among the Cities of Rancho Palos Verdes, Palos Verdes Estates, Rolling Hills, and Rolling Hills Estates, ranks among the premium residential areas in southern California.

Due to its strategic location, the Rancho Palos Verdes area played an important part in southern California's coastal defense system during much of the 20th century. In 1930, what is now the City of Rancho Palos Verdes became home to two observation posts for the coastal artillery network known as the Harbor Defenses of Los Angeles, established to protect the Port of Los Angeles that was developed between 1899 and 1910. During WWII, with new artillery batteries installed, the area gained increased significance in the system. In the post-WWII period, after the defense system turned its focus from warships to aircrafts, Rancho Palos Verdes hosted one of the primary anti-aircraft missile sites in the Los Angeles Defense Area, and served in that capacity until 1974. Many of these defense installations were located within the current project area, and in most cases left various remains to be found today. These installations, therefore, will be discussed in further detail in the sections to follow.

METHODS

The following sections outline the methods and procedures used during this study.

HISTORICAL RESEARCH

Bai "Tom" Tang, CRM TECH historian (see App. 1 for qualifications), conducted the historical background research for this study. In addition to reviewing reports of previous studies on the project area and other secondary sources in local, regional, and military history, Tang also pursued further research using various primary sources, and initiated oral historical interviews with long-time residents of the Rancho Palos Verdes area, including George Ishibashi and other members of the Ishibashi family.

The primary sources consulted during the research include historic maps and aerial photographs of the project vicinity, archival records of the County of Los Angeles, and materials on file at the Fort MacArthur Museum in San Pedro and at the local history collection of the Palos Verdes Library, Malaga Cove branch, in Palos Verdes Estates. Among the historic maps are the U.S. Geological Survey's (USGS) topographic maps dated 1896, 1928, 1944, 1951, 1963, and 1972, all of which are collected at the Science Library of the University of California, Riverside. Aerial photographs dated 1927, 1928, and 1945 are found at the Fairchild Aerial Photography Collection housed in Whittier College, Whittier.

RECORDS SEARCH

On September 19, 2000, CRM TECH archaeologist Mariam Dahdul (see App. 1 for qualifications) conducted the historical/archaeological resources records search at the South Central Coastal Information Center (SCCIC), located at the California State University, Fullerton. The SCCIC is the State of California's official cultural resource records repository for the County of Los Angeles, and a part of the California Historical Resource Information System established and maintained under the auspices of the California Office of Historic Preservation (OHP).

During the records search, Dahdul examined maps and records on file at the information center for previously identified cultural resources inside or within a one-mile radius of the project area, and existing cultural resources reports pertaining to the vicinity. Previously identified cultural resources include properties designated as California Historical

Landmarks or Points of Historical Interest, as well as those listed in the National Register of Historic Places, the California Register of Historical Resources, or the California Historical Resource Information System.

FIELD SURVEY

On September 10 through 12, 2000, CRM TECH archaeologists Mariam Dahdul, Daniel Ballester, and Adrián Sánchez Moreno (see App. 1 for qualifications) carried out the intensive-level field survey of the project area. During the survey, the team walked parallel 15-meter (ca. 50-foot) transects on the level areas and gentler slopes, and along 15-meter contours on the steeper slopes, and closely examined the ground surface for any evidence of human activity dating to older than 50 years. Areas that are too steep even for contour transects, such as the beach cliff and a south-facing road cut on Rancho Palos Verdes Drive, were visually inspected from below each incline. Historical/archaeological features encountered during the survey were flagged and noted on project maps. At the conclusion of the initial field survey, prospective sites were revisited and inspected more closely to determine site status and boundaries, if any.

On September 12, Bruce Love, CRM TECH principal investigator, visited the project area and was given a tour of all findings to date. In consultation with project archaeologists, Love made final decisions on which areas constituted sites and what the final boundaries should be. Later, Bai "Tom" Tang revisited the project area on October 6, 2000, for a spot check of the historic-era features observed during the survey. In particular, Tang completed field recordation procedures on a historic-era farmhouse complex that was identified as a result of the archaeological field survey, including detailed notations and preliminary photo-documentation of the structural and architectural characteristics and current conditions of the buildings, structures, and other associated features. The results of these field procedures are discussed in the sections below.

RESULTS AND FINDINGS

The following sections discuss the results and findings of the various research procedures outlined above.

HISTORICAL OVERVIEW OF THE PROJECT AREA

Results of the historic background research suggest that over the past 100 years the history of the project area largely echoed the patterns observed in the overall development of the Palos Verdes Peninsula, as discussed above (see "Historic Context"). In 1894, the year when Harry Phillips took over the management of the Bixby landholdings on the peninsula, no man-made features were found in the project area, or anywhere within a mile or two (Fig. 4). In the early 20th century, the coastal area of what is now Rancho Palos Verdes was gradually settled by tenant farmers, including a large proportion of Japanese immigrants and their American-born children. But most of these farmsteads were initially clustered around Portuguese Bend, approximately one mile to the east of the project area, where Kumekichi Ishibashi established his farm in 1906.

During the first 30 years of the 20th century, however, the increased agricultural development in the general vicinity gradually brought changes into the project area. Except for a coast-hugging road known as Paseo del Mar or Palos Verdes Coast Highway, the first notable evidence of human activities within the project area was a building in the central portion of the Upper Point Vicente Area, which was first recorded in 1925 (Fig. 5). An aerial photograph taken in 1928 shows this "building" to be a circular-shaped structure

of unknown nature (aerial photo 1928). No evidence of this structure is found in any of the later maps or aerial photographs. Because of its close proximity to military facilities installed during the WWII and Cold War years (see further discussion below), it is likely that the structure was obliterated during these later constructions.

In the 1920s, Frank Vanderlip planned to develop the Upper Point Vicente Area into "an Italian hillside village, to be occupied by craftsmen who would live, work, and sell their wares on different levels of the same building" (Morgan 1982:10). In the aftermath of the 1929 stock market crash, the plan was abandoned, leaving only a model of the village now on display at the Palos Verdes Historical Society (*ibid.*).

Also in the 1920s, the first farmstead in the project area was established near the northeastern corner of the Resort Hotel Area when a house was moved to this location at some time between 1925 and 1928 (Fig. 5; aerial photo 1928; Ishibashi 2000). In addition, the 1928 aerial photograph shows a second apparent farmstead along the northern boundary of the Resort Hotel Area, where no buildings were observed in 1925 (Fig. 5; aerial photo 1928). After the completion of today's Palos Verdes Drive South in the 1930s, what remained of the latter farmstead was left on the north side of the road, outside the project area (Fig. 6; aerial photo 1945). But the other one is still present in the project area today at 6621 Beachview Drive.

In 1930, the U.S. Army constructed six coastal artillery observation posts, known as the Long Point Base End Stations, in the southeastern portion of the Upper Vicente Area, thus beginning the 44-year military presence in the project area (Berhow 1992:7). Since then, the project area has hosted, among other military facilities, two WWII-era artillery batteries known as Batteries 5 and 240, and a Cold War-era surface-to-air missile launch area known as Nike Air Defense Site LA-55-L. Except for the brief emplacement of the temporary Battery 5 in the Resort Hotel Area in 1942, all of the defense installations to appear in the project area during that period were located in the Upper Vicente Area (Figs. 7-9). Defense-related activities, therefore, formed the dominant theme in the history of the Upper Vicente Area over much of the past 60 years, until the inactivation of the Nike missile site in 1974. In 1979, the property was transferred to the City of Rancho Palos Verdes.

In contrast, the Resort Hotel Area continued to be used primarily for agriculture, despite its brief military service in 1942, until the mid-1950s, when most of that area was incorporated into the Marineland Aquatic Park. The park opened in 1954, and operated for nearly 33 years until mounting losses forced its closure in 1987. Although most of the park was demolished in 1988, some of its buildings and other features of built environment survived in the project area to the present time, which will also be discussed in the section below.

PREVIOUS CULTURAL RESOURCES STUDIES

According to records on file at the South Central Coastal Information Center, the project area has been the subject of prior cultural resources studies, including two studies performed in 1998 and 1999, respectively, in connection with the proposed Long Point Resort project (Bissell 1998a; White et al. 1999; Fig. 10). The two prior studies for the current project were carried out on the basis of literature and records review in conjunction with spot-checks in certain portions of the project area, and did not involve systematic, intensive-level field surveys of the entire property (Bissell 1998a:13-16; White et al. 1999:9, 11, 35).

Within the boundaries of the present project area, these and other prior studies identified and recorded one prehistoric archaeological site, one prehistoric isolate, and four historic-

era sites, including a documented historic district that encompasses the other three sites. These previously identified cultural resources are listed below, and their recorded locations are illustrated in Figure 11.

- **Site CA-LAN-103** Site CA-LAN-103 was first recorded in 1939 by F. H. Racer, who described the rock shelter or small cave as having a "smoke blackened" roof and shell midden consisting of broken and whole abalone shells. Racer remarked that "this cave was cleaned out several years ago" (Racer 1939). By coincidence, CRM TECH archaeologist Harry M. Quinn had in his possession photographs and notes by Racer dating presumably from or near the time when he recorded the cave (Figs. 12, 13). According to notes, artifacts removed from the cave at that time included about 60 items, including shell ornaments and tools and chipped stone artifacts. Prior studies of the project area in 1998 and 1999, however, failed to locate the site, and it was assumed the rock shelter had been destroyed (Bissell 1998b; White et al. 1999:35).

- **Site 19-180589** Site 19-180589, recorded by Bissell (1998c) during the 1998 study of the project area, consists of the remains of the Long Point Base End Stations and an associated cable terminal box, all constructed in 1930. The Base End Stations were designed to furnish fall-of-shot data for fire adjustment of large-caliber guns, as well as to assist in early warning and target acquisition. The six Base End Stations at this location were associated with the six heavy artillery batteries at nearby Fort MacArthur.

- **Site 19-180590** Site 19-180590 represents the remains of the WWII-era Battery 240, which was constructed in 1942 for the placement of two six-inch turret-mounted guns. The remains, as recorded by Bissell (1998d), consist of two concrete gun blocks and a subsurface concrete and steel structure housing the powder rooms, shell rooms, and other supporting facilities.

- **Site 19-180591** Site 19-180591 is comprised of the largely intact remains of Nike Air Defense Site LA-55-L, the launch area for one of the Nike Ajax/Hercules anti-aircraft missile sites that once ringed the Los Angeles metropolitan area in the 1950s-1970s (Bissell 1998e). Bissell (*ibid.*) reports that the majority of the facilities, including two missile launcher sections and six buildings, remained in place in 1998.

- **Site 19-180593** Site 19-180593 is the documented Long Point Defense District, recorded as such by Bissell (1998f) during the 1998 study of the project area. The district encompasses the three defense-related sites listed above, namely 19-180589 (Base End Stations), 19-180590 (Battery 240), and 19-180591 (Nike Air Defense Site LA-55-L). The documented district has not been formally nominated, nor has it been designated on any official register of historical resources or by any government entities*.

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* A "district" is defined, for the purpose of historical resource recordation, by the National Parks Service and the California Office of Historic Preservation as a geographic area that "possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development" (NPS 1991:5; OHP 1995:3). The OHP's site recording guidelines provide that "any physical evidence of human activities over 45 years old may be recorded for purposes of inclusion in the OHP's filing system" (OHP 1995:2). However, a property recorded under this provision does not automatically become a significant or important historical resource unless officially registered, designated, or otherwise determined as such by the proper federal, state, or local government agencies.

- **Isolate 100099** Isolate 100099 is comprised of two Monterrey Chert stone flakes found near Battery 240 on a hilltop (Perry 1989). These artifacts were not observed at the recorded location during the 1998 and 1999 studies of the project area (Bissell 1998a:26; White et al. 1999:35).

During his 1998 study, Bissell also recorded a bronze survey monument that was apparently installed by the Los Angeles County Surveyor's Office in 1936 (Bissell 1998g). Designated subsequently by the SCCIC as Site 19-180592, this survey monument is located on a 3.9-acre parcel controlled by the U.S. Coast Guard, which is not considered a part of the project area at the time of this study.

At the conclusion of the 1998 study, Bissell (1998a:30) states that "it is the author's belief that the defense facilities on the current study area combine to form a Historic District that is eligible for inclusion in the National Register of Historic Places." The 1999 study, on the other hand, "was limited to an inventory of the cultural resources of the site and the impacts of the planned development on these cultural resources" (White et al. 1999:40), and offered no significance evaluation on the sites listed above, or any other historical/ archaeological features noted during that study.

Outside the project area but within a one-mile radius, SCCIC records indicate an additional 30 cultural resources studies. As a result of these studies, 20 archaeological sites and 2 isolates were recorded within the one-mile radius. Of the 20 archaeological sites, 18 consisted of shell middens, flakes, groundstone, and 3 shell beads, and 2 sites contained lithic scatters. The 2 isolates have been recorded as large fragments of abalone shell and a petroglyph (sandstone slab with etchings). The presence of 6 previously recorded historical/archaeological sites within the project area and 22 additional resources within a one-mile radius suggests a very high sensitivity for cultural resources in the project area, both from the prehistoric period and from the historic period.

POTENTIAL CULTURAL RESOURCES IN THE PROJECT AREA

Site CA-LAN-103 (Rock Shelter and Shell Midden)

CA-LAN-103 was found during the field survey hidden behind a dense stand of prickly pear cactus on the west-facing slope below the Coast Guard property (Fig. 14). Around the edges of the cactus stand, abalone shell fragments were visible emerging from beneath the vegetation and washing down slope. Cutting a trail through the cactus and following the shell midden up-slope, CRM TECH project archaeologists rediscovered the entrance to the rock shelter.

Evidence of past removals within the cave is clear, in the form of looters' pits and rock removals. Hundreds of pieces of abalone shell cover the cave entrance. The rock shelter itself measures approximately 4.5 meters (15 feet) front to back and 5 meters (16.5 feet) wide (Fig. 15), while the talus slope containing untold numbers of shell fragments and discarded artifacts reaches some 35 meters (115 feet) to the west and south of the cave entrance (Fig. 16).

The actual location of CA-LAN-103 is some 1,700 feet west of where it was plotted on the SCCIC map that was copied during the records search (Fig. 17). Since the original 1939 site record did not include a map, one can only speculate how the erroneous site location came to be recorded at the SCCIC. The correct location is now on file as a result of the current study and the submission of a site record update.

Site 19-180589 (Base End Stations)

As mentioned above, six Base End Stations were constructed at this location and transferred to the U.S. Army in 1930, along with a submarine cable terminal box, a cable junction box, and a concrete datum point (Berhow 1992:7, 14). The Base End Stations were small observation posts of reinforced concrete construction that were partially buried, each associated with one of the six heavy artillery batteries at Fort MacArthur, known as Batteries Osgood, Farley, Leary, Merriam, John Barlow, and Saxton. Among these, Battery Osgood-Farley, which was equipped with two 14-inch "disappearing" guns, and Batteries John Barlow and Saxton, which were equipped with four 12-inch mortars each, are now listed in the National Register of Historic Places (Fort MacArthur Museum Association n.d.). Technical details of the Base End Stations' construction and functions are well documented in the existing site record for 19-180589 (see App. 2), and will not be repeated in this report.

By 1943-1944, the six heavy artillery batteries listed above were declared obsolete and inactivated, and their guns were removed after WWII (Fort MacArthur Museum Association n.d.). The Base End Stations at Site 19-180589 were presumably inactivated around the same time as the batteries. Berhow (1992:14-15) reports that all six of the Base End Stations were extant in 1992, as well as the cable junction box, while the cable terminal box and datum point had probably been destroyed by then. In 1998, Bissell (1998a:17-20) located five of the six Base End Stations, along with the cable junction box. Field survey during the present study confirmed Bissell's observations.

The five Base End Stations that were inspected during this study, as noted by Bissell (1998c) two years ago, remain in excellent condition. In contrast, the three other groups of Base End Stations for the Fort MacArthur batteries, located at the fort, at White Point, and at Sea Bench, have all been greatly disturbed and partially destroyed (Berhow 1992:14; Fort MacArthur Museum Association n.d.). The sole surviving example at Sea Bench has since been listed in the National Register of Historic Places (White et al. 1999:17). The Base End Stations at Site 19-180589, the best preserved in the Los Angeles area (Berhow 1992:16), have thus become an important relic to supplement the historic gun batteries at Fort MacArthur.

Site 19-180590 (Battery 240)

Also known as Battery Harry C. Barnes, Battery 240 was constructed shortly after the Japanese attack on Pearl Harbor to facilitate two rapid-fire six-inch naval guns designed to repel sea-born invasions and submarine raids, which were considered the main threats to the west coast during the early days of U.S. involvement in WWII. Technical details of the battery's construction and functions are well documented in the existing site record for 19-180590 (see App. 2), and will not be repeated in this report.

The battery was completed and became operational in 1943 (Berhow 1992:12). Within the next two years, two other similar batteries were built in the Greater Los Angeles area, including Battery 241 at Fort MacArthur and Battery 242 at Bolsa Chica near Huntington Beach (*ibid.*). The remnants of Battery 241 can be found today in the Angels Gate Park in San Pedro, with features similar to those at Site 19-180590. Each of these three batteries was charged with the defense of a segment of the coastline, with Battery 240's responsibility extending as far north as Playa del Rey (Berhow 1992:app.). After the end of WWII, as the coastal artillery system became obsolete, Battery 240 was inactivated and dismantled, along with all other batteries in the Harbor Defenses of Los Angeles (White et al. 1999:22).

During the time when Battery 240 was in service, the gun emplacement was accompanied by a number of support buildings, structures, and subsurface features, including two power houses, two fuel tanks, a mess hall, barracks, a latrine, and a septic tank, forming the largest military base on the Palos Verdes Peninsula (Bissell 1998a:21; White et al. 1999:22; Young n.d.:13). Most of these were located outside the project area in the general vicinity of the present-day City Hall, but at least two of the buildings were apparently inside the project area (aerial photo 1945; Fig. 6). In the mid-1950s, all but one of the buildings and structures were demolished in preparation for the construction of new buildings associated with the Nike air-defense missile site (White et al. 1999:22). The sole survivor in that group was the mess hall, which was rehabilitated for the Nike site in 1954 (*ibid.*), but is no longer in existence today (see discussion of Site 19-180591, below).

At present, the gun battery itself remains present at the site, which consists of two concrete gun blocks and a subsurface concrete and steel structure housing the power rooms, shell rooms, and other supporting facilities. Although the gun blocks now stand vacant and one of them is overgrown by vegetation, the battery is overall in a very good state of preservation and is reportedly still used by the U.S. Coast Guard for some purposes. Much of the site is located on the Coast Guard parcel and thus outside the project area, including both gun blocks, but roughly half of the battery's subsurface structure, including the main entrance, is situated within the project boundaries (Fig. 17).

Site 19-180591 (Nike Air Defense Site LA-55-L)

Nike Air Defense Site LA-55-L was a part of Site LA-55, one of the 16 Nike air defense missile batteries that guarded the 4,000-square-mile Los Angeles Defense Area, one of the largest in the nation, during the height of the Cold War (Berhow 1992:18; Morgan and Berhow 1996:88). The Nike air defense program, designed to defend U.S. metropolitan areas and major military installations against nuclear-armed air assault by the Soviet Union, was officially launched in 1954, when the first Nike Ajax surface-to-air missiles started to phase out anti-aircraft artillery (McMaster et al. 1984:2-1). Between 1958 and 1961, the Nike Ajax missiles were gradually replaced by the more powerful Nike Hercules missiles that were armed with nuclear warheads (*ibid.*:2-2). As a result, the 16 missile sites in the Los Angeles Defense Area were reduced to 9, with the other 7 inactivated by 1964 (Berhow and Stokes n.d.:3). In the late 1960s, the U.S. Army began reducing the number of Hercules batteries maintained around the nation, and by 1974 all remaining sites in the Nike program had been inactivated (*ibid.*).

Site LA-55, known as Palos Verdes/Point Vicente, was activated in 1956, although it was shown to the public as early as 1955, the first Nike site to receive that distinction (Berhow and Stokes n.d.:2, 7). It was converted from Ajax to Hercules in 1958, without significant changes to the existing facilities (McMaster et al. 1984:2-2; Morgan and Berhow 1996:88). Like all other Nike batteries, Site LA-55 consisted of two components: an Integrated Fire Control area, the nerve center of the missile site, and a Launch Control area, the physical arm of the site. The Integrated Fire Control area for LA-55 was located some two miles to the northeast at Crenshaw Boulevard and Seacrest Drive, and has been demolished for the construction of Del Cerro Park (Berhow 1992:20). Site 19-180591 is the remains of the Launch Control area, designated accordingly as Site LA-55-L.

Although Site LA-55-L ceased operation more than 16 years ago (Morgan and Berhow 1996:88), the majority of its facilities remains intact today, including two missile launch sections and six buildings. Four of the buildings, the missile arming building, the missile assembly building, the generator building, and a guard post, are located within the project area (Fig. 17). The other two buildings, the troop barracks and the headquarters/ recreation building, are currently occupied by the Rancho Palos Verdes City Hall, just

outside the project area. Also located in the project area are other features associated with the Nike operations, such as an earthen revetment surrounding the missile arming building. The only major component of Site LA-55-L that has been demolished, according to Bissell (1998e), is the mess hall that was inherited from the WWII-era Battery 240, which was located next to the headquarters/recreation building outside the project area. More detailed listing and descriptions of the remaining facilities of Site LA-55-L are found in the existing site record for 19-180590 (see App. 2).

Of the 16 Nike air defense missile sites in the former Los Angeles Defense Area, most have been destroyed or partially destroyed since inactivation. Besides LA-55-L, according to Berhow and Stokes (n.d.:5-8), at present only five of the other Nike sites appear to retain their Launch Control area facilities, including those at Stanton/Garden Grove (LA-32), Fort MacArthur/White Point (LA-43), Malibu/Sainta Monica Mountains (LA-78), Chatsworth/Oak Mountain (LA-88), and Van Nuys/Sepulveda (LA-96).

Site 19-180593 (Documented Long Point Defense District)

The research findings presented above demonstrate that the Harbor Defenses of Los Angeles formed an important chapter in the history of the project area, particularly the Upper Point Vicente Area. In addition to the Base End Stations, Battery 240, and Nike Site LA-55-L, another WWII-era artillery battery, known as Battery 5, once also existed in the project area. During the previous surveys for the Long Point Resort project, Bissell (1998a:26-27) and White et al. (1999:36, 39) noted the presence of a Known-Distance Rifle Range that was associated with Nike Site LA-55-L. Both reports state that the rifle range is no longer in existence, and furthermore its former location lies outside the project boundaries as currently configured.

Commissioned in 1942 as a temporary battery while Battery 240 was under construction, Battery 5 consisted of the concrete mounts for two 155-millimeter "Long Tom" artillery pieces, one of the nine similar posts established in the Greater Los Angeles area in the early days of WWII (Berhow 1992:11; Young n.d.:13). It was located near the tip of Long Point, apparently with at least one support structure (aerial photo 1945; Monet et al. 1992:16). The battery was dismantled after Battery 240 became operational and, since its location was later occupied by the Marineland Aquatic Park, it is unlikely that any remains of the battery still exist today.

The three remaining military sites in the project area, the Base End Stations, Battery 240, and Nike Site LA-55-L, are not only geographically contiguous, occupying the central portion of the Upper Point Vicente Area, but also thematically connected to one another. Together they represent the evolution of the Los Angeles harbor defense system between 1930 and 1974, from one designed against heavily armored warships to one designed against sea-borne invasion and submarine raids, and finally to a more recent system designed against nuclear-armed air attacks. In this sense, the three sites constitute a coherent historic district despite their different dates of construction and operation.

6621 Beachview Drive (Ishibashi Farmhouse Complex)

During the present study, a previously unrecorded historic-era site, consisting of a farmhouse complex, was identified in the northeastern corner of the Resort Hotel Area (Fig. 18). The main feature at the site is a wood-frame residential structure with a rectangular plan, a low-pitched side gable roof, and wood-framed double-hung windows. Its exterior walls are clad with vertical flush boards, and the roof is covered with composition sheets. The façade of the house features an elevated wooden platform under a flat roof, forming a

large front porch. Overall, the house is simple in design and unpretentious in appearance (Fig. 19).

Standing next to this main residence is a small, shed-roofed secondary residence, also of wood-frame construction. Both of them appear to be occupied. The rest of the complex is comprised mainly of a number of wooden sheds, some covered with corrugated metal panels, that are used for storage or animal pens (Fig. 20). Also located in the complex are several old trucks and a mature growth of domestic trees, including large pepper trees. This group of buildings and structures is surrounded by agricultural fields, although most of them are not under cultivation at the time of the field survey.

Sources consulted during this study indicate that the main residence in the complex was moved to this location in the 1920s, when its former site was taken over by a stable for Frank Vanderlip's prized race horses (Ishibashi 2000). This took place evidently between 1925 and 1928, for the 1928 USGS map of the area, based on field surveys conducted in 1925, shows no building in the vicinity, while an aerial photograph clearly shows the presence of the farmhouse surrounded by trees and other structures (aerial photo 1928; Fig. 5).

According to George Ishibashi (2000), a son of Kumekichi Ishibashi, the house was occupied before 1936 by a Japanese farmer named Hashimoto. In that year, when Hashimoto returned to Japan, George Ishibashi moved here from the Ishibashi family's farmstead near Portuguese Bend, and began farming at this location (*ibid.*). In 1942, like all other Japanese-Americans, the Ishibashis were removed from the coastal area to internment camps. After the end of WWII, George Ishibashi returned to the house, and was soon joined by his brothers, including Masaichi "Mas" Ishibashi (Ishibashi 2000; anonymous n.d.:26). Mas Ishibashi resided at this location until the mid-1960s, while George Ishibashi continued to occupy the house until the mid-1990s (Ishibashi 2000).

As mentioned previously, the Ishibashis are a family of pioneers in the agricultural development of the Palos Verdes Peninsula in the early 20th century, and Kumekichi Ishibashi's original farmstead near Portuguese Bend is now officially designated as a California Point of Historic Interest (LAN-053). Among the Ishibashi family members who once lived in this farmhouse complex, Mas Ishibashi has distinguished himself as the largest farm operator in Rancho Palos Verdes, cultivating at one time 500 scattered acres from Palos Verdes Estates to San Pedro (anonymous n.d.:26). The acreage around this farmhouse complex was planted mostly in flowers, vegetables, barley, and beans, with some of the produce marketed from a nearby roadside stand on Palos Verdes Drive South, which was known as Deliciously Yours/Beautifully Yours (*ibid.*:26, 28).

Over the years, the farmhouse complex has been used several times as a movie set, and the existing front porch was constructed during one such episode (Ishibashi 2000). Aside from this, no major alterations have been reported on the residence (*ibid.*). This farmhouse complex was recorded on standard site record forms during this study, which will be submitted to the SCCIC for inclusion in the California Historical Resource Information System.

Other Possible Locations of Historical Interest

Isolate 100099 (Monterrey Chert Flakes)

The two stone flakes reported at this location in 1989 (Perry 1989) were not located during either of the two previous surveys of the project area (Bissell 1998a:26; White et al.

1999:35), or during the present study. Nor were any other similar artifacts noted in the vicinity during this study. This isolate, therefore, is evidently no longer in existence.

Concrete Slabs and Asphalt Roads

During the present study, two concrete slabs were observed just to the north of the Rancho Palos Verdes City Hall. These slabs have remnants of steel poles that were cut at some previous time, and they do not appear to be part of a domestic foundation, as they lack bolts around their edges. There are two asphalt roads approaching the slabs from Palos Verdes Drive South, and one of these leads right up to the slabs.

Results of the historical research reveal no buildings, structures, or man-made features at this location during the historic period. A building and a road that the current USGS map shows to be present at this location, in fact, did not come into being until some time between 1972 and 1978 (Figs. 2, 9). The features noted above thus clearly have no historic value, and consequently were not recorded as potential cultural resources during this study.

Existing Truck Farm

Of the two existing truck farms reported by Bissell (1998a:27) and White et al. (1999:33, 36), only one is located within the current project area. This truck farm, situated on the eastern edge of the Upper Point Vicente Area, is currently operated by James Hatano, and planted mostly in cactus. It contains a modern trailer and several wooden sheds, and no features that demonstrate any historic characteristics.

In his 1998 report, Bissell (1998a:25) states that aerial photographs taken in 1927 and 1928 indicate two houses in the project area, including one near the location of the Hatano farm. Examination of the same photographs during the present study, however, revealed no evidence of any buildings at the locations reported by Bissell (aerial photo 1927; 1928). Since no historic features are evident at the Hatano farm, no further consideration is required for that location.

Marineland Aquatic Park

The Marineland Aquatic Park, as previously stated, came into being in 1954 and ceased operations in 1987, and is thus fairly modern in origin. Most of its buildings and other facilities were demolished in 1988, and the remaining ones in the project area today demonstrate no particular historic characteristics or other special qualities. Therefore, the former site of the park was not recorded during this study, and requires no further consideration as a potential historical resource.

DISCUSSION

Based on the research results discussed above, the following sections present CRM TECH's conclusion on whether any of the historical/archaeological features encountered within the project area meets the official definitions of a "historical resource," as provided in the California Public Resources Code, in particular CEQA.

DEFINITION

According to PRC §5020.1(j), "'historical resource' includes, but is not limited to, any object, building, site, area, place, record, or manuscript which is historically or archaeologically

significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California." More specifically, CEQA guidelines state that the term "historical resources" applies to any such resources listed in or determined to be eligible for listing in the California Register of Historical Resources, included in a local register of historical resources, or determined to be historically significant by the Lead Agency (Title 14 CCR §15064.5(a)(1)-(3)).

Regarding the proper criteria of historical significance, CEQA guidelines mandate that "a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing on the California Register of Historical Resources" (Title 14 CCR §15064.5(a)(3)). A resource may be listed in the California Register if it meets any of the following criteria:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
(2) Is associated with the lives of persons important in our past.
(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
(4) Has yielded, or may be likely to yield, information important in prehistory or history. (PRC §5024.1(c))

Pursuant to these statutory and regulatory guidelines, Sites CA-LAN-103, 19-180589, 19-180590, 19-180591, 19-180592, 19-180593, and the farmhouse complex at 6621 Beachview Drive are evaluated under the California Register criteria. The results of the evaluation are summarized below.

SITE EVALUATION

Site CA-LAN-103 (Rock Shelter and Shell Midden)

Site CA-LAN-103 would qualify as a historical resource under California Register Criterion 4 ("information potential") if it contained intact archaeological deposits. Such deposits could yield important information on the prehistory of California's coastal populations, dating to past centuries or possibly millennia. However, the site has been seriously disturbed by artifact hunters, which compromises the site's historical integrity. Thus it is impossible to judge the full extent of the disturbances or the quantity and quality of the in-place artifact-bearing deposits without an archaeological testing program of scientific excavations to determine the current depth, breadth, and content of the site. In sum, the question of whether Site CA-LAN-103 qualifies under CEQA as a historical resource is unanswered based on present information.

Site 19-180589 (Base End Stations)

Site 19-180589, consisting of the six 1930 Base End Stations and an associated cable junction box, is a contributor to the historic significance of the documented Long Point Defense District (Site 19-180593), which appears to be eligible for listing in the California Register (see discussion below). In fact, these pre-WWII structures may be considered the most significant component of the documented district. Not only are they the oldest of the three elements of the documented historic district, but they represent rarer specimens than the other two components, namely Battery 240 (Site 19-180590) and Nike Air Defense Site LA-55-L (Site 19-180591). While other, similar six-inch gun batteries and Nike missile launch sites can still be found in the Los Angeles area, the group of Base End Stations in the project area is now the only intact example of its kind.

Despite the absence of the fire control instruments, these concrete structures retain historic integrity that reflects their period of significance. In addition to being a key component of the documented Long Point Defense District, Site 19-180589 is also closely related to Fort MacArthur, the historic cornerstone of the Los Angeles harbor defense system, where some of the large-caliber gun batteries served by the Base End Stations are now listed in the National Register of Historic Places and the California Register of Historical Resources. Based on these considerations, the site qualifies as a historical resource, both individually and as a contributing element of a documented historic district.

Site 19-180590 (Battery 240)

Constructed shortly after the United States entered WWII, Battery 240 was once an integral part of the Los Angeles harbor defense system. During its service of active duty, the two six-inch guns emplaced at this location were charged with defending the coastline from Playa del Rey to the San Pedro Bay against anticipated invasion or submarine raids. The battery is closely associated with the American war efforts and coastal defense, a prominent theme in the historical context of the Rancho Palos Verdes area. Therefore, it is eligible for listing in the California Register under Criterion 1.

Although the gun turrets and the auxiliary buildings at the battery have been removed, the subsurface structure of the battery and the concrete gun blocks are still intact. The site thus retains historic integrity to relate to its period of significance. Furthermore, it is one of the three contributors to the historic significance of the documented Long Point Defense District (Site 19-180593), which is also eligible for listing in the California Register (see discussion below). As such, Site 19-180590 qualifies as a historical resource both individually and as a contributing element of a documented historic district.

Site 19-180591 (Nike Air Defense Site LA-55-L)

Site 19-180591, representing the remains of the former Nike anti-aircraft missile launching area designated Site LA-55-L, is a relic of the Cold War between the United States and the Soviet Union in the years following the end of WWII. The presence of this and other similar air defense sites around the country undoubtedly played a significant part in preventing the Cold War from escalating into a real one. Because of its association with this important event in post-WWII American history, Site 19-180591 is eligible for listing in the California Register under Criterion 1.

Of the 16 such facilities that once circled the Los Angeles metropolitan area, Site LA-55-L is among the few that have survived since the termination of the Nike air defense program in 1974. Despite the removal of the armament and the loss of one of the auxiliary buildings, the site retains historic integrity overall, with the missile launcher sections and the remaining buildings largely intact. In addition, the Nike missile launching area is the geographically dominant element of the documented Long Point Defense District (Site 19-180593), which as a whole is eligible for listing in the California Register (see discussion below). Site 19-180591, therefore, qualifies as a historical resource both individually and as a contributing element of a documented historic district.

Site 19-180593 (Documented Long Point Defense District)

As stated above, the three elements comprising this documented historic district, the 1930 Base End Stations (Site 19-180589), the WWII-era Battery 240 (Site 19-180590), and Nike Air Defense Site LA-55-L (Site 19-180591), have been each determined to be individually eligible for listing in the California Register. Together, these three components form a

thematic district representing the evolution of the Los Angeles harbor defense system from 1930 to 1974. The Harbor Defenses of Los Angeles, to which the district is integrally associated, was an important chapter in the history of not only the Palos Verdes Peninsula but also the Greater Los Angeles area. Based on these considerations, the present study concludes that Sites 19-180589, -180590, and -180591 constitute a "district" as defined by the National Parks Service and the California Office of Historic Preservation (NPS 1991:5; OHP 1995:3), and that the documented Long Point Defense District, consisting of these three sites, is eligible for listing in the California Register under Criterion 1, and thus qualifies as a historical resource as a whole*.

6621 Beachview Drive (Ishibashi Farmhouse Complex)

This farmhouse complex, dating to the 1920s, was home to members of the Ishibashi family, most notably Masaichi "Mas" and George Ishibashi, from 1936 to the mid-1990s except for a brief period during WWII. Son of the first Japanese immigrant to lease land and establish a farm on the Palos Verdes Peninsula, Mas Ishibashi has also distinguished himself as the largest and probably the best-known farm operators in the area in the post-WWII period. Because of this connection and the family's well-documented contributions to the development of the peninsula in the early 20th century, this farmhouse complex is certainly of local historical interest.

The farmhouse itself is very modest in appearance, and has no architectural merit or other special characteristics. If the house and its environs were to qualify for the California Register, it would be under Criterion 2 through the association with an important person. Guidelines adopted by the California Office of Historic Preservation, however, provide that "properties associated with living persons are usually not eligible for inclusion" in the California Register, because "sufficient time must have elapsed to assess both the person's field of endeavor and his/her contribution to the field" (NPS 1991:16). In view of this provision, the current study concludes that the farmhouse complex at 6621 Beachview Drive is not eligible for listing in the California Register, and thus does not qualify as a historical resource as defined by CEQA. However, because of its long association with the Ishibashi family, including Mas Ishibashi, the complex does merit special planning considerations* as a point of local historical interest.

PROJECT EFFECT ASSESSMENT

CEQA establishes that "a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment" (PRC §21084.1). "Substantial adverse change," according to PRC §5020.1(q), "means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired."

Site CA-LAN-103 (Rock Shelter and Shell Midden)

In order to determine whether the project would have an effect on Site CA-LAN-103 as a historical resource, it must first be determined whether or not the site meets the statute

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* Although the resource has been documented, no additional action has been taken to create a formally designated historic district.

* "Special consideration in local planning," as provided in the California Office of Historic Preservation's site recording guidelines, is a level of protection afforded to cultural resources that are not eligible for listing in the National Register of Historic Places or the California Register of Historical Resources and are not eligible for designation under an existing local ordinance, but that still possess a certain degree of historical interest to be recognized. In practice, such "special consideration" remains largely undefined by CEQA procedures and is left to the discretion of the Lead Agency.

definition of a historical resource. Such a determination would depend upon results of an archaeological testing and evaluation program.

Site 19-180589 (Base End Stations)

As the project is currently configured, the Base End Stations lie within a proposed habitat conservation area. As such, the project will have no effect on these resources.

Site 19-180590 (Battery 240)

Three kinds of land use are proposed for the portion of Battery 240 that lies within the project area: public play golf course (recreation), public parking and parks (recreation), and conservation. The first two have the potential to have an adverse effect on this historical resource. However, due to the location of this resource within areas designated for conservation and recreation, the potential exists for design modifications that would avoid such effect. This would allow incorporation of historic features into project plans in such a way as to preserve those characteristics of Battery 240 that qualify it for inclusion in the California Register. In sum, the project has the potential to have an adverse effect on this historical resource, but by proper design, such effect can be reduced to levels less than significant.

Site 19-180591 (Nike Air Defense Site LA-55-L)

Since Site 19-180591 is located in an area proposed for a golf course, project effects to this historical resource are potentially significant.

Site 19-180593 (Documented Long Point Defense District)

The documented Long Point Defense District, consisting of the three military facilities listed above, will be affected by the project as currently planned. However, project effects range from "no effect" to "adverse effect" depending upon the element in question. The most important of the three elements, the Base End Stations, will suffer the least amount of effect. Since these structures are located in a proposed habitat conservation area, there will be no effect to this element.

The second element in terms of significance is the Battery 240 site, much of which is outside the project area on the Coast Guard parcel. The portion within the project area will potentially be affected by project plans, but can readily be preserved as part of proposed recreational land use.

The most recent and least important of the three elements, namely Nike Air Defense Site LA-55-L, has the greatest potential for significant effect. If the above-ground buildings in the project area—the missile arming building, the missile assembly building, the generator building, and the guard post—or the earthen revetment around the missile arming building are removed, it would constitute an adverse effect to this resource, and by extension an adverse effect to the entire documented historic district.

6621 Beachview Drive (Ishibashi Farmhouse Complex)

The project plans call for the construction of a golf course at this location, which requires the demolition of the buildings, structures, and other related features in the complex. Obviously, the project as currently proposed will impact this site. However, since the complex does not meet CEQA's definition of a historical resource, such impact will not constitute a significant effect to a historical resource.

RECOMMENDATIONS

This study has determined that, among the historical/archaeological features encountered in the project area, the documented Long Point Defense District and its three components, the Base End Stations, Battery 240, and Nike Air Defense Site LA-55-L, meet CEQA's definition of historical resources. In addition, the study has concluded that the Ishibashi farmhouse complex at 6621 Beachview Drive is of sufficient local historical interest to merit special planning considerations, and that Site CA-LAN-103 cannot be adequately evaluated on the basis of existing data. In light of these findings, CRM TECH has formulated specific recommendations on each of the sites mentioned above. These recommendations are presented in the sections below.

SITE CA-LAN-103 (ROCK SHELTER AND SHELL MIDDEN)

The project applicant shall retain a qualified, city-approved archaeologist to conduct archaeological testing in order to determine the depth, breadth, and nature of the contents of Site CA-LAN-103, and whether or not it qualifies as a historical resource. Such a testing program would consist of scientific excavation units, artifact analysis, and report preparation for a sample of the site area, so that a conclusion can be reached regarding site integrity and the research potential of its intact deposits.

If the testing program determines that Site CA-LAN-103 qualifies as a historical resource, three options are available to reduce project effects to levels less than significant:

- *Option 1* Capping the site to preserve it *in situ*.
- *Option 2* Redesigning the project to avoid impacting the site.
- *Option 3* Retaining a qualified archaeologist to prepare and implement a data recovery plan prior to issuance of a grading permit for the immediate area of the site.

SITE 19-180589 (BASE END STATIONS)

Since the proposed project will have no effect on the Base End Stations, the only further requirement regarding this site is to ensure its proper protection during construction activities. No other treatment is recommended for this historical resource.

SITE 19-180590 (BATTERY 240)

Due to the proposed project's potential to cause a substantial adverse change in the significance of this historical resource, CRM TECH recommends the following two options:

- *Option 1 (preferred)* That the project effects to this site be avoided by preserving the portion of the site within the project area and incorporating it into project designs in such a way as to retain the historic characteristics of this resource.
- *Option 2 (if demolition is unavoidable)* That the historical and physical information about Battery 240 be preserved through comprehensive documentation at a level compatible to Level 2 of the Historic American Buildings Survey (HABS) and the Historic American Engineering Record (HAER).

Established in 1933 and 1967, respectively, HABS and HAER have been adopted by the National Park Service as the primary methods of preserving important information about architectural, engineering, and industrial sites of historic value, and are often initiated as the means of mitigating adverse effects of federal undertakings on such sites (NPS 1993:1). At Level 2, HABS/HAER requires detailed textual and photographic recordation, sketch maps and drawings of structural features, and historical documentation to record the subject property's history. The results of such documentation are to be made accessible to the public at one or more local repositories, such as the local history collection of the Palos Verdes Library and/or the Palos Verdes Historical Society's museum.

In addition, due to the likelihood of encountering subsurface features or buried artifacts from the WWII era in the vicinity of Battery 240, CRM TECH further recommends that earth-moving activities near the site be monitored by a qualified archaeologist.

SITE 19-180591 (NIKE AIR DEFENSE SITE LA-55-L)

The following two options are recommended regarding disposition of Site 19-180591:

- *Option 1* That the project effects to this site be avoided by preserving components of the site and incorporating them into project designs in such a way as to retain the historic characteristics of this resource.

- *Option 2 (if demolition is unavoidable)* That the project effects to this site be mitigated through recordation procedures compatible to Level 2 of HABS/HAER, identical to those recommended for Battery 240.

SITE 19-180593 (DOCUMENTED LONG POINT DEFENSE DISTRICT)

Specific recommendations on the treatment of the three elements comprising this documented historic district are discussed above in separate sections (see "Site 19-180589," "Site 19-180590," and "Site 19-180591"). If these recommendations are adopted, the project's potential effects on the documenetd historic district will be reduced to a level less than significant.

6621 BEACHVIEW DRIVE (ISHIBASHI FARMHOUSE COMPLEX)

Although not eligible for listing in the California Register, this farmhouse complex qualifies as a point of local historical interest. In order to reduce the project impacts on the complex, CRM TECH recommends preserving the historical and physical data about the buildings, structures, and other related features through documentation.

Due to the local nature of the complex's significance, HABS-compatible procedures such as those recommended for Battery 240 and Nike Air Defense Site LA-55-L do not appear to be an appropriate approach in this case. Instead, the recommended scope of work consists of a general documentation of the complex's history and current conditions, and limited photographic recordation of its physical characteristics. The results of these procedures should be housed at one or more local repositories to facilitate public access.

CONCLUSION

The foregoing report has provided background information on the project area, outlined the methods used in the current study, and presented the results of the various avenues of research. As a result of the study, six historical/archaeological sites are identified within the project area, as listed in the table below. Another site that was recorded during previous surveys for the proposed project, 19-180592, representing a 1936 survey monument, was found to be outside the project area as currently configured. Several other features that were noted but not recorded during the previous studies, such as the former Marineland Aquatic Park and the truck farms now in operation in the Upper Point Vicente Area, do not demonstrate any historic characteristics and require no further consideration in the cultural resources assessment process. A prehistoric isolate that was recorded in the project area in 1989, designated 19-100099 and consisting of two flakes, could not be located during any of three recent surveys of the project area, including the present study, and presumably is no longer in existence at the recorded location.

Based on the results and findings of the study, CRM TECH evaluated the historical significance of the six historical/archaeological sites in the project area against CEQA's definition of "historical resources" and the officially established criteria for inclusion in the California Register o Historical Resources. The results of the evaluation are presented in the table below, along with CRM TECH's assessment of potential project effects on sites that qualify as historical resources and specific recommendations on the treatment of each of these sites.

Site ID	Evaluation	Project Effects	Recommendations
CA-LAN-103 (rock shelter and shell midden)	Cannot be evaluated without testing	Cannot be determined without testing	Archaeological testing and evaluation
19-180589 (Base End Stations)	Historical resource	No effect	Preserve *in situ* as part of habitat conservation area
19-180590 (Battery 240)	Historical resource	Adverse effect unless mitigated	Preserve *in situ* (preferred) or HABS/HAER Level 2 recordation; archaeological monitoring
19-180591 (Nike Air Defense Site LA-55-L)	Historical resource	Adverse effect unless mitigated	Preserve *in situ* or HABS/HAER Level 2 recordation
19-180593 (Long Point Defense District)	Historical resource	Adverse effect unless mitigated	See specific recommendations for 19-180589, 19-180590, and 19-180591
6621 Beachview Drive (Ishibashi Farmhouse Complex)	Not a historical resource but of local historical interest	No effect on a historical resource	Photographic and documentary recordation prior to demolition

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1896a Map: Redondo, Calif. (15', 1:62,500); surveyed in 1894.

1896b Map: San Pedro, Calif. (15', 1:62,500); surveyed in 1894.

1928 Map: San Pedro Hills, Calif. (6', 1:24,000); surveyed in 1925.

1944 Map: San Pedro, Calif. (15', 1:62,500); aerial photos taken in 1940.

1951 Map: Redondo Beach, Calif. (7.5', 1:24,000); aerial photos taken in 1947, field-checked in 1951.

1963 Map: Redondo Beach, Calif. (7.5', 1:24,000); aerial photos taken in 1963, field-checked in 1963.

1972 Map: Redondo Beach, Calif. (7.5', 1:24,000); 1963 edition photorevised in 1972.

1978 Map: Long Beach, Calif. (1:250,000); 1957 edition photorevised in 1977.

1981 Map: Redondo Beach, Calif. (7.5', 1:24,000); 1963 edition photorevised in 1978.

White, Laurie, David T. Moore, and Robert S. White

1999 Cultural Resources Inventory Report for the Long Point Resort, Rancho Palos Verdes, Los Angeles County, California. Copy provided by RBF Consulting, Irvine, CA.

Young, Donald J.

n.d. *Wartime Palos Verdes*. Publisher unknown. Copy provided by RBF Consulting, Irvine, CA.

APPENDIX 1:

PERSONNEL QUALIFICATIONS

PRINCIPAL INVESTIGATOR

Bruce Love, Ph.D., RPA (Register of Professional Archaeologists)

Education

1986	Ph. D., Anthropology, University of California, Los Angeles.
1981	M.A., Anthropology, University of California, Los Angeles.
1976	B.A., Anthropology, University of California, Los Angeles.

1996	"CEQA 101," presented by the Association of Environmental Professionals.
1995	"CEQA Workshop," presented by Association of Environmental Professionals.
1994	"Assessing the Significance of Historic Archaeological Sites," presented by the Historic Preservation Program, University of Nevada, Reno.
1994	"CEQA 1994: Issues, Trends, and Advanced Topics," presented by UCLA Extension.
1990	"Introduction to Federal Projects and Historic Preservation Law," presented by U.S. General Services Administration Training Center.

Professional Experience

1993-	Owner and Principal, CRM TECH, Riverside.
1990-1993	Director, Archaeological Research Unit, UC Riverside; Coordinator, Archaeological Information Center, UC Riverside.
1989-1990	Coordinator, Archaeological Information Center, UCLA.
1987-1990	Owner and Principal, Pyramid Archaeology, Palmdale, California.
1986-1987	Junior Fellow, Dumbarton Oaks Center for Pre-Columbian Research, Washington, D.C.
1981-1986	Part-time cultural resources management consultant; doctoral student at UCLA.

Memberships

Register of Professional Archaeologists.
Association of Environmental Professionals.
American Planning Association.
Society for American Archaeology.
Society for California Archaeology.
Coachella Valley Archaeological Society.

PROJECT HISTORIAN

Bai "Tom" Tang, M.A.

Education

1988-1993	Graduate Program in Public History/Historic Preservation, UC Riverside.
1987	M.A., American History, Yale University, New Haven, Connecticut.
1982	B.A., History, Northwestern University, Xi'an, China.

1994	"Assessing the Significance of Historic Archaeological Sites," presented by the Historic Preservation Program, University of Nevada, Reno.
2000	"Introduction to Section 106 Review," presented by the Advisory Council on Historic Preservation and the University of Nevada, Reno.

Professional Experience

1993-	Project Historian, CRM TECH, Riverside, California.
1993-1997	Project Historian, Greenwood and Associates, Pacific Palisades, California.
1991-1993	Project Historian, Archaeological Research Unit, UC Riverside.
1990	Intern Researcher, California State Office of Historic Preservation, Sacramento.
1990-1992	Teaching Assistant, History of Modern World, UC Riverside.
1988-1993	Research Assistant, American Social History, UC Riverside.
1985-1988	Research Assistant, Modern Chinese History, Yale University.
1985-1986	Teaching Assistant, Modern Chinese History, Yale University.
1982-1985	Lecturer, History, Xi'an Foreign Languages Institute, Xi'an, China.

Honors and Awards

1988-1990	University of California Graduate Fellowship, UC Riverside.
1985-1987	Yale University Fellowship, Yale University Graduate School.
1980, 1981	President's Honor List, Northwestern University, Xi'an, China.

Cultural Resources Management Reports

Preliminary Analyses and Recommendations Regarding California's Cultural Resources Inventory System (With Special Reference to Condition 14 of NPS 1990 Program Review Report). California State Office of Historic Preservation working paper, Sacramento, September 1990.

Approximately 300 cultural resources management reports with the Archaeological Research Unit, Greenwood and Associates, and CRM TECH, since October 1991.

Membership

California Preservation Foundation.

PROJECT ARCHAEOLOGIST

Mariam Dahdul, B.A.

Education

2001 (Exp.)	M.A., Anthropology (specializing in Archaeology), California State University, Fullerton.
1993	B. A., Geography, California State University, Fullerton.

Professional Experience

2000- Project Archaeologist, CRM TECH, Riverside.

Laboratory and Field Experience

1999-2000 Assisted in the catalogue and analysis of artifacts at the CSU, Fullerton archaeology laboratory.

1999 Field survey course under the direction of Phyllisia Eisentraut; surveyed and mapped prehistoric site in the Mojave Desert.

PROJECT ARCHAEOLOGIST

Daniel Ballester, B.A.

Education

1998	B.A., Anthropology, California State University, San Bernardino.
1997	Archaeological Field School, University of Las Vegas and University of California, Riverside.
1994	University of Puerto Rico, Rio Piedras, Rio Piedras, Puerto Rico (August to December).

Professional Experience

1999-	Project Archaeologist, CRM TECH, Riverside.
1998-1999	Field Crew, K.E.A. Environmental, San Diego. • Two and a half months of excavations on Topomai village site, Camp Pendleton.
1998	Field Crew, A.S.M. Affiliates, Encinitas. • Two weeks of excavations on a site on Red Beach, Camp Pendleton, and two weeks of survey in Camp Pendleton, Otey Mesa, and Encinitas.
1998	Field Crew, Archaeological Research Unit, University of California, Riverside. • Two weeks of survey in Anza Borrego Desert State Park and Eureka Valley, Death Valley National Park.

PROJECT ARCHAEOLOGIST

Adrián Sánchez Moreno, B.A.

Education

1999 B.A., Anthropology (with emphasis in Archaeology), University of San Diego.

Professional Experience

2000- Project Archaeologist, CRM TECH, Riverside.

1999 Field Crew, excavation in Camp Pendleton Marine Corps Air Base, Oceanside. K.E.A. Environmental, San Diego.

1999 Field Crew, excavation at Freedmen's Cemetery site in Alexandria, Virginia. URS Greiner Woodward & Clyde.

1999 Field Crew, survey and excavation in Guerrero Negro, Mexico.
- Including identification of osteological specimens.

1999 Field Crew, excavation at Lake Chapala, Baja California, Mexico.
- Excavation and cataloguing of lithic artifacts from the oldest known site in Baja California.

1998 Field Crew, petroglyph survey in San Pedro Atacama, Chile.
- Focusing on identification of possible habitation and petroglyph sites.

APPENDIX 2:

HISTORICAL/ARCHAEOLOGICAL SITE RECORDS

Sites 19-180389, 19-180590, and 19-180591
Recorded by Ronald M. Bissell, 1998

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # 19-180589
HRI#

Trinomial
NRHP Status Code 3B

Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** (Assigned by Recorder): Long Point Defense Facilities

P1. Other Identifier: Base End Stations (Observation Posts)

***P2. Location: [X] Not for Publication [ ] Unrestricted**

***P2a. County:** Los Angeles

***P2b. USGS 7.5' Quad** Redondo Beach, CA **Date** 1963, photorevised 1981 **T** 5S ; **R** 15W **1/4 of** **1/4 of Sec** ; San Bernardino **B.M.** Unsectioned.

P2c. Address None City Zip

P2d. UTM: (Give more than one for large and/or linear resources) Zone 11 ; 370125 m E/ 3734335 m N

P2e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) The Base End Stations are at an elevation of 305 feet. From the Hawthorne Boulevard entrance to the Rancho Palos Verdes Civic Center, proceed along entry road and take two left hand forks. Proceed to locked gate and park. Proceed on foot southward on east side of chain link fence, continuing southward when fence ends. Base End Stations are directly below on steep bluff in dense vegetation.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting and boundaries) Six Base End Stations, a Submarine Cable Terminal Box and a Cable Terminal Box were constructed at the site in 1930. Each Base End Station is a concrete and steel, partially buried observation post equipped with a steel entry door, steel shuttered observation ports, an entry ladder, two instrument pedestals and shelving for communications equipment. The Cable Terminal Box is of similar construction, but lacks observation ports. The Submarine Cable Terminal Box was constructed just above high tide line somewhere south of the Base End Station area. The dimensions of each of the three types of facilities are given in the Reports of Completed Construction (Berhow 1992), contained in the first three Continuation Sheets. The attached Sketch Map depicts the configuration of the Base End Stations and the cable terminal box.

Each Base End Station was designed to furnish fall-of-shot data for fire adjustment of one large caliber gun as part of the Los Angeles Harbor Defenses during the years between the World Wars. The defense facilities were connected by submarine cable. The submarine cable terminated at the box near the ocean, with subsurface cabling connecting to the terminal box in the Base End Station area.

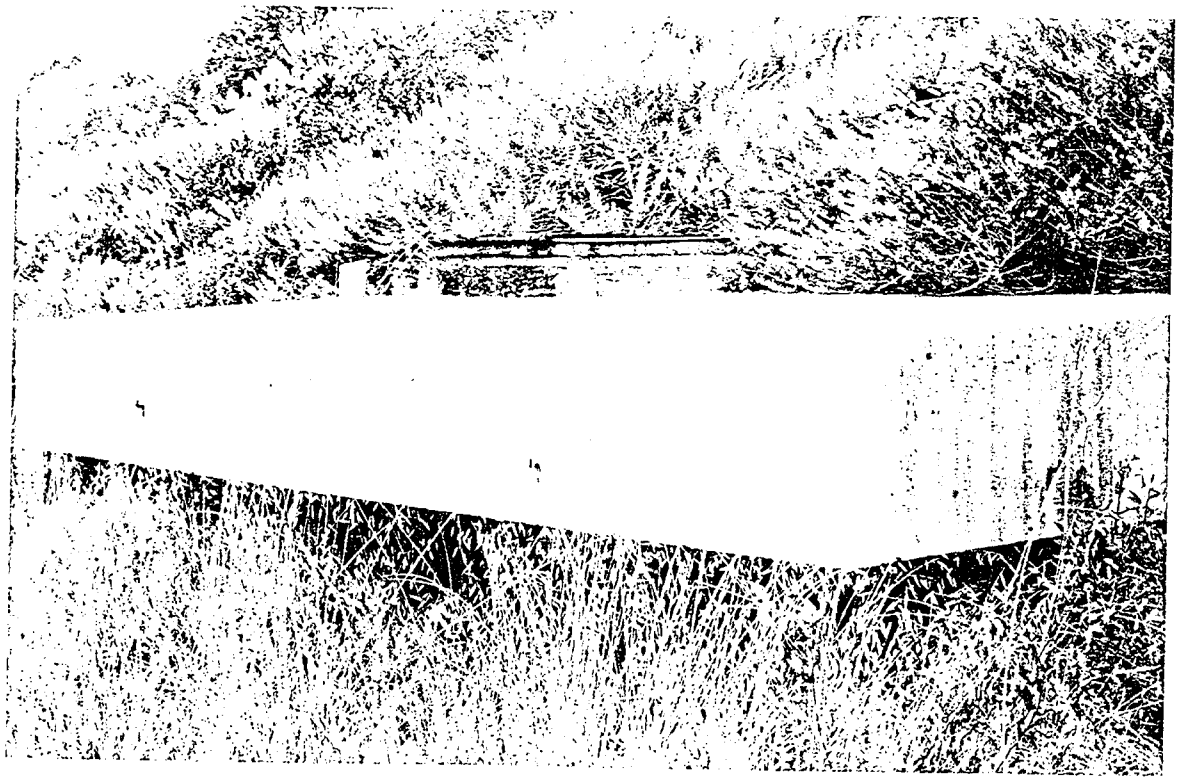
Currently, five of the six original Base End Stations are in existence. The sixth could not be relocated, but there is a possibility it still exists in deep vegetation covering the site area. The cable terminal box also is still in existence, but is buried except for the entrance door. No trace of the submarine cable terminal box near the beach could be found, but this should not be taken as proof that it has been destroyed. The location of the submarine cable terminal box is unknown, and only the portion of beach related to the current study area was examined. The facility may lay outside the current boundary.

The five existing Base End Stations are in an excellent state of preservation. The area is difficult to reach and the entry hatches are padlocked (and apparently have been for a long time). Consequently, the interior has been preserved. Examination through observation shutters established that the interiors are in excellent preservation, with even the original paint intact.

*P3b. **Resource Attributes:** (List attributes and codes) HP11: Engineering structure, HP34: Military property, HP39: Other, Los Angeles Harbor Defense Observation Posts (Base End Stations).

*P4. **Resources Present:** [X] Building [X] Structure [ ] Object [ ] Site [ ] District [X] Element of District [ ] Other (Isolates etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo:(View, date, accession #) This is a view of a Base End Station, looking to the northwest. There are five such structures in the immediate area. A sixth once existed, cannot currently be located, but may still exist in the dense brush or buried by slope wash. The dark, lower portions are shutters covering the observation ports. The shutters are opened by hooks attached to the projections that can be seen in the face of the concrete. The entry hatch can be seen at the rear, top of the structure. A Cable Terminal Box, similar in construction to the Base End Stations, but lacking observation ports, also exists in the immediate area.

***P6. Date constructed/Age and Sources:** [X] Historic [ ] Prehistoric [ ] Both. All of the facilities were constructed prior to 24 September 1930, the date when they were transferred to military control (Berhow 1992). See first three Continuation Sheets.

***P7. Owner and Address:** City of Rancho Palos Verdes, 30940 Hawthorne Boulevard, Rancho Palos Verdes, CA 90275

***P8. Recorded by:** (Name, affiliation and address) Ronald M. Bissell, RMW Paleo Associates, Incorporated, 23392 Madero, Suite L, Mission Viejo, CA 92691, (949) 770-8042

***P9. Date Recorded:** 8 May 1998

***P10. Survey Type:** (Describe) Project was a reconnaissance in support of an Environmental Impact Report for construction of a resort and golf course.

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Bissell, Ronald M., March 1998, Existing Conditions, Cultural Resources on the Long Point Resort Property, Rancho Palos Verdes, Los Angeles County, California. Report prepared for Robert Bein, William Frost and Associates, 14725 Alton Parkway, Irvine, CA 92618.

***Attachments:** [ ] NONE [X] Location Map [X] Sketch Map [X] Continuation Sheet [X] Building, Structure and Object Record [ ] Archaeological Record [ ] District Record [ ] Linear Feature Record [ ] Milling Station Record [ ] Rock Art Record [ ] Artifact Record [X] Photograph Record [ ] Other (List) _____

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

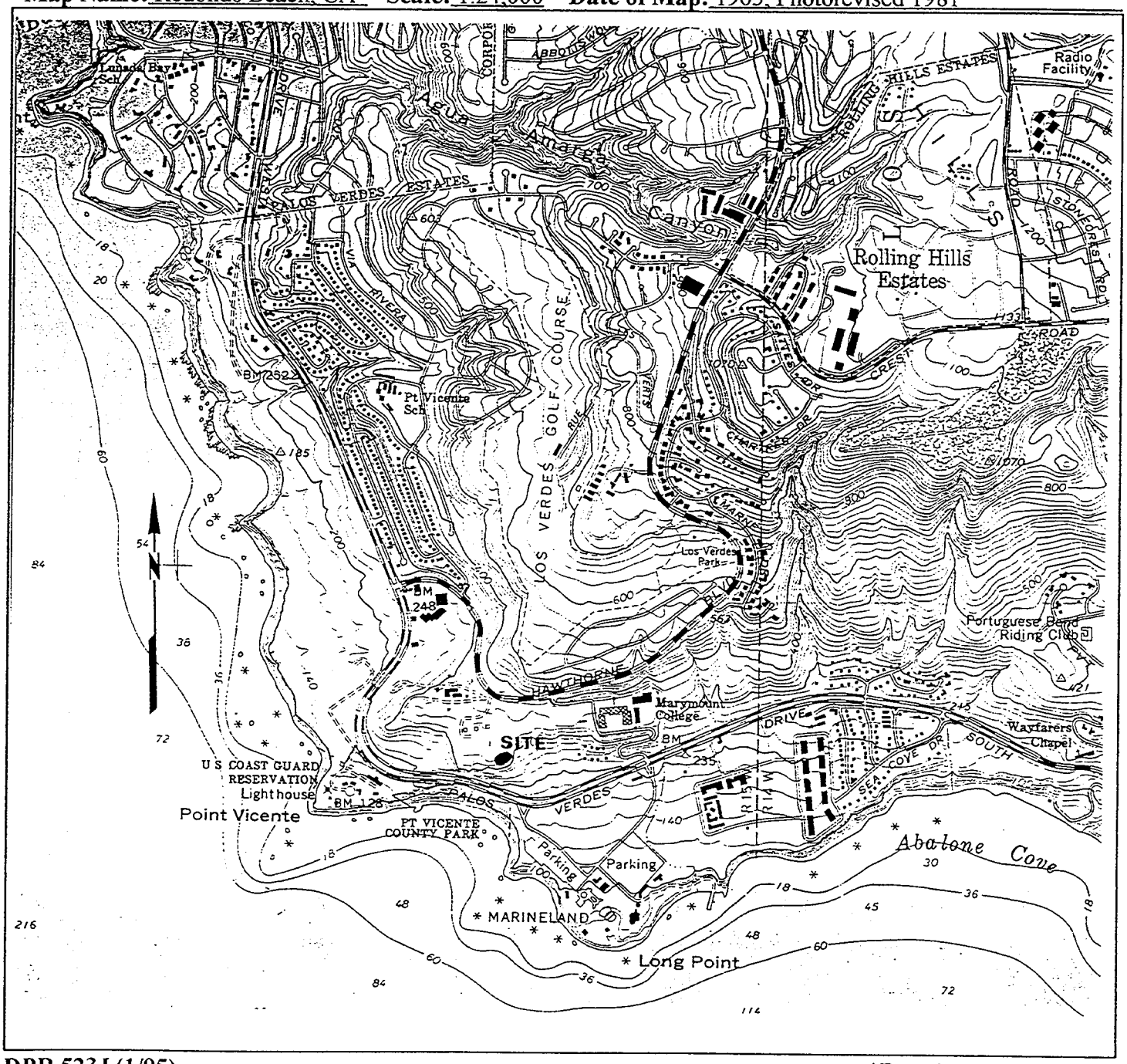
LOCATION MAP

Primary # 19-180589
HRI#
Trinomial

Page 4 of 13

***Resource Name or #** (Assigned by Recorder): Long Point Defense Facilities

***Map Name:** Redondo Beach, CA ***Scale:** 1:24,000 ***Date of Map:** 1963, Photorevised 1981



DPR 523J (1/95)

*Required Information

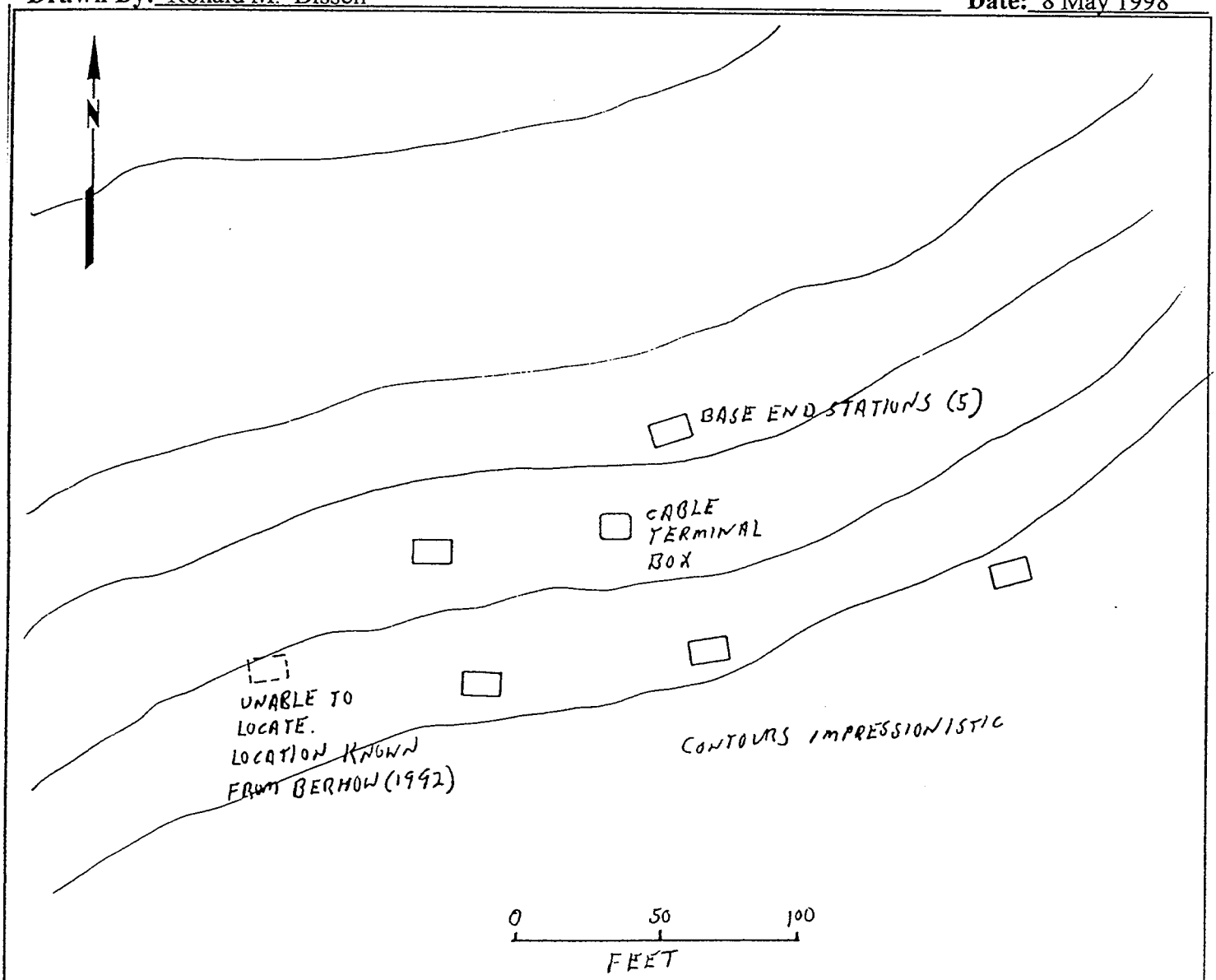
State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

SKETCH MAP

Primary # 19-180589
HRI#
Trinomial

Page 5 of 13
Resource Name or #: (Assigned by Recorder): Long Point Defense Facilities

***Drawn By:** Ronald M. Bissell **Date:** 8 May 1998



NOTE: Include bar scale and north arrow.

DPR 523K (1/95) ***Required Information**

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # 19-180589
HRI#
Trinomial

 *Resource Name or #: (Assigned by Recorder): Long Point Defense Facilities
*Recorded by Ronald M. Bissell *Date 8 May 1998 [X] Continuation [ ] Update

This Report of Completed Construction describes one of the Base End Stations. A similar sheet for each station is found in Berhow (1992).

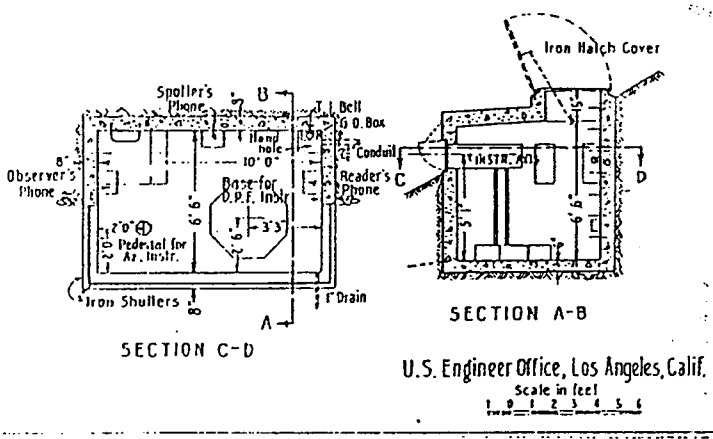
REPORT OF COMPLETED WORKS - SEACOAST FORTIFICATIONS.
(Fire control or Torpedo Structures)

HARBOR DEFENSES OF LOS ANGELES, CALIF.
FORT MacARTHUR
STRUCTURE: SUPPLEMENTARY STATION B'V1

Form 2. Corrected to September 24, 1930.

Location	Long Point Reservation: N. 41° E. - 35' from S.W. corner.	Type of data transmission	Telephone
Date of transfer	September 24, 1930	Date of transfer	
Cost to that date	$973.77	Cost of data transmission equipment	
Type of construction:		For tide stations give description of tide gauge	
(a) Roof	Reinforced concrete	For datum points give Forts from which visible	
(b) Remainder of building	Concrete (walls reinforced)	For dormitories give stations served	
How concealed	Exterior painted to match terrain	For cable hut give S. C. type	
How protected	Partially buried in ground		
Height above concealment	3 feet		
Height above protection	3 feet		
Conspicuous at 500 yards			
Source of electric current	None		
Kilowatts required	None		
Type of lighting fixtures	None		
How heated	Not heated		
Connected to water mains	No		
Connected to sewer	No		
Type of latrine	None		
Permanent or temporary installation	Permanent		
Present condition	New		
Reference of site	303		
Reference of instrumental axis	303.91		
Type of observing instrument*	Lewis D.P.F. (M 1907) Warner & Swasey Az. (M 1910)		
Type of plotting board	None		
Type and capacity of crane	None		
Maximum dimensions of rool handled	None		

*Instruments to be installed when received.



 *Required Information

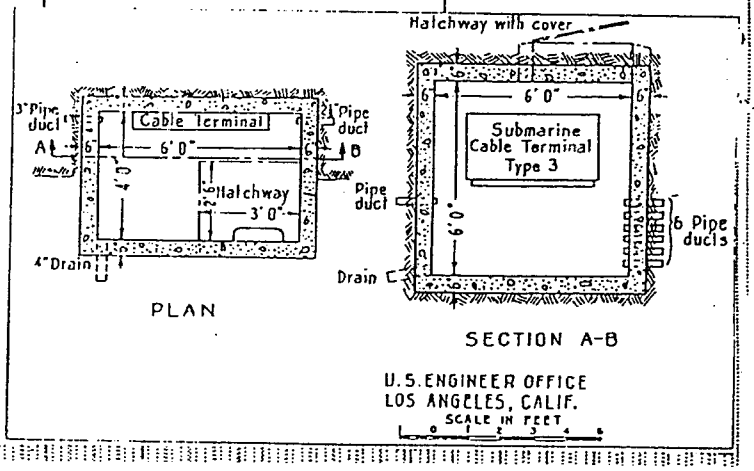
This Report of Completed Construction was taken from Berhow (1992) and depicts the Cable Terminal Box.

REPORT OF COMPLETED WORKS - SEACOAST FORTIFICATIONS
(Fire control or Torpedo Structures)

Form 2. Corrected to September 24, 1930

HARBOR DEFENSES OF LOS ANGELES, CALIF.
FORT MacARTHUR
STRUCTURE: DISTRIBUTION MANHOLE.

Location	Long Point Reservation: N. 81° E - 138' from N. W. corner.	Type of data transmission	None
Date of transfer	September 24, 1930.	Date of transfer	
Cost to that date	$347.62	Cost of data transmission equipment	
Type of construction		For tide stations give description of tide gauge	
(a) Roof	Reinforced concrete	For datum points give Forts from which visible	
(b) Remainder of bldg.	Concrete (walls reinforced)	For dormitories give stations served	
How concealed	Partially concealed by terrain	For cable hut give S. C. type	
How protected	Partially buried in ground		
Height above concealment	2 feet		
Height above protection	2 feet		
Conspicuous at 750 yards			
Source of electric current	None		
Kilowatts required	None		
Type of lighting fixtures	None		
How heated	Not heated		
Connected to water mains	No		
Connected to sewer	No		
Type of latrine	None		
Permanent or temporary installation	Permanent		
Present condition	New		
Reference of site	323		
Reference of instrumental axis			
Type of observing inst.	None		
Type of plotting board	None		
Type and capacity of crane	None		
Max. dimensions of reel handled	None		



State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # 19-180589
HRI#
Trinomial

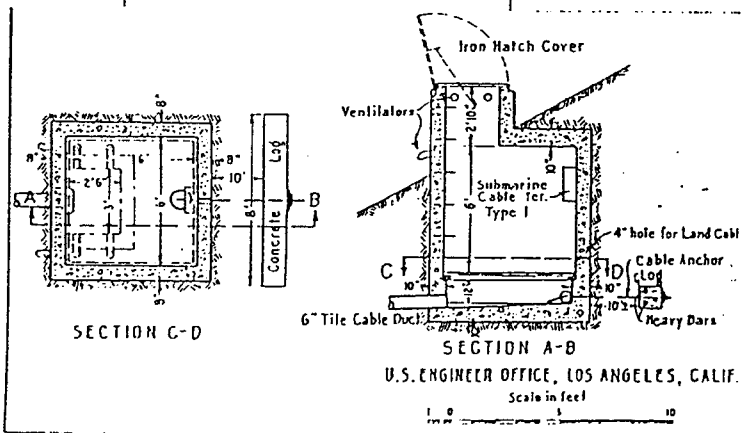
 *Resource Name or #: (Assigned by Recorder): Long Point Defense Facilities
*Recorded by Ronald M. Bissell *Date 8 May 1998 [X] Continuation [ ] Update

This Report of Completed Construction was taken from Berhow (1992) and depicts the Submarine Cable Terminal Box.

REPORT OF COMPLETED WORKS - SEACOAST FORTIFICATIONS
(Fire control or Torpedo Structures)
Form 2. Corrected to September 24, 1930.

HARBOR DEFENSES OF LOS ANGELES, CALIF.
FORT MacARTHUR
STRUCTURE: SUBMARINE CABLE TERMINAL HUT, LONG POINT.

Location	At base of bluff, above beach, S. 3 W. - 840' from S.E. Corner of Long Point Reservation	Type of data transmission	None
Date of transfer	September 24, 1930	Date of transfer	
Cost to that date	$1,924.98 1934.95 see attached	Cost of data transmission equipment	
Type of construction:		For tide stations give description of tide gauge	
(a) Roof	Reinforced concrete		
(b) Remainder of building	Concrete (walls reinforced)		
How concealed	Partially concealed by terrain	For datum points give Forts from which visible	
How protected	Partially buried in ground	For dormitories give stations served	
Height above concealment	4 feet	For cable hut give S. C. type	Type A modified
Height above protection	4 feet		
Conspicuous at 750 yards			
Source of electric current	None		
Kilowatts required	None		
Type of lighting fixtures	None		
How heated	Not heated		
Connected to water mains	No		
Connected to sewer	No		
Pipe of latrine	None		
Permanent or temporary installation	Permanent		
Present condition	New		
Reference of site	25		
Reference of instrumental axis			
Type of observing instrument	None		
Type of plotting board	None		
Type and capacity of crane	None		
Maximum dimensions of reel handled	None		

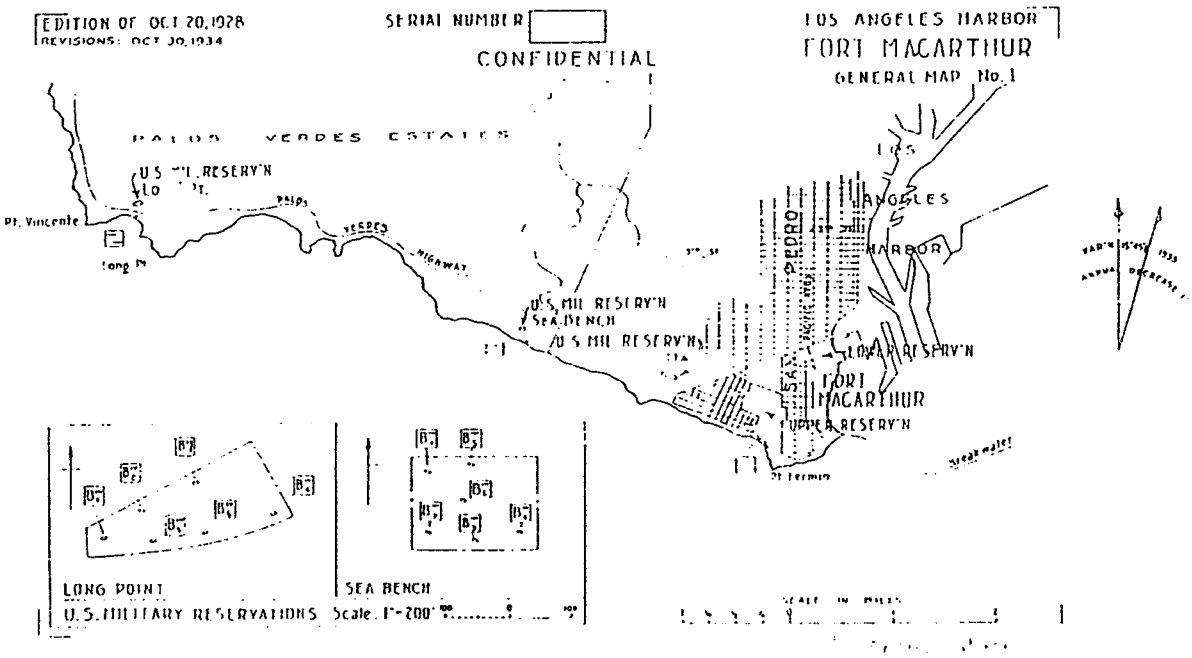


State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # 19-180589
HRI#
Trinomial

 *Resource Name or #: (Assigned by Recorder): Long Point Defense Facilities
*Recorded by Ronald M. Bissell *Date 8 May 1998 [X] Continuation [ ] Update

Map fromBerhow (1992) depicting location of Long Point Military Reservation and Base End Stations. Note that terminal boxes are not shown.



 *Required Information

*NRHP Status Code 3B

* Resource Name or #: (Assigned by Recorder): Long Point Defense Facilities

B1. Historic Name: None

B2. Common Name: As above

B3. Original Use: As observation posts for observing fall of shot from large caliber guns that were part of the Los Angeles Harbor Defenses in the years between the World Wars. Other facilities provided for communication to accomplish the fall of shot adjustments.

B4. Present Use: Not currently used

*B5. **Architectural Style** Military, Coastal and Harbor Defense

*B6. **Construction History:** (Construction date, alterations, and date of alterations) See first three Continuation Sheets attached to Primary Record. Control of the facilities was given to the military on 24 September 1930. It is not known how long a period was required for construction. No known alterations have been made.

*B7. **Moved? [X] No [ ] Yes [ ] Unknown Date:_____ Original Location:_____**

*B8. **Related Features:** Five observation posts known as Base End Stations (six were originally constructed), a Cable Terminal Box and a Submarine Cable Terminal Box (location unknown, perhaps destroyed), were part of the site. A survey monument was also established in the area, but can no longer be found. It may exist in the very heavy brush.

B9a: Architect: Unknown b. Builder: Unknown

*B10. **Significance: Theme** Military, Coastal and Harbor Defense **Area** Los Angeles Harbor **Period of Significance** 1930 through World War II **Property Type** Base End Stations (observation posts) and communications facilities **Applicable Criteria** A. That are associated with events that have made a significant contribution to the broad patterns of our history. (Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.) The period between the World Wars was a time of great change in military concepts and technology. In naval technology, ships became larger, faster, better protected and were equipped with larger caliber, more accurate, more effective weaponry. Treaties limited naval construction, but were either not honored or were abandoned by several powers influential in the Pacific Ocean area. Coastal defenses were seen as a necessary deterrent. Several large caliber

gun emplacements were constructed as part of the Los Angeles Harbor Defense network. Accurate employment of these guns (some emplacements of which are on the National Register of Historic Places) depended on several subsidiary facilities, not the least of which were observation posts to observe and adjust the fall of shot. That was a function of the Base End Stations described in this document. Another major function of the Base End Stations was the observation of traffic around the Los Angeles harbor area. In the era before radar, reliable air searches and developed intelligence means, the observations from a Base End Station could conceivably have provided the only early warning the harbor defenses would get.

The technology of the period required one Base End Station for each large caliber gun, hence the reason for six identical facilities at Long Point. Within each station are two pedestals, one for an azimuth instrument and one for a range finder. The Reports of Completed Construction (see Primary Record Continuation Sheets) indicates the instruments, no longer present, were a Lewis D.P.F., Model 1907, and a Warner and Swazey Azimuth device, Model 1910.

Base End Stations were common to harbor defenses, but given the extent of recent coastal development have become quite rare. The examples at Long Point are not only extant, but are in excellent condition. Even details such as interior paint have been preserved. This is due to the facts that the facilities are difficult to reach, are in heavy growth of prickly pear and have been padlocked. The Base End Stations at Long Point preserve one of the lesser known (but not of lesser importance) elements of the gunnery problem associated with harbor defense. Other elements, such as the gun emplacements at Fort MacArthur, preserve the actual firing element and have already received National Register recognition.

The Base End Stations at Long Point are part of a District, formed by themselves, a double six inch gun battery dating to 1942 and an air defense site dating to the early 1950s. In sum, these facilities document defense efforts over a period of four decades. None of these facilities ever fired a shot in anger. The criteria given above is related to events of importance. In this case the importance of the events rests in their *not* occurring. The United States was not invaded or bombed - the defenses did the job they were designed to do, the deterrence of aggression. All United States citizens should be grateful such facilities were in place. The few such remaining facilities should be preserved so future generations of Americans can appreciate the importance of national defense efforts and its rapid evolution in the mid 20th century.

B11. Additional Resource Attributes: (List attributes and codes.) HP11-Engineering Structure, HP34-Military Property

*B12. **References:** Berhow, Mark (Compiler), 1992, The Harbor Defenses of Los Angeles, Summary Histories and Reports of Completed Works, on file at the National Archives, Laguna Niguel, California.

Bissell, Ronald M., March 1998, Existing Conditions, Cultural Resources on the Long Point Resort Property, Rancho Palos Verdes, Los Angeles County, California. On file at the South Central Coastal

Information Center, University of California, Los Angeles.

B13. Remarks:

***B14. Evaluator:** Ronald M. Bissell

***Date of Evaluation:** 8 May 1998

(Sketch Map with north arrow required.)

See Sketch Map contained in Primary Record

(This space reserved for official comments.)

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PHOTOGRAPH RECORD

Primary # 19-180589
HRI#
Trinomial

 Project Name (Assigned by Recorder): Long Point Defense Facilities Year 1998
Camera Format: 35 mm SLR Lens Size: 50 mm Film Type and Speed: Pan TriX 100
Negatives Kept at: RMW Paleo Associates, Incorporated

Mo.	Day	Time	Exp./Frame	Subject/Description	View Toward	Accession #
5	7	09:30	1	Base End Station, see Item P5a	Northwest	
5	7	09:35	2	Detail of erosion control wall	North	
5	7	09:40	3	Detail of observation port shutter	Northwest	
5	7	09:45	4	Detail of entry hatch	Northwest	
5	7	09:55	5	Cable Terminal Box entry hatch	South	
5	7	10:10	6	Detail of entry hatch	West	
5	7	15:20	22	Hillside containing Base End Stations	North	

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # 19-180590
HRI#

Trinomial
NRHP Status Code 3B

Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** (Assigned by Recorder): Long Point Defense Facilities

P1. Other Identifier: Battery 240

***P2. Location: [X] Not for Publication [ ] Unrestricted**

***P2a. County:** Los Angeles

***P2b. USGS 7.5' Quad** Redondo Beach, CA **Date** 1963, photorevised 1981 **T** 5S ; **R** 15W **1/4 of** **1/4 of Sec** ; San Bernardino **B.M.** Unsectioned.

P2c. Address None City Zip

P2d. UTM: (Give more than one for large and/or linear resources) Zone 11 ; 369780 m E/ 3734550 m N

P2e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Battery 240 is at an elevation of 360 feet. From the Hawthorne Boulevard entrance to the Rancho Palos Verdes Civic Center, proceed along entry road past the City Hall buildings and park at the rear of the two story building. An asphalt road with a cable barrier is at the south end of the parking lot. Walk along the asphalt road to the southwest for 300 feet to arrive at Battery 240.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting and boundaries) Battery 240 was constructed in 1942 as part of the Los Angeles Harbor Defense system. The battery was designed to serve two six inch guns mounted in turrets at opposite ends of the battery. Battery 240 is constructed of concrete and steel, with walls that are three feet in thickness. The structure, except for the gun blocks and service doors, is buried by soil that was apparently taken from the area immediately to the southwest.

The interior of Battery 240 consists of a powder room, a shell room and an air compressor/motor room for each of the guns. Behind the gun support rooms are a generator room, a plotting room, a switchboard/spotting/radio room, a water cooler room and a latrine. It is thought that the water cooler room was an air conditioning facility to maintain the powder at uniform temperature and humidity, critical factors for accurate delivery of fire. Two fuel tanks were buried a short distance northeast of Battery 240 and a septic tank and leach field are located to the south.

Battery 240 appears to be in an excellent state of preservation. The southernmost gun block has been somewhat damaged by tree growth, but otherwise the facility is in excellent condition. The author has been unable to date to gain entrance to Battery 240 (controlled by the Coast Guard).

None of these buildings have survived, but troop barracks, a mess hall and administration buildings were constructed in the area immediately south of Rancho Palos Verdes City Hall. Sidewalks and a septic tank thought to be associated with the support buildings are still extant. The support buildings are depicted on the attached Sketch Map.

***P3b. Resource Attributes:** (List attributes and codes) HP11: Engineering structure, HP34: Military property, HP39: Other, Los Angeles Harbor Defense Gun Battery.

***P4. Resources Present:** [X] Building [X] Structure [ ] Object [ ] Site [ ] District [X] Element of District [ ] Other (Isolates etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)

P5b. Description of Photo:(View, date, accession #) Battery 240 is buried under the mound of soil that covers the center of this picture. The object at the base of the pole near the center of the frame is one of

the original ventilators. The top of the main entrance to Battery 240 is visible as a dark line about one half inch below and left of the ventilator. Neither gun block is visible, but one is beyond the hill between the two right poles. The other gun block is out of the frame to the left. It is not possible to show Battery 240 in one photograph. Additional photographs are contained in Continuation Sheets.

***P6. Date constructed/Age and Sources:** [X] Historic [ ] Prehistoric [ ] Both. "As built" engineering drawings of Battery 240 on file at the National Archives in Laguna Niguel are dated 20 June 1942. Construction would have been completed before that date.

***P7. Owner and Address:** Coast Guard

***P8. Recorded by:** (Name, affiliation and address) Ronald M. Bissell, RMW Paleo Associates, Incorporated, 23392 Madero, Suite L, Mission Viejo, CA 92691, (949) 770-8042

***P9. Date Recorded:** 8 May 1998

***P10. Survey Type:** (Describe) Project was a reconnaissance in support of an Environmental Impact Report for construction of a resort and golf course.

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Bissell, Ronald M., March 1998, Existing Conditions, Cultural Resources on the Long Point Resort Property, Rancho Palos Verdes, Los Angeles County, California. Report prepared for Robert Bein, William Frost and Associates, 14725 Alton Parkway, Irvine, CA 92618.

***Attachments:** [ ] NONE [X] Location Map [X] Sketch Map [X] Continuation Sheet [X] Building, Structure and Object Record [ ] Archaeological Record [ ] District Record [ ] Linear Feature Record [ ] Milling Station Record [ ] Rock Art Record [ ] Artifact Record [X] Photograph Record [ ] Other (List) _____

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

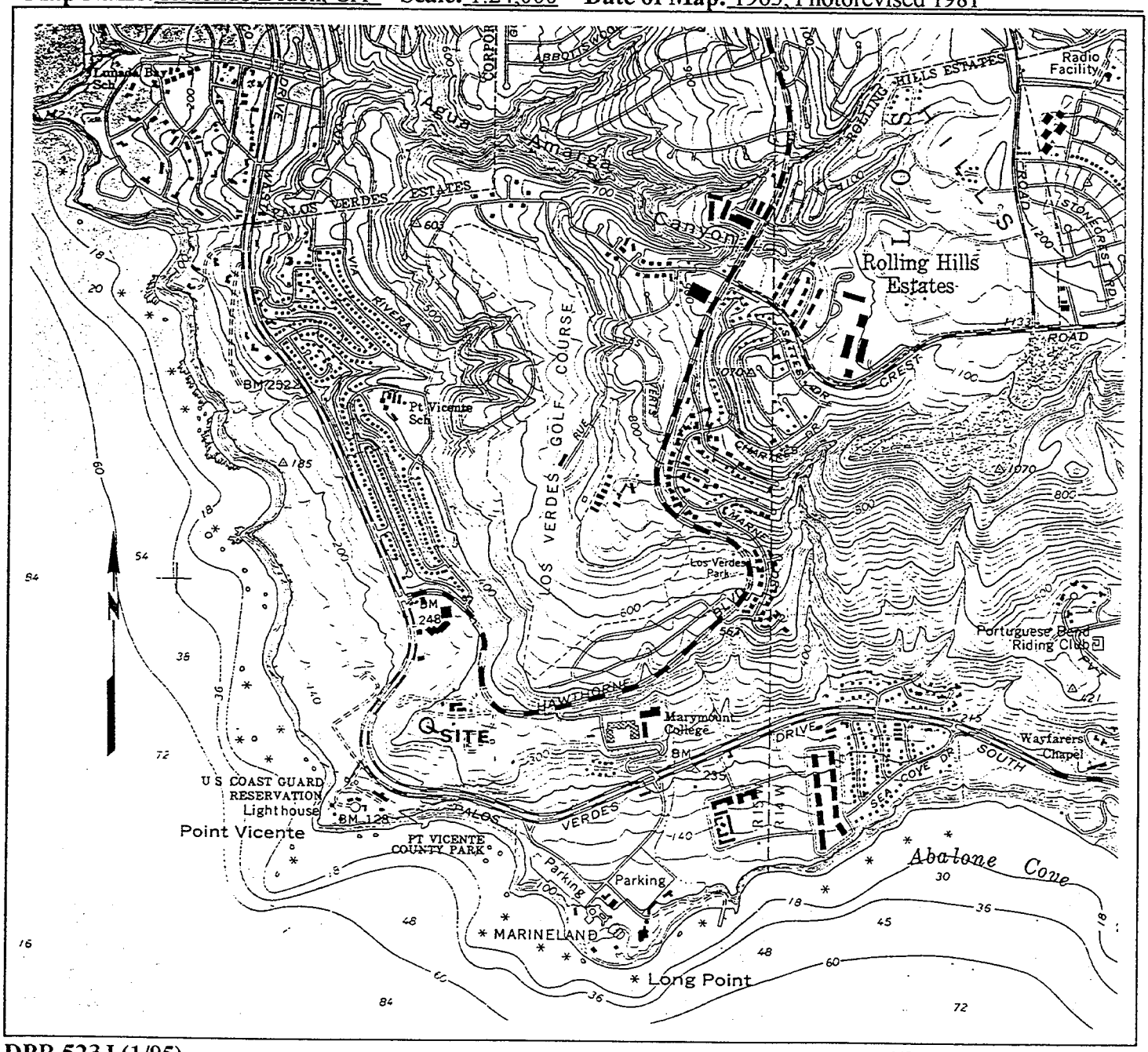
LOCATION MAP

Primary # 19-180590
HRI#
Trinomial

Page 4 of 13

***Resource Name or #** (Assigned by Recorder): Long Point Defense Facilities

***Map Name:** Redondo Beach, CA ***Scale:** 1:24,000 ***Date of Map:** 1963, Photorevised 1981



DPR 523J (1/95)

***Required Information**

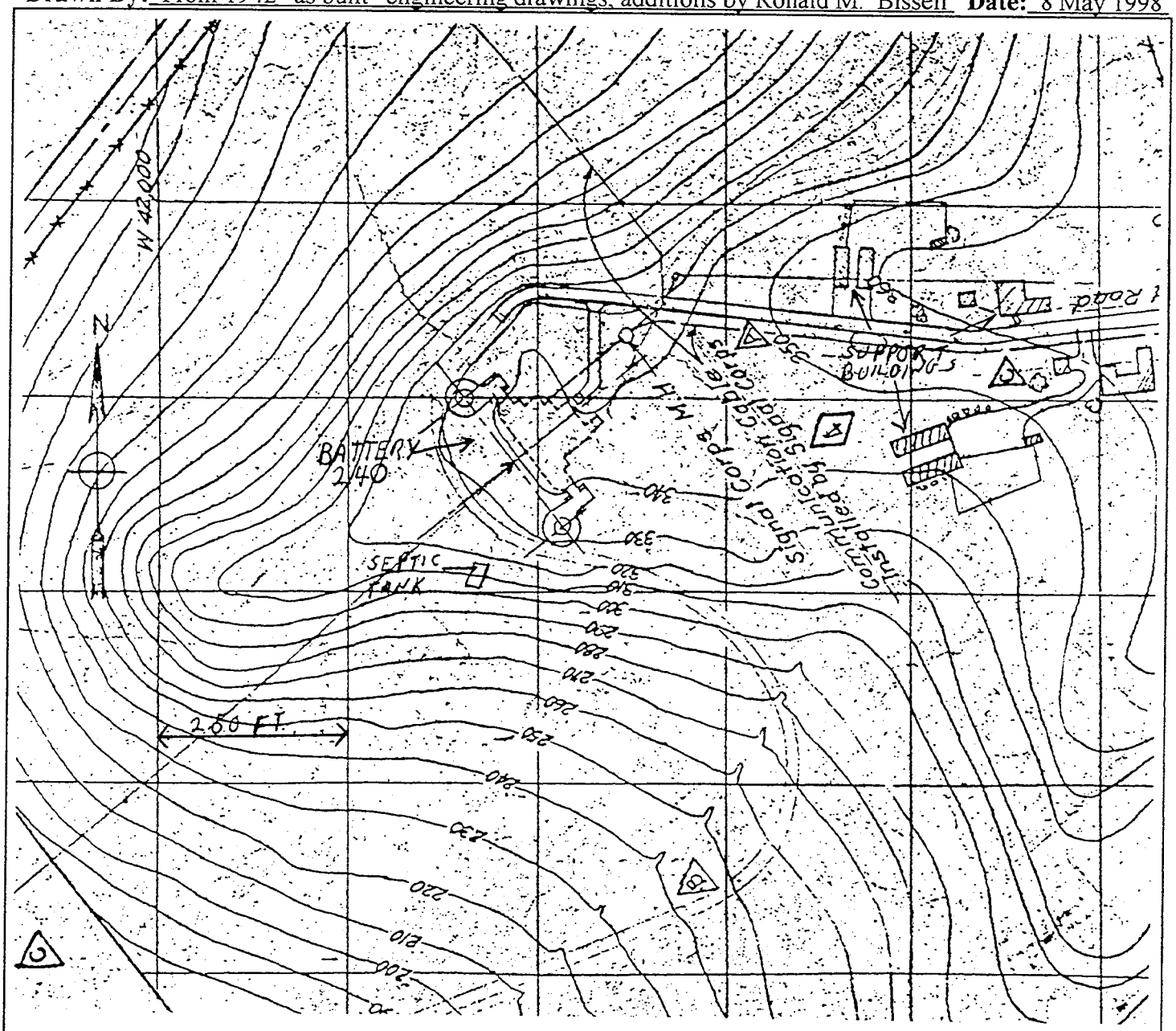
State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

SKETCH MAP

Primary # 19-180590
HRI#
Trinomial

Page 5 of 13
Resource Name or #: (Assigned by Recorder): Long Point Defense Facilities

***Drawn By:** From 1942 "as built" engineering drawings, additions by Ronald M. Bissell **Date:** 8 May 1998



NOTE: Include bar scale and north arrow.

DPR 523K (1/95) ***Required Information**

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

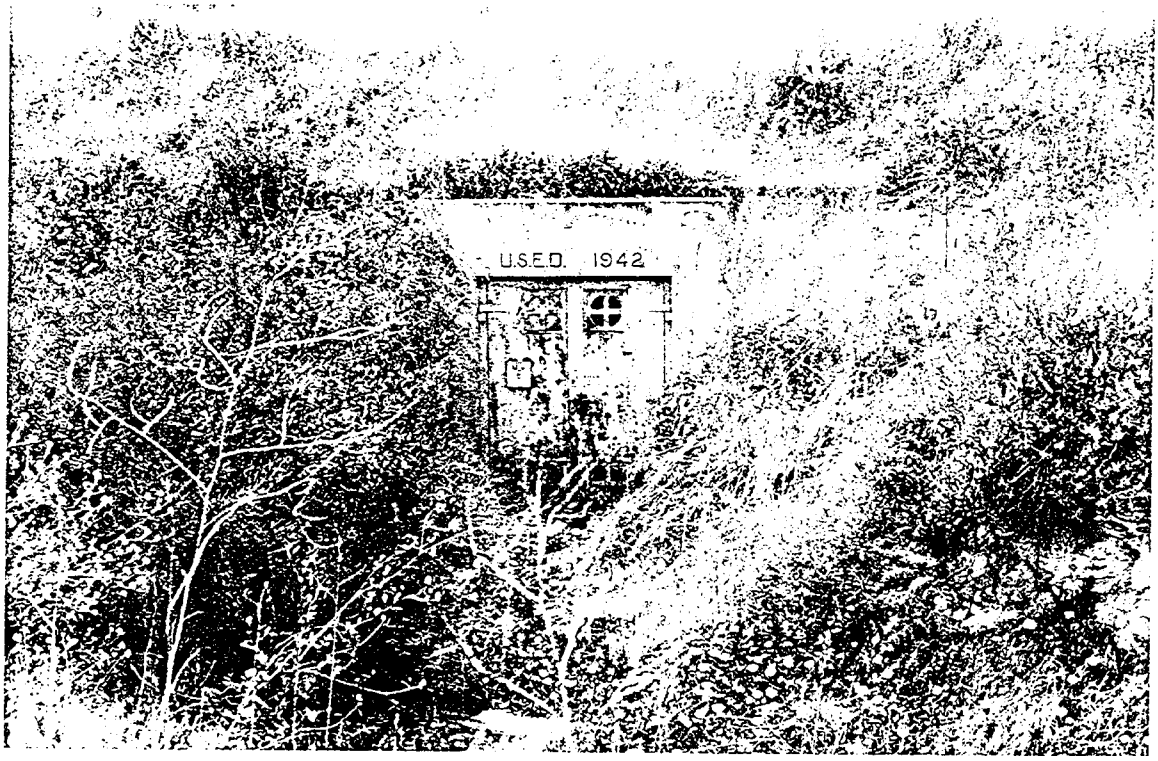
CONTINUATION SHEET

Primary # 19-180590
HRI#
Trinomial

*Resource Name or #: (Assigned by Recorder): Long Point Defense Facilities

*Recorded by Ronald M. Bissell *Date 8 May 1998 [X] Continuation [ ] Update

The main entrance to Battery 240.



*Required Information

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

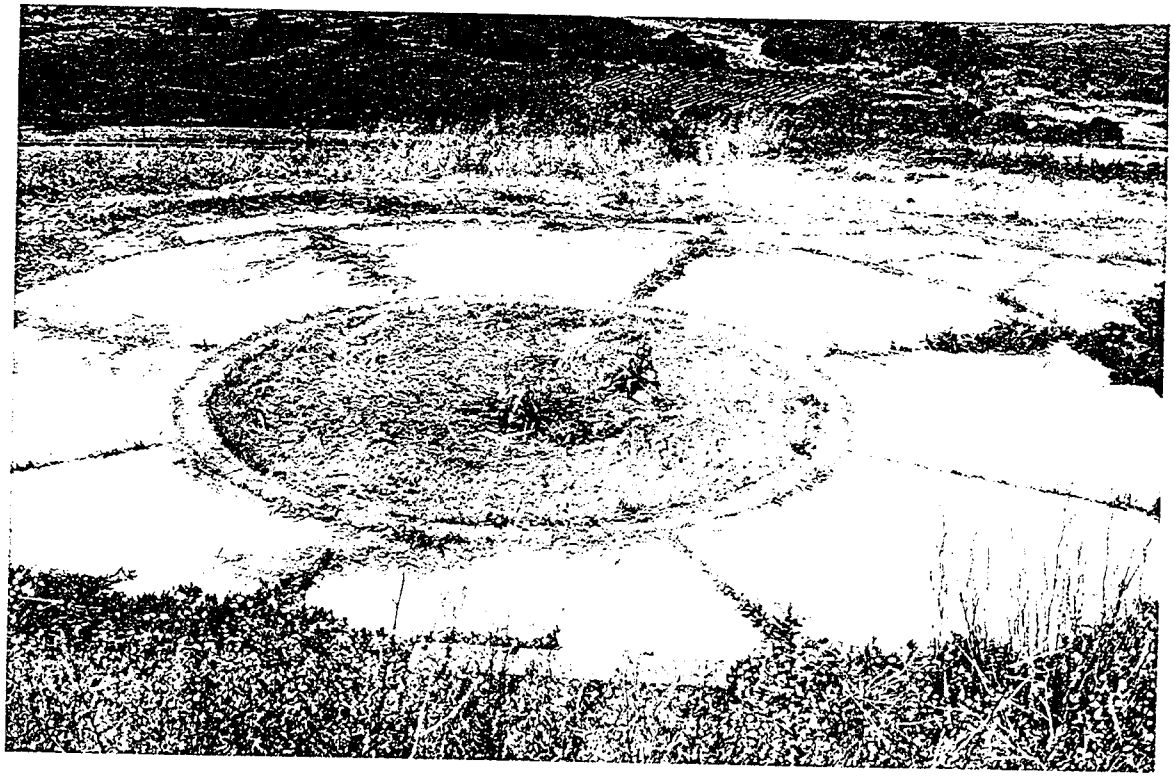
CONTINUATION SHEET

Primary # 19-180590
HRI#
Trinomial

*Resource Name or #: (Assigned by Recorder): Long Point Defense Facilities

*Recorded by Ronald M. Bissell *Date 8 May 1998 [X] Continuation [ ] Update

Northern gun block at Battery 240. A six inch, turret mounted rifle was emplaced here. The service door, allowing entrance to the battery interior is out of view to the lower right. The concrete pedestal in the lower part of the frame provided communications connections between the gun turret and the interior of the battery.



*Required Information

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

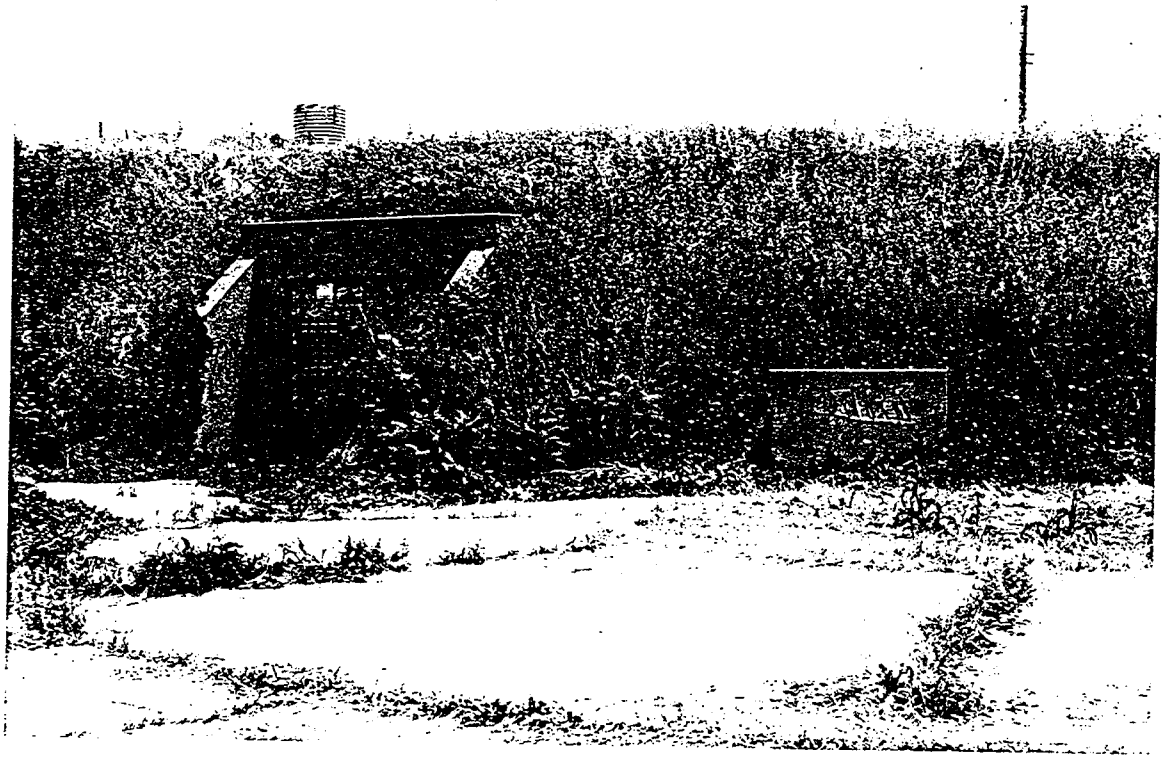
CONTINUATION SHEET

Primary # 19-180590
HRI#
Trinomial

*Resource Name or #: (Assigned by Recorder): Long Point Defense Facilities

*Recorded by Ronald M. Bissell *Date 8 May 1998 [X] Continuation [ ] Update

Service door adjacent to northern gun block. The concrete pedestal to the right of the door provided communications connections between the gun turret and the interior of the battery.



*Required Information

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

CONTINUATION SHEET

Primary # 19-180590
HRI#
Trinomial

***Resource Name or #:** (Assigned by Recorder): Long Point Defense Facilities

***Recorded by** Ronald M. Bissell ***Date** 8 May 1998 [X] Continuation [ ] Update

The southern gun block at Battery 240. The entire area is overgrown.

*Required Information

BUILDING, STRUCTURE, AND OBJECT RECORD

***NRHP Status Code** 3B

*** Resource Name or #: (Assigned by Recorder):** Long Point Defense Facilities

B1. Historic Name: Battery 240

B2. Common Name: As above

B3. Original Use: As a twin six inch gun battery as part of the Los Angeles Harbor Defenses during World War II. The battery contained all the facilities required to service the guns. Other facilities a short distance to the northeast, no longer extant, provided for logistics and administration.

B4. Present Use: Not currently used

***B5. Architectural Style** Military, Coastal and Harbor Defense

***B6. Construction History:** (Construction date, alterations, and date of alterations) Battery 240 was constructed in early 1942. "As built" engineering drawings are dated in May and June of 1942. It is not known how long a period was required for construction. No known alterations have been made.

***B7. Moved? [X] No [ ] Yes [ ] Unknown Date:** _____ **Original Location:** _____

***B8. Related Features:** Sidewalks and a septic tank thought to be associated with the logistics and administration area to the northeast of the battery can still be seen. A large concrete tank, thought to be one of the battery fuel tanks is located on a slope northeast of the battery. Plans depict a septic tank and leach field south of the battery. Nothing is visible in that area today, but the septic tank is probably still in place.

B9a: Architect: Unknown b. Builder: Unknown

***B10. Significance: Theme** Military, Coastal and Harbor Defense **Area** Los Angeles Harbor
Period of Significance World War II **Property Type** Six inch gun battery, associated administrative and logistics facilities
Applicable Criteria A. That are associated with events that have made a significant contribution to the broad patterns of our history.
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.) The period between the World Wars was a time of great change in military concepts and technology. In naval technology, ships became larger, faster, better protected and were equipped with larger caliber, more accurate, more effective weaponry. Treaties

limited naval construction, but were either not honored or were abandoned by several powers influential in the Pacific Ocean area. Coastal defenses were seen as a necessary deterrent, and became critical with the onset of World War II. Several large caliber gun emplacements were constructed as part of the Los Angeles Harbor Defense network. Battery 240 was one such facility.

Battery 240 represents the intermediate sized guns used for harbor defense. Larger caliber guns were emplaced at Fort MacArthur, some distance to the east. The Fort MacArthur emplacements are included in the National Register of Historic Places. The large caliber gun emplacements are impressive, but they represent only one facet of the full range of facilities required to adequately defend the harbor. Lighter guns for use against shipping and aircraft were also required, as were observation posts, radar installations, searchlight platforms, logistics facilities, administration facilities and infrastructure. Battery 240 is representative of the mid ranged weaponry, and is thought to be the only such facility that has been preserved in the Los Angeles harbor area.

Battery 240 is part of a District formed by itself, a group of Base End Stations (observation posts constructed in 1930) and an air defense site dating to the early 1950s. In sum, these facilities document defense efforts over a period of four decades. None of these facilities ever fired a shot in anger. The criteria given above is related to events of importance. In this case the importance of the events rests in their *not* occurring. The United States was not invaded or bombed - the defenses did the job they were designed to do, the deterrence of aggression. All United States citizens should be grateful such facilities were in place. The few such remaining facilities should be preserved so future generations of Americans can appreciate the importance of national defense efforts and the rapid evolution of defense requirements in the mid 20th century.

B11. Additional Resource Attributes: (List attributes and codes.) HP11-Engineering Structure, HP34-Military Property

***B12. References:** Berhow, Mark (Compiler), 1992, The Harbor Defenses of Los Angeles, Summary Histories and Reports of Completed Works, on file at the National Archives, Laguna Niguel, California.

Bissell, Ronald M., March 1998, Existing Conditions, Cultural Resources on the Long Point Resort Property, Rancho Palos Verdes, Los Angeles County, California. On file at the South Central Coastal Information Center, University of California, Los Angeles.

B13. Remarks:

***B14. Evaluator:** Ronald M. Bissell

***Date of Evaluation:** 8 May 1998

 *Resource Name or #: (Assigned by Recorder): Long Point Defense Facilities

(Sketch Map with north arrow required.)

See Sketch Map contained in Primary Record

(This space reserved for official comments.)

*Required Information

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PHOTOGRAPH RECORD

Primary # 19-180590
HRI#
Trinomial

 Project Name (Assigned by Recorder): Long Point Defense Facilities Year 1998
Camera Format: 35 mm SLR Lens Size: 50 mm Film Type and Speed: Pan TriX 100
Negatives Kept at: RMW Paleo Associates, Incorporated

Mo.	Day	Time	Exp./Frame	Subject/Description	View Toward	Accession #
5	7	10:30	7	Battery 240 overview. See Item P5a.	Southwest	
5	7	10:35	8	Battery 240 main entry door. See Continuation Sheet.	Southwest	
5	7	10:45	9	Northernmost gun block and service door. See Continuation Sheet.	Southwest	
5	7	10:50	10	Northernmost gun block as seen from top of Battery 240. See Continuation Sheet.	Northwest	
5	7	11:00	11	Southernmost gun block.	Southwest	
5	7	11:05	12	Southern service door. Extensive vegetation.	Northwest	

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # 19-180591
HRI#

Trinomial
NRHP Status Code 3B

Other Listings
Review Code Reviewer Date

 ***Resource Name or #:** (Assigned by Recorder): Long Point Defense Facilities

P1. Other Identifier: Nike Air Defense Site LA-55-L

***P2. Location: [X] Not for Publication [ ] Unrestricted**

***P2a. County:** Los Angeles

***P2b. USGS 7.5' Quad** Redondo Beach, CA **Date** 1963, photorevised 1981 **T** 5S ; **R** 15W **1/4 of** **1/4 of Sec** ; San Bernardino **B.M.** Unsectioned.

P2c. Address 30940 Hawthorne Boulevard City Rancho Palos Verdes, CA Zip 90275

P2d. UTM: (Give more than one for large and/or linear resources) Zone 11 ; 369870 m E/ 3734660 m N, 370000 m E/ 3734335 m N, 370140 m E/ 3734420 m N, 370000 m E/ 3734685 m N

P2e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Nike Air Defense Site LA-55-L varies in elevation from 315 feet to 365 feet. The troop barracks and the orderly/day room buildings are today used as Rancho Palos Verdes City Hall. To the south of these two buildings is an equipment storage yard containing the two underground launcher sections of the Nike battery. Also in this area are the missile assembly building, the missile arming building (complete with revetment and warning flagpole), the generator building and a guard post building.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting and boundaries) A Nike air defense battery consisted of two areas. The Integrated Fire Control (IFC) area contained the three radars and the analog computer used to solve the air defense gunnery problem and to guide the missile in flight. The other portion of the battery was known as the Launcher Area (LC), and, as the name implies, was where missiles were serviced, stored and launched. The two areas had to be separated by a minimum distance of 1,000 yards. This separation was necessary because the radar antenna that tracked the missile had to physically move in order to maintain a lock on the missile. Any nearer and the antenna would have been incapable of moving fast enough to maintain tracking of the missile. The IFC area associated with Nike Air Defense Site LA-55-L was located at higher elevation to the east, and has been destroyed.

Nike Air Defense Site LA-55-L still retains all but two of the major facilities present during the active

life of the battery. One missing element is the mess hall. The mess hall was a World War II building, originally constructed as part of the Battery 240 complex (see recording forms for that facility). The building was located immediately to the east of the present single story City Hall building. The mess hall was of wood frame construction, typical of temporary buildings erected during World War II.

The two story, L shaped City Hall building was the troop barracks for the Nike site. This building is of concrete block construction and is in an excellent state of repair. The barracks housed the troops from both the IFC and LC areas. The single story City Hall building was the orderly and day room. The battery commander, executive officer and first sergeant had offices here, where most administrative functions were accomplished. The day room portion would have had television, probably a pool table, and tables, writing desks and chairs for troop use. The orderly/day room was also of concrete block construction and is also in excellent condition. A short distance south of the City Hall buildings are the missile assembly building (currently in use as a Cox Communications office) and the missile arming building (currently used for storage). The assembly building is where missiles were uncrated and checked out on arrival at the battery, or were disassembled and crated if it was necessary to remove a missile. The arming building is behind a revetment that completely encircles the building. It was here that warheads were installed and fuel, oxidizer and starting mix were added, and where the missile was mated to its booster. These buildings are also of concrete block construction and are in a state of excellent preservation. Many important details are preserved. For example, atop the revetment surrounding the arming building is a pole, weighted at the bottom to allow it to be easily swung from a horizontal to a vertical position. The pole would have had a red flag attached and the pole would be in the vertical position whenever fueling/arming operations were in progress. This alerted unnecessary personnel to stay out of the revetted area. The referenced report (Bissell 1998) contains a picture of troops dressed for the fueling operation. A short distance east of the arming building is a wood framed, metal roofed building that originally housed generators (currently used for storage). The battery used commercial power, but any one of the three diesel generators (typically Hobart HF-30-G models) furnished sufficient power to run the LC area. A similar emergency power system was at the IFC area. The generator buildings also housed converters. Commercial power is provided at 60 hertz, but the Nike system used 400 hertz. The converters made the necessary adjustment.

The heart of the LC area is located immediately to the south of the buildings just described. These are two launcher sections (Alpha and Bravo), each consisting of a large underground missile storage area, an elevator for bringing the missiles to the surface and three satellite launcher positions. An additional launcher was on the elevator, so each section could have four missiles in firing position at any given time. See the referenced report (Bissell 1998) for a picture of a launcher section with missiles in launch position. The underground portion at each section also included a soundproofed room where the crew retired after the missiles were prepared for launching. The soundproofing was necessary, since within several hundred meters a launch was deafening. The crew room was also heavily constructed to prevent injury should a missile destroy itself on or immediately above the launcher. Both of the launcher section structures are in an excellent state of preservation. Even the soundproof rooms remain. Important details have been preserved at both launcher sections. For example, the blast deflector plates

that sat directly below the missile booster engines when ready for launching are still in place. The plates are also present on the two elevators. A painted sign on the top of one launcher section hatch identifies, "Alpha Section."

A small wood framed building is located immediately south of the missile assembly building. Currently used for storage, this building was once the guard post that controlled entry to the LC area. The building is somewhat deteriorated, but still maintains such details as the building number assigned by the military. Just north of the revetted area is an athletic court, currently used for tennis. Undoubtedly, this was a basketball court when the battery was active.

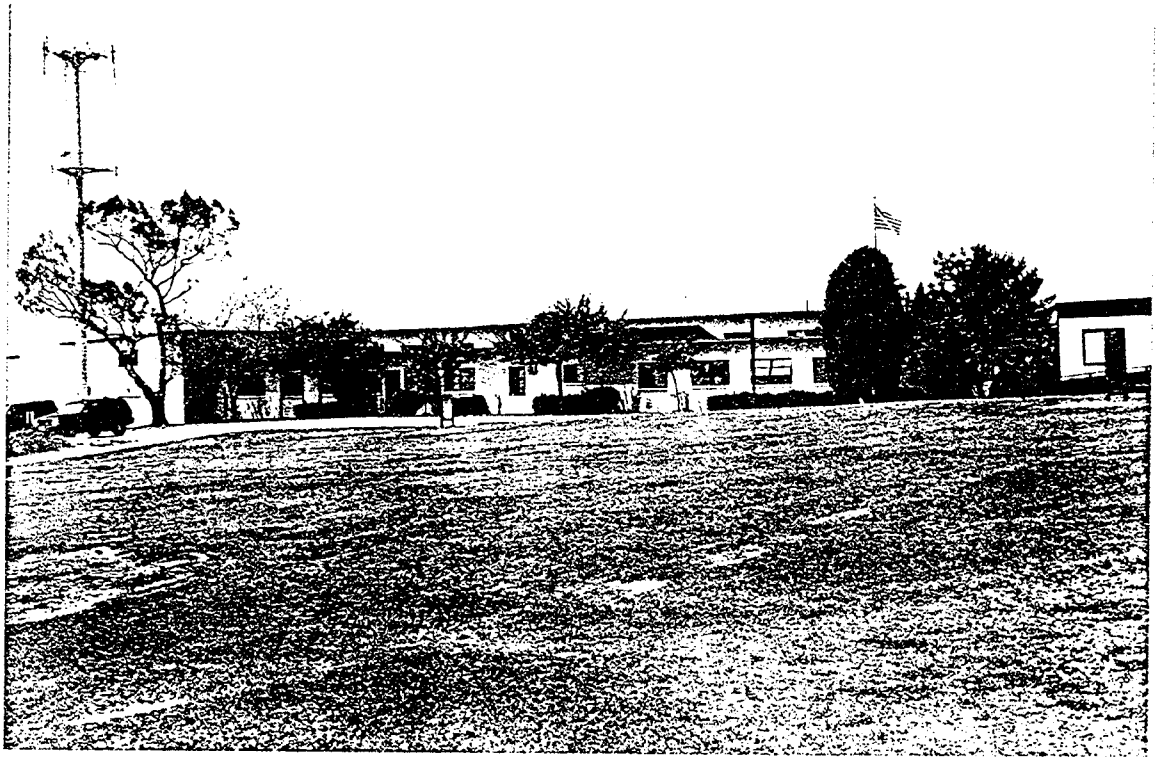
It was previously mentioned that two elements of the LC area are missing. The mess hall was previously discussed. The other missing element is the launcher control van. The van is from where the launcher platoon leader controlled the two launcher sections and designated the next missile for firing. A map contained in Berhow (1992), and used as the base for the accompanying Sketch Map, depicts a small building between the troop quarters and the missile assembly building. This may have been the launcher control van, which was removed when the battery became inactive. The van's concrete pad should have remained, but it cannot be seen today. Alternatively, the van may have been adjacent to the missile assembly building, but this seems too close to the launchers for safety. The van also had a pole mounted test set that was nothing more than a guidance section from a missile. This was used for calibrating the missile tracking radar. A picture of the interior of a launcher control van is contained in the referenced report (Bissell 1998).

A known distance rifle range was located some 1,500 meters west of the troop barracks. This facility provided military units in the Los Angeles area with the means to maintain rifle proficiency. While not strictly a part of site LA-55-L, it is a certainty that the battery would have had the extra duty of maintaining and administering the rifle range. No element of the rifle range can be seen today.

***P3b. Resource Attributes:** (List attributes and codes) HP11: Engineering structure, HP34: Military property, HP39

***P4. Resources Present:** [X] Building [X] Structure [ ] Object [ ] Site [ ] District [X] Element of District [ ] Other (Isolates etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo:(View, date, accession #) The two story building that can be seen behind the single story building was the barracks of Los Angeles Air Defense Site LA-55-L. The single story building housed the orderly and day rooms. These buildings are the current Rancho Palos Verdes City Hall. The building at the far right is a modern temporary structure sited where the Nike site mess hall used to be. The mess hall was of World War II construction associated with Battery 240 (see recording forms for that facility). The lawn area between the City Hall and the camera once contained several buildings associated with Battery 240. One photograph cannot adequately depict the Nike site. Additional photographs are contained in following Continuation Sheets.

*P6. **Date constructed/Age and Sources:** [X] Historic [ ] Prehistoric [ ] Both. Documentation on file at the National Archives in Laguna Niguel indicates construction during 1953.

*P7. **Owner and Address:** City of Rancho Palos Verdes, 30940 Hawthorne Boulevard, Rancho Palos Verdes, CA 90275

*P8. **Recorded by:** (Name, affiliation and address) Ronald M. Bissell, RMW Paleo Associates, Incorporated, 23392 Madero, Suite L, Mission Viejo, CA 92691, (949) 770-8042

***P9. Date Recorded:** 8 May 1998

***P10. Survey Type:** (Describe) Project was a reconnaissance in support of an Environmental Impact Report for construction of a resort and golf course.

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Bissell, Ronald M., March 1998, Existing Conditions, Cultural Resources on the Long Point Resort Property, Rancho Palos Verdes, Los Angeles County, California. Report prepared for Robert Bein, William Frost and Associates, 14725 Alton Parkway, Irvine, CA 92618.

***Attachments:** [ ] NONE [X] Location Map [X] Sketch Map [X] Continuation Sheet [X] Building, Structure and Object Record [ ] Archaeological Record [ ] District Record [ ] Linear Feature Record [ ] Milling Station Record [ ] Rock Art Record [ ] Artifact Record [X] Photograph Record [ ] Other (List) _____

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

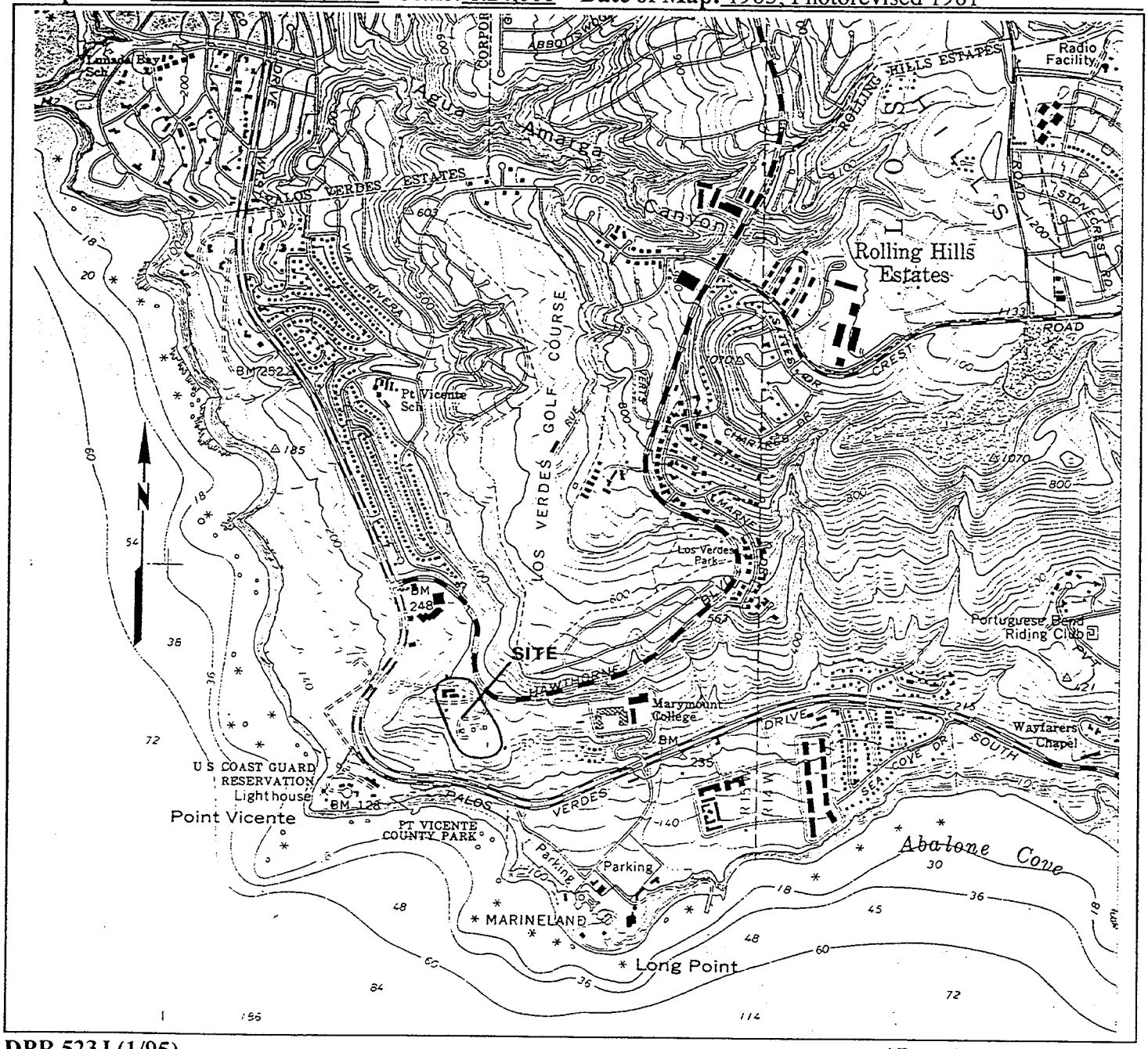
LOCATION MAP

Primary # 19-180591
HRI#
Trinomial

Page 6 of 16

***Resource Name or #** (Assigned by Recorder): Long Point Defense Facilities

***Map Name:** Redondo Beach, CA ***Scale:** 1:24,000 ***Date of Map:** 1963, Photorevised 1981



DPR 523J (1/95)

***Required Information**

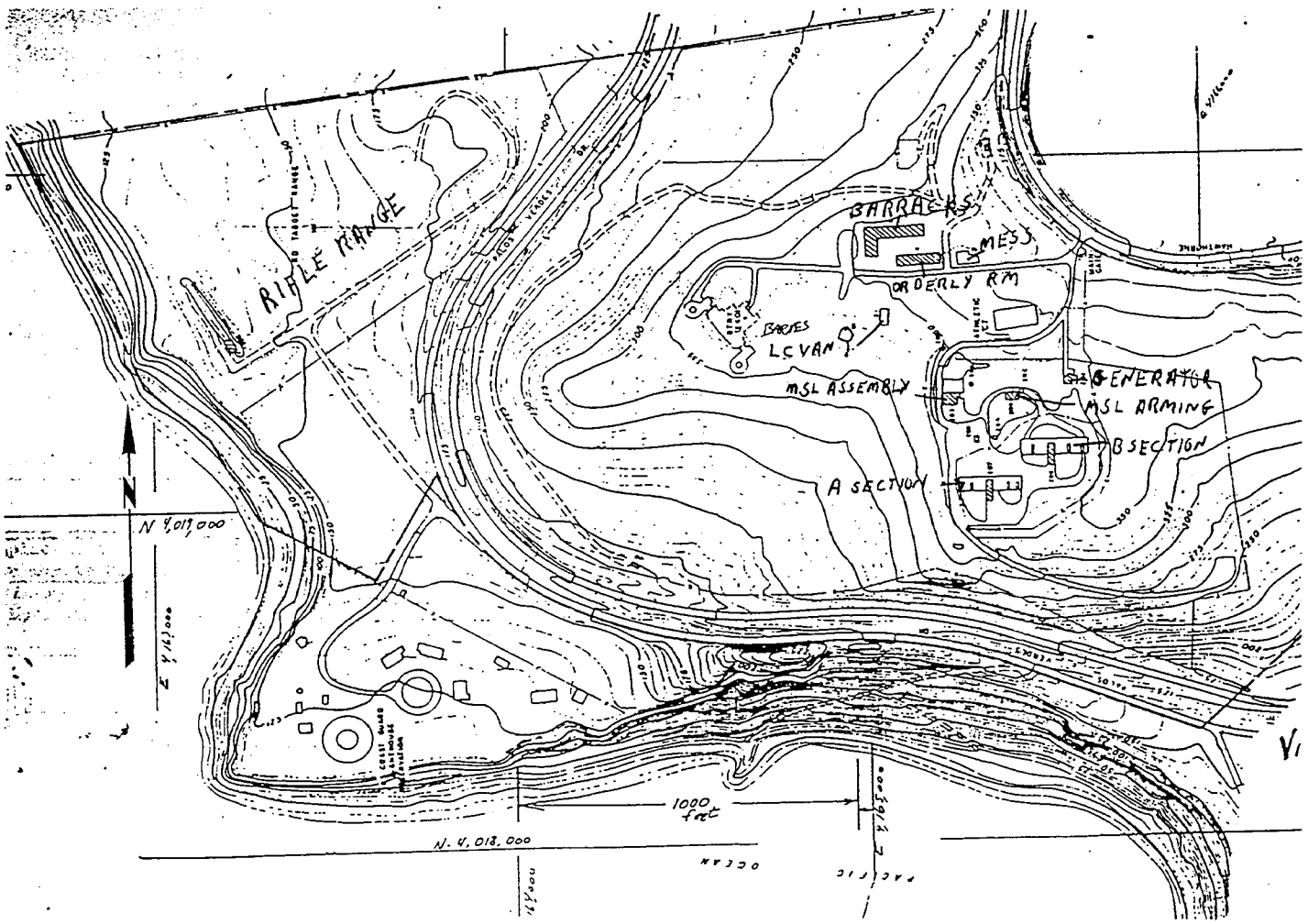
State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

SKETCH MAP

Primary # 19-180591
HRI#
Trinomial

Page 7 of 16
Resource Name or #: (Assigned by Recorder): Long Point Harbor Facilities

***Drawn By:** From Berhow (1992) additions by Ronald M. Bissell **Date:** 8 May 1998



NOTE: Include bar scale and north arrow.

DPR 523K (1/95) ***Required Information**

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

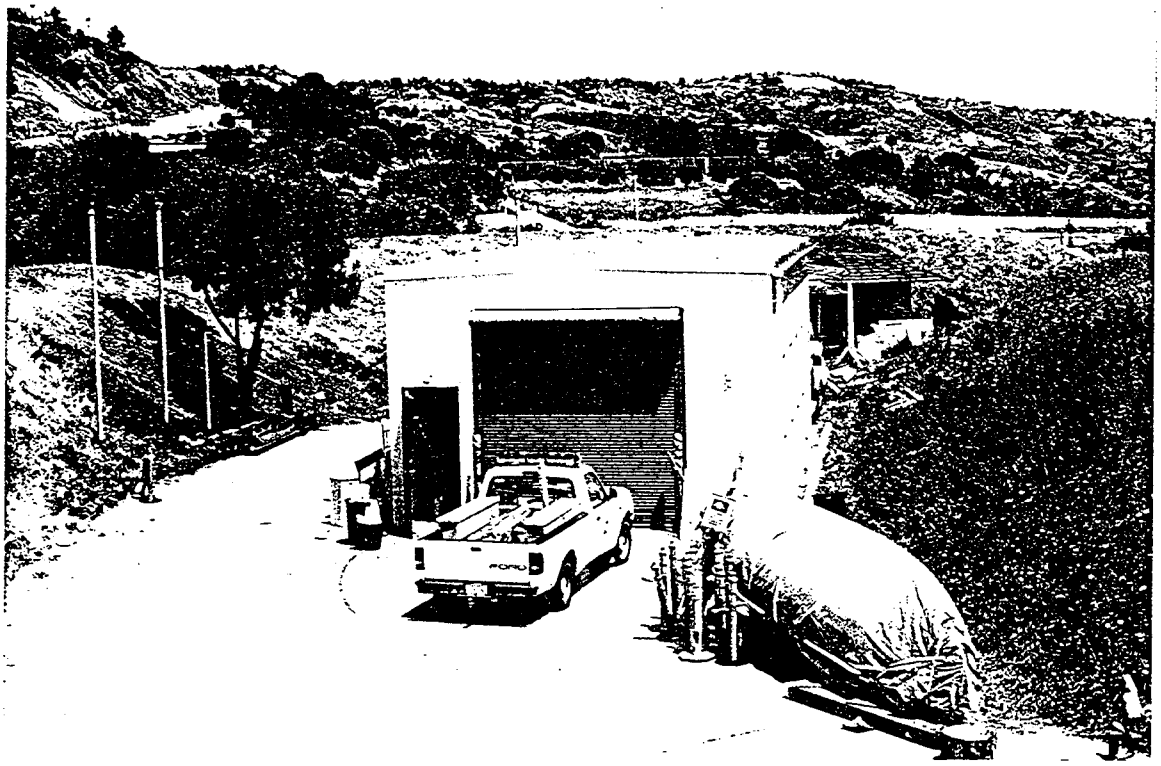
CONTINUATION SHEET

Primary # 19-180591
HRI#
Trinomial

*Resource Name or #: (Assigned by Recorder): Long Point Defense Facilities

*Recorded by Ronald M. Bissell *Date 8 May 1998 [X] Continuation [ ] Update

Missile arming building. View to the east. Note revetment surrounding building. The white roof that can be seen directly above the arming building is the generator building. Photograph was taken from atop the revetment.



*Required Information

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

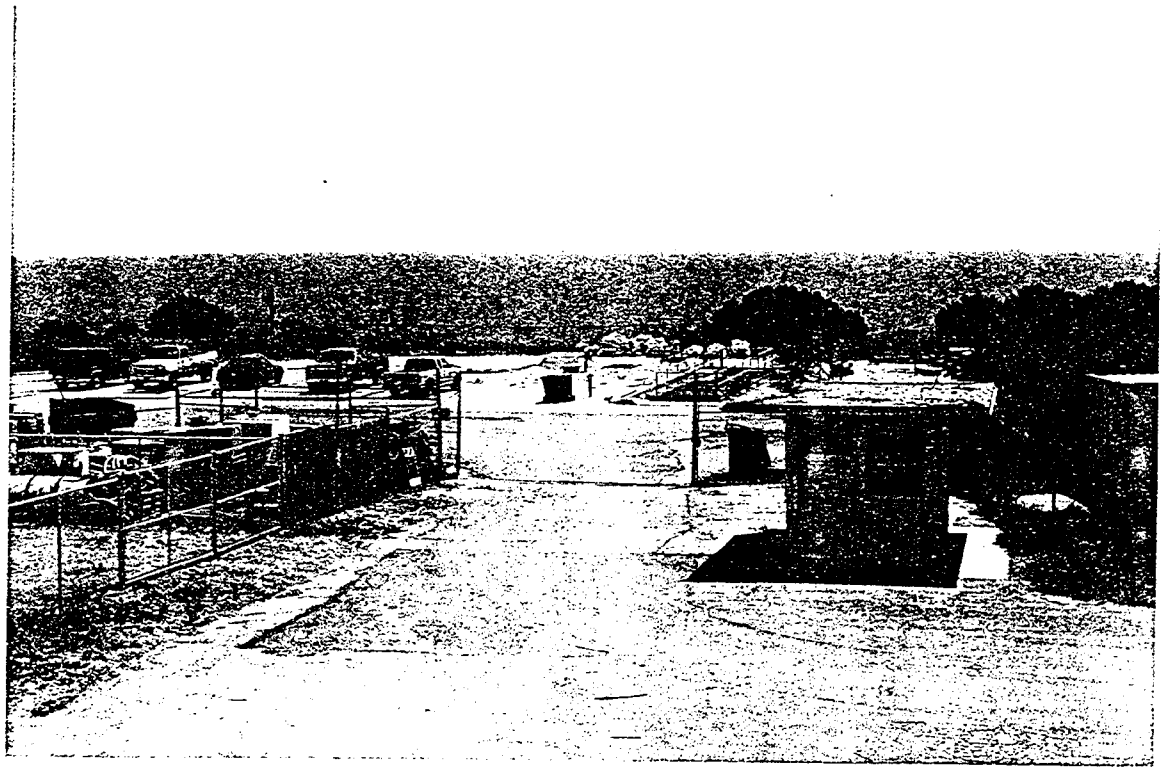
CONTINUATION SHEET

Primary # 19-180591
HRI#
Trinomial

 *Resource Name or #: (Assigned by Recorder): Long Point Defense Facilities

*Recorded by Ronald M. Bissell *Date 8 May 1998 [X] Continuation [ ] Update

This view it to the south, from atop the revetment. The small building in the right foreground is the guard post. Beyond the open gate is Launcher Section Alpha. The dark rectangular object immediately above the left edge of the guard post roof is the elevator. Two satellite launchers were located where the two pickup trucks facing the camera are parked. The other satellite launcher was to the right of the elevator. The fourth launcher was on the elevator. The obvious rail around the elevator is an added feature and would not have been present during the active life of the battery. The dark object between the elevator and the first pickup truck is a ventilator and the concrete mound beyond it is the main entry to the underground portion of the section. Section Bravo lies to the left.



 *Required Information

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

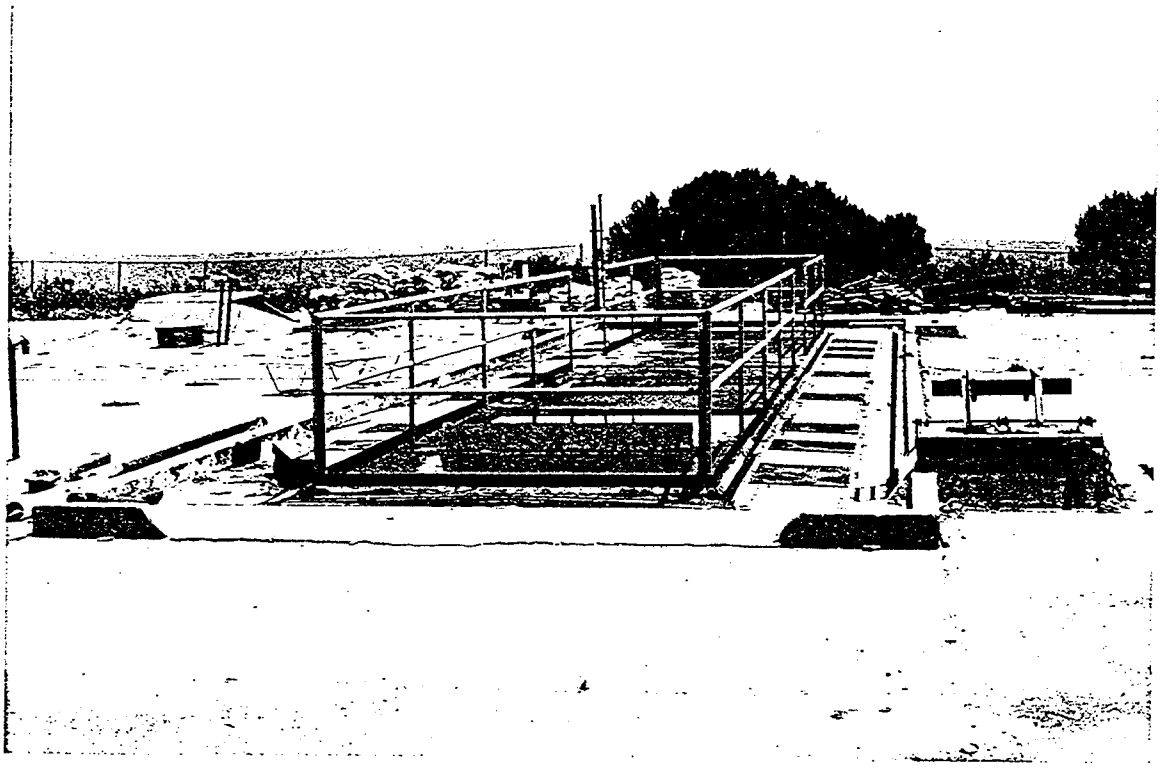
CONTINUATION SHEET

Primary # 19-180591
HRI#
Trinomial

 ***Resource Name or #:** (Assigned by Recorder): Long Point Defense Facilities

***Recorded by** Ronald M. Bissell ***Date** 8 May 1998 [X] Continuation [ ] Update

A detail view of the Alpha Section elevator. View to the south.



*Required Information

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

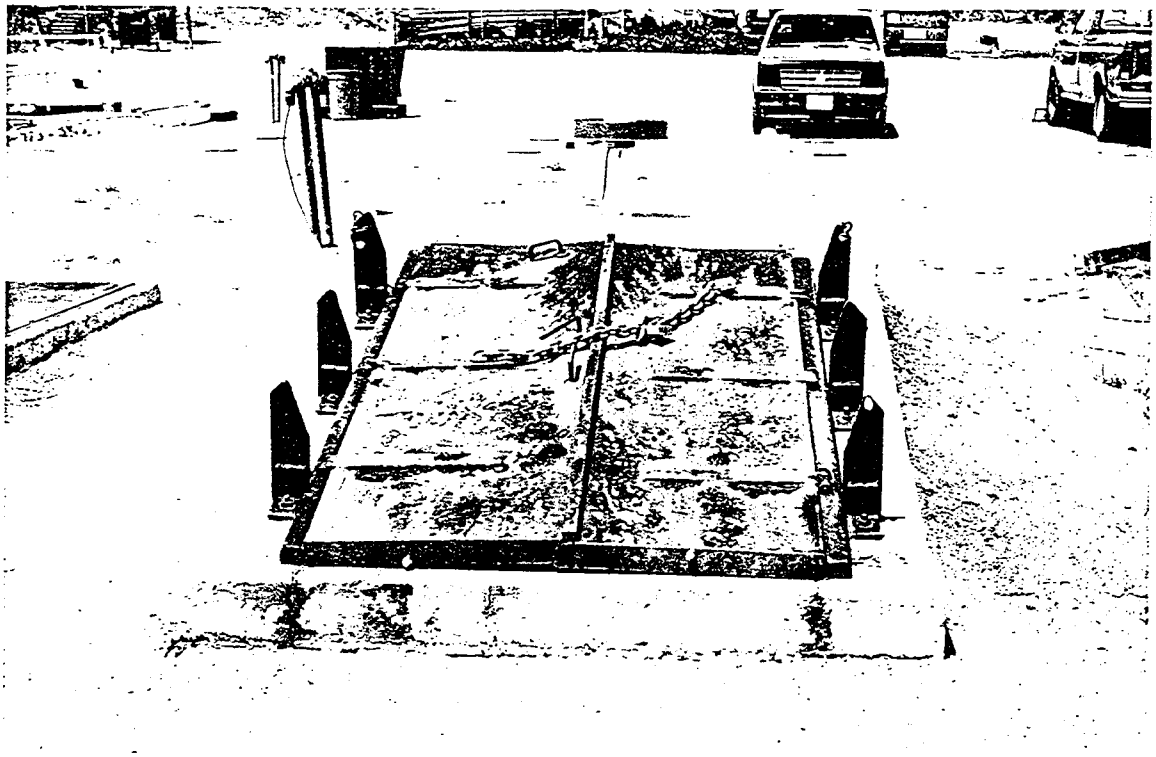
CONTINUATION SHEET

Primary # 19-180591
HRI#
Trinomial

 ***Resource Name or #:** (Assigned by Recorder): Long Point Defense Facilities

***Recorded by** Ronald M. Bissell ***Date** 8 May 1998 [X] Continuation [ ] Update

Alpha Section main entry door. View north.



 *Required Information

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

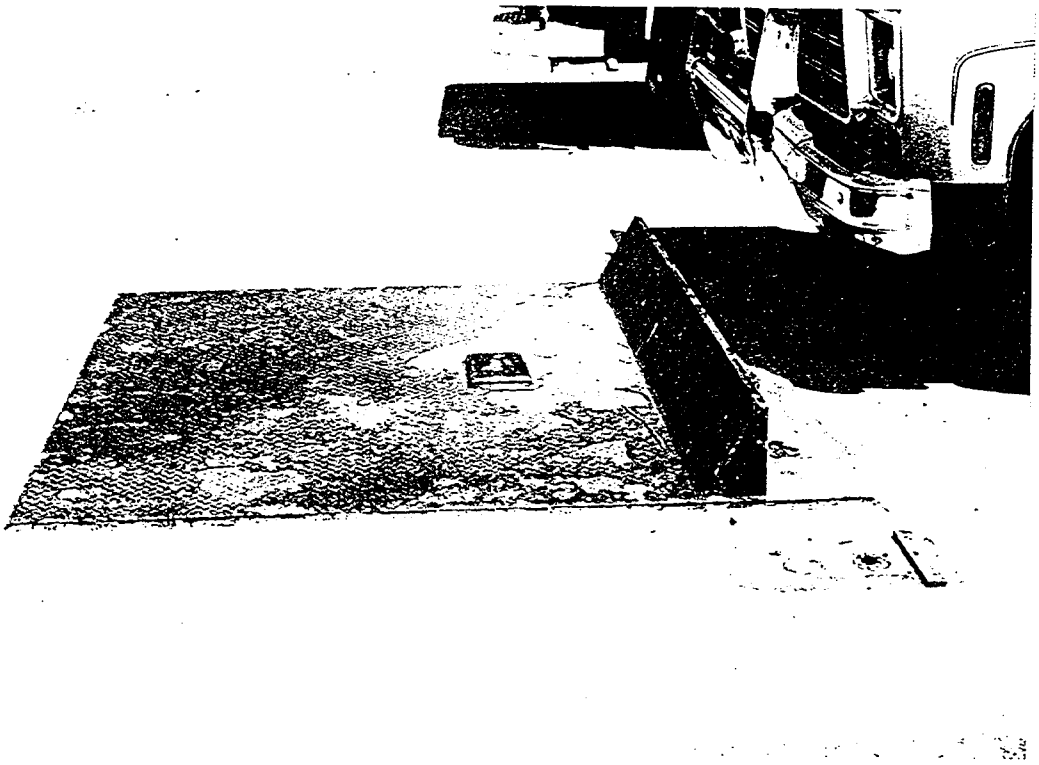
CONTINUATION SHEET

Primary # 19-180591
HRI#
Trinomial

 ***Resource Name or #:** (Assigned by Recorder): Long Point Defense Facilities

***Recorded by** Ronald M. Bissell ***Date** 8 May 1998 [X] Continuation [ ] Update

A blast deflector in Alpha Section. View east.



*Required Information

*** Resource Name or #: (Assigned by Recorder):** Long Point Defense Facilities

B1. Historic Name: Nike Air Defense Site LA-55-L

B2. Common Name: As above

B3. Original Use: As a launcher area for Nike air defense missiles during the 1950s and 1960s. Troop quarters, recreation facilities and administrative offices are also present. The resource consists of a barracks, an orderly/day room, a missile assembly building, a missile arming building surrounded by a revetment, two subsurface launcher sections with elevators, a guard post, an athletic court and numerous smaller facilities. A nearby rifle range was probably administered by the battery.

B4. Present Use: Barracks and orderly/day room currently used as Rancho Palos Verdes City Hall. Most other facilites are used by the City of Rancho Palos Verdes as storage.

***B5. Architectural Style** Military

***B6. Construction History:** (Construction date, alterations, and date of alterations) The facilites at site LA-55-L were constructed in 1953, except the mess facility, which was constructed in 1942, but is no longer extant. Minor alterations were made to the interiors of the barracks and orderly/day room to make them serviceable as city offices. Safety rails were added to the two elevators in the launcher sections. Tactical equipment (except blast deflectors) were removed when the site became inactive.

***B7. Moved? [X] No [ ] Yes [ ] Unknown Date:_____ Original Location:_____**
See B13, Remarks

***B8. Related Features:** A known distance rifle range was located about 1,500 meters west, but is no longer extant.

B9a: Architect: Unknown b. Builder: Unknown

***B10. Significance: Theme** Military, Air Defense **Area** Los Angeles Metropolitan
Period of Significance Cold War, 1950s 1960s **Property Type** Nike air defense Launcher Area
Applicable Criteria A. That are associated with events that have made a significant contribution to the broad patterns of our history.
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.) The period following World War II was a time of great

international tension due to development of atomic weapons and the means of delivering them by air. Now known as the Cold War, this era saw the emplacement of may air defense installations around major United States cities and defense facilites.

Los Angeles site LA-55-L was the Launcher Area for one such air defense battery (to date, the author has been unable to determine the name of the unit that actually occupied the site). The battery was designed to engage enemy aircraft at distances too great for them to have released bombs. Improving technology allowed site LA-55-L to receive Nike Hercules missiles to replace the original Nike Ajax equipment.

Los Angeles Site LA-55-L is part of a District formed by itself, a group of Base End Stations (observation posts constructed in 1930) and Battery 240, a coastal defense emplacement constructed in 1942. None of these facilities ever fired a shot in anger. The criteria given above is related to events of importance. In this case the importance of the events rests in their *not* occurring. The United States was not invaded or bombed - the defenses did the job they were designed to do, the deterrence of aggression. All United States citizens should be grateful such facilities were in place. The few such remaining facilities should be preserved so future generations of Americans can appreciate the importance of national defense efforts and the rapid evolution of such efforts in the mid 20th century.

B11. Additional Resource Attributes: (List attributes and codes.) HP11-Engineering Structure, HP34-Military Property

***B12. References:** Berhow, Mark (Compiler), 1992, The Harbor Defenses of Los Angeles, Summary Histories and Reports of Completed Works, on file at the National Archives, Laguna Niguel, California.

Bissell, Ronald M., March 1998, Existing Conditions, Cultural Resources on the Long Point Resort Property, Rancho Palos Verdes, Los Angeles County, California. On file at the South Central Coastal Information Center, University of California, Los Angeles.

B13. Remarks: Of all the buildings and structures associated with Site LA-55-L, only the guard post building is thought to be in other than its original location. This building could either have been near the main entrance at Hawthorne Boulevard, or at some point between there and the launcher area gate.

Many of the details given in this form are based on author's personal experience. Author was a Nike Ajax Missile Tracking Radar Operator and Nike Ajax Fire Control Repair Technician from 1956 through 1960.

***B14. Evaluator:** Ronald M. Bissell

***Date of Evaluation:** 8 May 1998

 ***Resource Name or #:** (Assigned by Recorder): Long Point Defense Facilities

(Sketch Map with north arrow required.)

See Sketch Map contained in Primary Record

(This space reserved for official comments.)

***Required Information**

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PHOTOGRAPH RECORD

Primary # 19-180591
HRI#
Trinomial

 Project Name (Assigned by Recorder): Long Point Defense Facilities Year 1998

Camera Format: 35 mm SLR Lens Size: 50 mm Film Type and Speed: Pan TriX 100
Negatives Kept at: RMW Paleo Associates, Incorporated

Mo.	Day	Time	Exp./Frame	Subject/Description	View Toward	Accession #
5	7	12:35	13	Missile arming building and revetment. See Continuation Sheet.	East	
5	7	12:40	14	Overview of Launcher Section Alpha. Guard post in foreground. See Continuation Sheet.	South	
5	7	12:45	15	Missile assembly building	Northwest	
5	7	12:50	16	Missile arming building and revetment.	Northeast	
5	7	12:55	17	Detail of elevator at Alpha Section. See Continuation Sheet.	South	
5	7	13:00	18	Detail, blast deflector plate. See Continuation Sheet.	East	
5	7	13:05	19	Main entry door to Alpha Section. See Continuation Sheet.	North	
5	7	13:25	20	Barracks and orderly/day room. See Item P5a.	North	

15.5 Geology, Soils and Seismicity Report

GEOLOGY, SOILS, AND SEISMICITY REPORT
LONG POINT EIR

Rancho Palos Verdes

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December 4, 2000

Project No. 6742

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AERIAL PHOTOGRAPHS REVIEWED

1. USDA, April 1952, AXJ-4R-123, 124, 125; Scale 1:20,000
2. Pacific Air Industries, 1928, C300-M9, M10, M11, M12, M27, M28, M29, M40, M41; Scale 1":=1500'
3. Fairchild Aerial Survey, August 16, 1945, 9700, 1021, 22; Scale 1' =100'
4. Fairchild Aerial Survey, May 7, 1960, 23870-515, 516, 517, 518; Scale 1:14,400
5. I.K. Curtis Services, Inc. July 10, 1980, Neg #68 and 69, W.O. #870652; Scale 1" = 600'

GEOLOGY, SOILS, AND SEISMICITY REPORT
LONG POINT EIR
Rancho Palos Verdes

1.0 EXISTING CONDITIONS

1.1 GEOLOGIC SETTING

The project area occupies the entire area delineated as Long Point "Resort Area" (former site of Marineland of the Pacific), and the topographically elevated area surrounding Rancho Palos Verdes City Hall, referred to as "Upper Point Vincente Area," both situated along the southern margin of the Palos Verdes Peninsula. The Palos Verdes Peninsula is a topographically and structurally high block of ground underlain by folded marine sedimentary and basaltic rocks of Miocene age. The bedrock is overlain by various surficial geologic units including marine and nonmarine terrace deposits, sea cliff talus, landslide debris, and artificial (man-made) fill. The Peninsula slopes are cut by a series of marine terraces and terrace remnants that stair-step along the southern flanks of the peninsula. Thirteen principal terrace levels (i.e. marine benches) have been recognized by Woodring and others (1946). In the Resort Area, the terrace surfaces which once occupied this area have been modified by grading for the now-dismantled Marineland aquatic park. A partially-preserved marine terrace also occupies portions of the Upper Point Vincente/U.S. Coast Guard site.

By far the most common geologic hazards in Rancho Palos Verdes are land settlement, shoreline cliff erosion, active landslides and inactive landslides. Although the project area is located within the seismically active region of Southern California, there are no documented active or potentially active faults projecting towards or transecting the project areas. Moreover, there are no known large landslides within either the Resort Area or Upper Point Vincente Area.

1.1.1 Upper Point Vincente Area

Topographically, the Upper Point Vincente Area, which includes the 3.9 acre U.S. Coast Guard property, occupies a broad, man-made (i.e., graded) upper pad/platform and a smaller lower pad bounded by westerly- and southerly-facing slopes which descend down to P.V. Drive

South. The uppermost pad, on which City Hall is located, slopes gently to the south and rests at an elevation of between 345 and 360 feet above mean sea level(msl). The smaller lower pad, which occupies most of the U.S. Coast Guard property, is situated at an elevation ranging from about 310 to 330 feet msl and also slopes gently to the south. Both the upper and lower graded pads were created during construction of the Nike Missile facility during and following World War II. These pads contain a number of below-ground bunkers. The existing buildings for City Hall were part of the Nike Missile complex.

The westerly- and southerly-facing 100- to 270-foot high slopes that border the graded pads have inclinations which vary from as shallow as 3:1 (horizontal:vertical) to as steep as 1:1 along a southerly-facing, 100 foot-high man-made cut slope adjacent to P.V. Drive South. However, the inclination of the majority of the natural slopes which bound the former Nike Missile facilities are generally in the range of 2:1 to 1 ½:1. The majority surface water drainage from the Upper Point Vincente/U.S. Coast Guard area occurs as sheet flow onto P.V. Drive South, and is ultimately discharged from pipelines over the coastal bluff.

The Upper Point Vincente Area lies outside the Coastal Zone and the City's Local Coastal Program.

1.1.2 Resort Area

The topography of the Resort Area is represented by a well-defined bench (i.e., marine terrace) that lies at an elevation between about 80 and 140 feet msl. This terrace/bench descends gently to the rim of a steep sea cliff, which then descends nearly vertically about 40 to 140 feet to sea level. The terrace represents an ancient wave-cut platform (tread) similar to the modern beach. Due to grading activities, the majority of the natural land surface was modified during World War II when the site was used to train CB's/heavy equipment operators. Almost the entire site was bulldozed, creating a number of deep trenches/pits up to about 20 feet deep.

The ancient marine terrace was further modified in the early 1950s during construction for the Marineland aquatic park. Due to past grading activities, natural drainage patterns across the area have been significantly modified. The bulk of the existing surface water drainage collects in four major swales which have notched near vertically into the top of the sea cliff and

discharge into plunge basins 80 to 100 feet below the rim of the sea cliff. A number of gullies have also eroded 20 to 40 feet headward into the gently sloping area near the top of the sea cliff.

1.2 GEOLOGIC MATERIALS

1.2.1 Surficial Materials

Surficial materials within the Upper Point Vincente/U.S. Coast Guard site and the Resort Area listed in order of increasing age are: artificial fill, beach deposits, native soils, slopewash and talus, landslide debris, and marine terrace deposits. The distribution of these materials is shown on the accompanying "Geologic Maps" (Figures 1 and 2). The designations shown below, in parentheses, correspond to those shown on the maps.

Native Soils (not designated on maps)

According to the U.S. Department of Agriculture Bureau of Soils Map (dated 1919), the native soils within the project areas are known as Altamont clay adobe and clay loam. These soils, which form(ed) a 3- to 6-foot thick cap above the shaley bedrock of the Monterey Formation, are typically dark grey to black in color, contain varying amounts of decaying organic material (i.e., grasses and weeds) and bedrock fragments, and are generally moderately to highly expansive. Residual soil materials overlaying basaltic (i.e., volcanic) bedrock and nonresidual terrace-cover soils are reddish brown and consist of sandy clayey loam.

Due to widespread grading activities, the majority of these soils have been stripped away and used for regrading for Marineland and the Nike Missile site. Portions of undisturbed native soils remain within the northeastern corner of the Resort Area. In the past, prior to widespread development, the more gently sloping areas were cultivated for barley and lima beans.

In the Upper Point Vincente/U.S. Coast Guard site, the soils mantling the slopes adjacent to City Hall and the former Nike Missile site have experienced relatively minor disruption from past and present development. The lower, more gently-sloping portions of this area have been used in the past for agricultural purposes.

Artificial Fill (af)

Artificial fill consists of native soil and bedrock materials which have been excavated and placed across the majority of the Resort Area as either engineered fill or as non-engineered fill. Undocumented, non-engineered fill occupies a large portion of the former Marineland site where these collapsible soils attain thicknesses of approximately 30 feet. The thickness of the engineered fill soils vary from several feet to about 10 feet thick. Along several places on the sea cliff, fills consisting of hard rock boulders have been cast over the cliff in times past.

Artificial fill materials within the Upper Point Vincente/U.S. Coast Guard property occupy the area disturbed by past grading for the Nike Missile site. These materials consist of uncontrolled fill, parking lots, roadways bunker sites, etc.

Beach Deposits (Qb)

Beach deposits occupying a 50- to 100-foot side strip in the tide zone are very coarse, chiefly pebbles, cobbles and boulders up to several feet in diameter derived from toppling of the rock units forming the adjacent sea cliff.

Soil-Slopewash Mixtures (QSW)

A veneer of black to dark brown porous, silty clay and clayey silt soil-slopewash mixtures form a veneer on the natural slopes adjacent to City Hall and the U.S. Coast Guard site, along the top of the sea cliffs, and are mixed with talus deposits. Depths range from one foot to five feet. Vertical desiccation and tension cracks, occurring in these soils at the outer margins of the sea cliff, are at least three to four feet deep and extend up 1 to 20 feet inland of the outermost edge of the sea cliff.

Talus (Qta)

Coarse talus deposits mantle the sea cliff to heights of 100 feet above sea level. They contain silt to boulder-sized debris derived from weathering of the cliff; their lowermost parts have been partly reworked by wave action during extreme high tides. These materials form a protective buffer zone against undercutting of the toe of the bluff by wave action. The finer-

grained matrix and the talus is reddish in color, strongly suggesting it was derived from basalt, the underlying parent material.

Marine Terrace Deposits (Qtm)

Marine terrace deposits occupy portions of both the Resort Area and the Upper Point Vincente/U.S. Coast Guard site. They consist of dark gray to brown silt, sand, gravel and coarse rock fragments, resting on a wave-cut platform similar to the modern beach. These materials are most easily viewed along the rim of the sea cliff. The material is chiefly fine-grained and is subject to erosion.

Landslides

A discussion of landslides is presented in Section 2.2 of this report.

1.2.2 Bedrock Formations

General

The entire project area is underlain by the lower part of the Altamira Member of the Monterey Formation and basaltic intrusive rocks of Miocene age. The principal rock types, listed in order of decreasing abundance, are: soft (altered) to hard (unaltered) basalt, hard platy siliceous shale, hard to very hard siliceous shale and limestone/dolomite, soft to moderately hard sandy shale, and soft granular to fine-grained silty volcanic ash (tuff). All these rocks are intermixed on a small to large scale and their distribution is shown on the accompanying Geologic Maps (Figures 1 and 2).

Basalt (Tb)

Altered basaltic rock is by far the most abundant bedrock (approximately 85 percent of the sea cliff) underlying the project area and is well-exposed on the face of the cliff, as well as on the 100-foot high cut slope adjacent to the westbound land of Palos Verdes Drive south. The basalt contains inclusions and septa of sedimentary rock and intrusions of granular to silty, moderately altered tuff (as crosscutting veins and dikelets) in chaotic disarray due, in part, to the injection of basalt into the soft sediments beneath the sea floor in Miocene time and, in part, to uplift and later deformation associated with the Pleistocene history of the Palos Verdes Hills.

Most of the basaltic rocks exposed above the shoreline exhibit moderate to high degrees of hydrothermal alteration. The altered basaltic rocks vary in color from light to dark reddish brown, are moderately hard to moderately soft and are massive. Although noticeably softer than the fresh basaltic rocks, exposures of the altered rocks stand at steep angles along the sea cliff. The altered basaltic rocks consist primarily of coarse to medium grains of altered feldspars and mafic minerals. The grains are cemented by calcite, silica, clay minerals and gypsum. Soft, punky pockets of ash ranging in color from pale-gray to red are locally present. Where observed, these pockets do not exceed a few feet in maximum dimension. The altered basaltic rocks also are locally "honeycombed" by numerous cross-cutting gypsum veinlets to form a rough "stock-works" texture. Some barite and siliceous fracture fillings have also been observed.

Altamira Shale (Tma)

Sedimentary rocks exposed within the project areas belong to the Altamira Shale Member of the Monterey Formation, a stratigraphically thick bedrock unit of marine origin. Sedimentary rock types identified within the project areas are in decreasing order of abundance, shale, siltstone, carbonate rocks, chert, sandstone, and rocks containing sediments and air-fall deposits of volcanic origin. Throughout most of the Palos Verdes Peninsula, the Altamira Shale forms a thick, stratigraphically continuous sequence of distinctly layered rocks. However, exposures in and around the project areas are scattered and are aerially as well as stratigraphically discontinuous. The largest continuous exposure is in the sea cliff along the southwestern edge of the Resort Area.

These scattered exposures of Altamira rocks represent inclusions within a thick and aerially extensive mass of the somewhat younger basaltic rocks. Stratigraphic continuity has been destroyed by several episodes of volcanic intrusion that have shattered and shifted the bedding of the Altamira shale. Many of these sedimentary bedrock inclusions exhibit no prevailing bedding orientations (i.e., strike and dip), and they range in size from less than one inch to several tens of feet in maximum dimension.

The intimate contact between the intrusive volcanic and sedimentary rocks has resulted in widespread and locally-pervasive hydrothermal alteration of the sedimentary inclusions. This alteration is characterized by baking of the margins of the inclusions and by hardening due to widespread silicification. The gross effect is that the altered sedimentary rocks commonly are harder, more resistant to erosion than much of the volcanic rock. In addition, the strength of these rocks has been increased, which leads to a greater degree of slope stability. The sedimentary rocks also exhibit widespread fracturing, commonly at high angles to bedding. The degree of this fracturing ranges from moderate to pervasive. The fractures apparently occurred in response to disruption of the sedimentary beds by the volcanic intrusions. The majority of the isolated failures (i.e. landslides) on the face of the sea cliff are controlled in large part by these fractures.

The shale units are marked by prominent thin bedding and they range from hard, platy rocks to soft, waxy ones. They are widespread throughout the Altamira inclusions and range in color through dark grey, greenish brown and reddish brown. Fissility ranges from moderate to nonexistent in many of the shale intervals, so that these rocks commonly fracture across bedding planes more readily than they separate along them. This loss of fissility is largely due to the welding of the beds by heat and chemical action related to hydrothermal alteration.

The siltstones are medium- to thick-bedded, fine grained, and range in color from dark gray through greenish grey to greyish brown. They range from hard to very hard. Several of the numerous exploratory borings encountered noticeable amounts of granular, waxy material (possibly bentonite clay) apparently of volcanic origin.

The carbonate rocks include both limestone and dolostone. Where exposed or penetrated by exploratory borings, these units are thick-bedded to massive. They are very hard, having for the most part been silicified and, locally, at least partially replaced by chert. Color of the fresh rock ranges from brownish grey to very dark grey. Light grey alteration rims are present along some fractures and contacts.

Surface exposures of chert are rare, but several thick intervals were penetrated by exploratory borings. The chert layers are massive, microcrystalline rocks. They are very hard and fracture conchoidally. Color ranges from dark grey to brownish grey.

Based on the Grading Plan (October 2000), grading for the project would involve excavations up to 10 to 15 feet deep within the bedrock materials. According to the project planners, all excavated materials would be redistributed as engineered fill within the project area. Experience in the area indicates that the bedrock can be broken by tractor-mounted rippers. However, some large boulders will likely be generated during grading and they would require special handling, or removal from the property. Blasting will not be necessary during grading for the project.

1.3 BEDROCK STRUCTURE

Due in part to folding and to basalt intrusion, the large septa and inclusions of sedimentary rocks exhibit a wide variety of bedding plane attitudes. Large masses of Altamira shale exposed in the sea cliff below the Resort Area display adversely oriented, seaward-dipping bedding planes which have given rise to at least one (1) of the five (5) documented landslides along the sea cliff. However, much of the bedding is contorted and widespread basaltic intrusions have produced more stable conditions along the majority of the sea cliff. In general, the landslides which have developed are of limited extent and do not pose a significant gross stability problem.

Based on the most recent geological mapping by Neblett & Associates and Law Crandall (1999), nine (9) noticeable bedrock faults have been observed on the face of the sea cliff These faults typically tend northwest to northeast, dip at high angles (75 to 85 degrees) and produce minimal offset. These faults are not considered "active" or "potentially active," and are most likely related to adjustment in the rock sequence during tectonic folding and basaltic intrusions.

1.4 GROUNDWATER

Groundwater has not been encountered in the many exploratory borings which have been drilled within the project areas over the last 40+ years. Neither seeps nor springs have been noted by researchers during the last century. It is apparent that the lack of groundwater beneath the area (with the exception of groundwater at or near sea level) can be expected given the pervasively fractured nature of the bedrock and the site's immediate proximity to the sea. In general, the majority of the bedrock beneath both project areas consist of non-waterbearing sedimentary and volcanic rocks. Groundwater flow in these materials would be restricted to fractures within the bedrock..

No evidence of perched groundwater was found during the course of the numerous subsurface investigations with the project area. No laterally continuous impermeable layers (such as bentonitic clay) have been found which could conceivably produce a perched groundwater condition.

1.5 MINERAL RESOURCES

Mineral resources known to exist in Rancho Palos Verdes include basalt, diatomaceous earth Palos Verdes Stone and asphalt. Basalt was quarried at three locations for nearly ten years, with operations ceasing in 1958. The Palos Verde Hills were once the location of the third largest diatomaceous earth quarry in the nation. This site became depleted in 1953, and the operation was moved to another site in 1954. Operations were halted at this second site when it was determined that the market value of the land for development purposes exceeded the worth of the diatomaceous earth. Palos Verdes Stone, a sedimentary rock, occurs commonly on the Palos Verdes Peninsula. The stone is used ornamentally in both architecture and landscaping and is generally found close to the surface. Grading operations often expose quantities of the stone which is then collected for commercial use. Asphalt has never been commercially exploited on the peninsula.

These are no documented economic mineral resources beneath the project areas. Additionally, the area is not known to be underlain by petroleum resources.

2.0 GEOLOGIC HAZARDS

General

The primary geologic hazards within the project area are those associated with landslides and sea cliff erosion, and strong ground motion from earthquakes. The landslide hazard on the Palos Verdes Peninsula is well-documented and is represented most notably by the active Portuguese Bend and Abalone Cove landslides, and the most recent landslide at Ocean Trails Golf Course, located about five miles east of the project area. Numerous other active, dormant or ancient landslides are present along the south coastal shoreline of Rancho Palos Verdes.

Hazards associated with earthquakes include primary hazards (ground shaking and surface rupture) and secondary hazards (liquefaction, seismic settlement, seismically induced landsliding, tsunamis, and seiches).

2.1 FAULTING AND SEISMICITY

In accordance with the California Department of Conservation Division of Mines and Geology, a fault is defined as a fracture in the crust of the earth along which rocks on one side have moved relative to those on the other side. An inactive fault is a fault that has not experienced earthquake activity within the last 1.6 million years. An active fault is one which has experienced movement/activity in the past 11,000 years. A fault which has moved within the last 1.6 million years, but not proven by direct evidence to have moved within the last 11,000 years, is considered potentially active. No active or potentially active faults are located within or project towards the Resort Area or the Upper Point Vincente/U.S. Coast Guard site.

The Palos Verdes Peninsula, like most of Southern California, is part of a seismically active region. Although a number of faults have been identified within the project site, none of the faults observed is considered active or potentially active, according to the numerous studies performed within the project area. There are a number of faults in the general Los Angeles area which have been identified as active or which are considered potentially active. None of these faults passes through the subject property, so the likelihood of fault-related ground rupture affecting the site is negligible.

The Alquist-Priolo Act of 1972 (now the Alquist-Priolo Earthquake Fault Zoning Act, Public Resources Code 2621, Division 2, Chapter 7.5) regulates development near active faults so as to mitigate the hazard of surface fault-rupture. Under the Act, the State Geologist is required to delineate "special studies zones" along known active faults in California. The Act also requires that, prior to approval of a project, a geologic study be conducted to define and delineate any hazards from surface rupture. A geologist registered by the State of California, within or retained by the lead agency for the project, must prepare this geologic report. A 50-foot setback from any known trace of an active fault is required. The project area is not currently known to be located within an Alquist-Priolo Earth Fault Zone.

The Modified Mercalli intensity scale, developed in 1931, measures the intensity of an earthquake's effects in a given locality, and is perhaps much more meaningful to the layman because it is based on actual observations of earthquake effects at specific places. On the Modified Mercalli intensity scale, values range from I to XII. The most commonly used adaptation covers the range of intensity from the conditions of "I -- not felt except by very few, favorably situated," to "XII –damage total, lines of sight disturbed, objects thrown into the air." While an earthquake has only one magnitude, it can have many intensities, which decrease with distance from the epicenter.

Ground motions, on the other hand, are often measured in percentage of gravity (percent g), where g = 32 feet per second per second (980 cm/sec^2) on the earth. One hundred percent of gravity (1g) is the acceleration a sky diver would experience during free-fall. An acceleration of 0.4 g is equivalent to accelerating from 0 to 60 miles (0-97 km) per hour in about 7 seconds. The force that one would feel during an earthquake with 0.4g acceleration would be similar to the force one would feel when standing in the back of a truck accelerating very rapidly onto a freeway. One difference between the earthquake and the ride in the truck is that in the earthquake one would accelerate backward and forward for many cycles. That is why it is difficult to stand during episodes of strong ground shaking.

Ground shaking accompanying earthquakes on any number of faults within the greater Los Angeles area could be expected to be felt within the project area. However, the intensity of ground shaking would depend upon the magnitude of the earthquake, the distance to the

epicenter, and the geology of the area between the epicenter and the property. A listing of recognized active faults, their closest distances to the property, and the maximum expected earthquake along each fault are presented in Table 1. Also presented are generalized evaluations of maximum ground shaking on site for the maximum earthquakes and generalized predictions of the likelihood of such events occurring. The locations of the major faults which could potentially produce significant ground shaking at the site are illustrated on Drawing No. 3 –Map of Quaternary Faults in Southern California.

In addition to the faults identified on Table 1, it should be noted that strong movement along the Cabrillo fault, located approximately 2½ miles to the east of the project site, could also have some ground shaking effects, since recent findings have indicated that there has been some geologically recent movement of the offshore segment of the fault. This fault may, therefore, be considered at least potentially active.

TABLE 1
SUMMARY OF FAULT AND GENERALIZED EARTHQUAKE INFORMATION FOR LONG POINT PROJECT

Fault	Distance from Site (miles)	Largest Expected Earthquake Richter Magnitude	Expected Level of Ground Shaking at Site	Likelihood of Occurrence
Palos Verdes	5	7.1	High to Very High	Moderate
Redondo Canyon	5	4.5	Low to Moderate	Moderate
Compton (Blind thrust Fault)	7	6.8	Moderate to High	Moderate
Newport-Inglewood	12	6.9	Moderate to High	Moderate
Malibu Coast/Hollywood	21	6.4	Moderate	Low
Elysian Park (Blind) Thrust Fault	21	6.7	Moderate	Moderate
Whittier-Elsinore	28	6.8	Low to Moderate	Moderate
Raymond	30	6.5	Low to Moderate	Low
San Fernando/Sierra Madre	34	6.7	Low	Moderate

Fault	Distance from Site (miles)	Largest Expected Earthquake Richter Magnitude	Expected Level of Ground Shaking at Site	Likelihood of Occurrence
San Jacinto	58	6.8	Low	High
San Andreas	58	7.8	Low	High

The most severe ground shaking would be expected to accompany a large earthquake on the Palos Verdes Fault. A moment magnitude(m) 7.1 earthquake on this fault could produce a maximum horizontal ground acceleration of about 0.6g, and Modified Mercalli intensities in the range of VII to IX within the project area.

Neither the Resort Area of the Upper Point Vincente/U.S. Coast Guard site has specific geologic conditions that make it particularly vulnerable to major earthquake damage. Subsurface conditions are not favorable for liquefaction and the high sea cliff negates potential tsunami damage to areas inland of the bluff. The most severe seismic effects that could be expected would be localized spalling of detached blocks of ground along parts of the sea cliff and/or partial movement/reactivation of the existing landslides exposed on the sea cliff. The geologic setback line established by the various geotechnical researchers takes this potential spalling effect into consideration.

Damage from ground rupture on site is extremely unlikely because no known active faults cross the project area; however, the proposed project site could be subject to moderate to high ground shaking in the event of a major earthquake along either the Palos Verdes Fault, Compton (Blind) Thrust Fault, or the Newport-Inglewood fault or other regional faults.

Secondary earthquake hazards include liquefaction, ground lurching, lateral spreading, seismically induced settlement, tsunamis, and earth-induced landsliding. The most severe seismically induced effects that could be expected would be localized spalling (i.e., outward heaving) of detached blocks of bedrock and any overlying marine terrace deposits along parts of the sea cliff/bluff and/or reactivation of the three landslides on the sea cliff.

Liquefaction

Seismic ground shaking of relatively loose, granular soils that are saturated or submerged can cause the soils to liquefy and temporarily behave as a dense fluid. Liquefaction is caused by a sudden temporary increase in pore water pressure due to seismic densification or other displacement of submerged granular soils. Liquefaction more often occurs in areas underlain by young alluvium where the groundwater table is higher than 50 feet below the ground surface. There are no such conditions within either the Resort Area or Upper Point Vincente/U.S. Coast Guard site.

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. Areas underlain by thick accumulations of slopewash and alluvium appear to be more susceptible than bedrock to ground lurching. 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. Where deposits of loose terrace sands and slopewash exist on the project site, ground lurching may occur.

Lateral Spreading

Lateral spreading involves the lateral displacement of surficial blocks of sediment (i.e., alluvium, terrace sands) as a result of liquefaction in a subsurface layer. As previously stated, the liquefaction potential within the project area, however, is considered to be nonexistent.

Seismically Induced Ground Settlement

Strong ground shaking can cause settlement by allowing sediment particles to become more tightly packed, hereby reducing pore space. Unconsolidated, loosely packed alluvial deposits and beach sand are especially susceptible to this phenomenon. Poorly compacted artificial fills may also experience seismically-induced settlement. Unconsolidated soils such as highly

disturbed landslide debris, colluvium and beach sand are present in the project area and are subject to seismically-induced ground settlement.

Tsunamis

A tsunami is a seismic sea-wave caused by sea-bottom deformations that are associated with earthquakes beneath the ocean floor. The hazard from tsunamis is considered to be low given the elevated nature of the proposed project.

Seiche

The project area is not located downslope of any large bodies of water that could adversely affect the project area and, therefore, the likelihood of earthquake-induced dam failure or seiches is considered remote.

2.2 LANDSLIDES

Certain regions in the Palos Verdes area are known for being susceptible to landsliding. Two large active landslides on the Palos Verdes Peninsula, the Abalone Cove Landslide and the Portuguese Bend Landslide, are located approximately 1.1 and 1.6 miles east-northeast of the site respectively. In the City of Rancho Palos Verdes, many of the areas recognized as susceptible to landsliding have been placed within building moratorium areas pending demonstration that the indicated slides either do not exist or can be developed safely.

The most recent landslide to occur within Rancho Palos Verdes was the 17-acre Ocean Trails Golf Course (OTGC) landslide which occurred approximately two years ago. This was a well documented ancient landslide that became reactivated. The OTGC landslide moved along a laterally continuous bentonite clay layer. No such clay layer is known to underlie the project area.

Factors conducive to the movement of the three notable landslides, as well as other landslides in the City, include the structural orientation of the bedrock units involved (unsupported beds dipping seaward), high ground water, and the presence of numerous, laterally extensive

tuff/bentonite clay beds, including the Portuguese tuff, within the stratigraphic section. These tuff clay beds have altered to bentonite which, under conditions of high moisture content, becomes weak and susceptible to sliding, such as occurred at Ocean Trails Golf Course. The Portuguese tuff is a distinctive mappable unit in the Palos Verdes areas and is not known to occur beneath the project area. No obvious bentonitic units have been documented in the sea cliff. The underlying bedrock, in large part, consists of basalt with inclusions of Altamira shale units which have moderately folded or crenulated. Mechanics of the basalt intrusion have effectively separated the Altamira Shale into disconnected sections or bodies and this, coupled with the variable bedding orientation, appears to preclude the likelihood of long continuous planes of weakness occurring within the bedrock units beneath the site. Moreover, much of the void space in the brecciated, fractured and disjointed rock structure created by the intrusive volcanic action has been secondarily cemented with calcareous (dolomitic), siliceous, and sulphur-rich minerals. Accordingly, the risk of large scale landsliding at the Long Point site is further reduced. Point Vincente and Long Point are headland areas considered to be resistant to rapid erosion or sliding, in large part due to the primary and secondary effects of the basaltic intrusions.

Five relatively minor landslides have been documented along the sea cliff below the Resort Area. These slide masses occur where large blocks of Altamira Shale are exposed on the face of the sea cliff. These landslides have resulted from the steep topography, weakened rock on the face of the bluff, internal strength of the surficial terrace deposits and, to a somewhat lesser degree, unsupported bedding within the bedrock. A relatively larger landslide (labeled Q1s?) has been postulated within the southeast corner of the Upper Point Vincente portion of the project area. Additional exploratory drilling will be necessary to further evaluate the presence, or absence, of this suspected landslide.

2.3 SEA CLIFF STABILITY

The coastline along the southern margin of the Resort Area features a bold, continuous sea cliff that ranges in height above sea level from a low of about 40 feet at its southern end to a high of 145 feet along the western margin of the area. In vertical profile the sea cliff consists of an

upper steep bedrock face that is topped by a less steep slope cut in the overlying terrace deposits. Much of the lower part of the sea cliff within the western portion of the Resort Area is mantled by a near-continuous apron of talus/slopewash.

The stability of sea cliffs is dependent upon a variety of factors. These factors include height and steepness, geologic materials and structure, water, and the strength of materials.

In the Resort Area, the east- and west-facing sea cliffs the expose hard, well-bedded Altamira Shale Member of the Monterey Formation, The southern promontory along the shoreline is primarily weathered basalt and the 50-foot high terrace on the eastern and western sides of the promontory expose artificial fill and terrace deposits.

The cliff faces and exploratory borings reveal the shales to be the hardest and typically the more erosion-resistant rock type within the project area. Despite being well-bedded and moderately fractured, the shale generally has no apparent through-going planes of weakness, such as continuous weathered tuff/bentonite clay beds that would promote in translational type failures. There are portions of the cliff face that expose locally unsupported bedding, yet there is no evidence that these sections of rock may fail. The basalt has intruded so pervasively that bedding planes are disrupted and discontinuous thus precluding simple slippage as a primary mode of failure.

Cliff failure in the shales occurs primarily by toppling when near-vertical joint sets are sufficiently undermined. This likely occurs in small segments as no large-scale evidence of recent rockfall or collapse is evident on the beaches or in the historic aerial photographs.

In slight contrast, the massive, weathered and hydrothermally altered basalt is softer than the shales and thereby erodes somewhat easier. The somewhat granular texture of the basalt allows for absorption of salt water into the surfaces of the rock, and may even allow some capillary of "wicking" effects. This means that at heights above the constantly wetted surf zone, near the upper edge of wicking effects, but below upper levels of occasional seawater wetting by splash, high tides, and storm waves, is a zone of rock which becomes wetted occasionally and later

dries. This wetting and drying effect allows salt to crystallize in near surface pores of the basalt and pry loose shallow layers of the basalt. Since the glassy, smooth-surfaced, cemented rocks of the Altamira Member resist absorption of the salt into the surface, they are less susceptible to this surficial erosive process. Thus the basalt weathers faster than the indurated Altamira Shale. It is this feature of the rock that apparently determines the rate and mechanism of sea cliff retreat. The mechanism is characterized by raveling rather than by large scale failures. Since the basalt has intruded into the shales in broad bands, the raveling basalt undermines the fractured shales and toppling occurs.

The eastern and western flanks of the Resort Area promontory expose thick accumulations of fill and terrace deposits. These soils are far softer than the surrounding bedrock, yet still maintain vertical cliff faces. This geometry is a result of an erosion resistance foundation rock below relatively well-consolidated soils and high rates of the toe area erosion, which carries off the talus before it accumulates. This mechanism is the representative mode of failure for the fills and terrace materials found adjacent to the surf zone of the site. Locally, existing fills at the edge of the 50-foot high terrace, on the eastern flank of the promontory, are subject to erosion or topple failure of the type described.

The appearance of the sea cliff itself indicates gross stability, with bedrock slopes commonly standing in excess of 60 degrees and locally at or near vertical. Much of this feature, particularly its lower part, is cut into relatively hard basaltic rocks. However, despite the considerable expanse of daylighted bedding, the vast majority of the sea cliff is not considered prone to large-scale landsliding for the following reasons.

- The sedimentary rocks have been hardened by hydrothermal alteration that has driven out moisture, lowered permeability, and welded the units together both across and along their bedding surfaces. Although much of the section is thin bedded, fissility has essentially been destroyed, so that where beds do dip out of the sea cliff unsupported, they stand as high, near-vertical faces.

- The bedding is convoluted and corrugated through the section so that the entire mass is interlocked within itself and anchored by zones that dip landward or parallel to the sea cliff. The section is much broken by joints and fractures oriented at high angles to the bedding.

- There are no laterally continuous weak tuff/bentonite clay beds.

Geomorphic evidence clearly indicates that sea cliff retreat is and will continue to be a very slow process along this stretch of shoreline. The relative evenness of the shoreline indicates that retreat has been a gradual and generally uniform process rather than an episodal one characterized by the sudden slumping or sliding of large blocks of ground moving as discrete masses. No indication of large to moderate-scale landsliding is evident anywhere, although small scale collapse of the sea cliff have been documented.

2.4 SEA CLIFF EROSION

The sea cliff is an erosional feature whose presence indicates that, for the past several thousand years, the shoreline has been slowly migrating in a landward direction. Erosion along the top of the bluff is caused by a combination of two agents. The first of these comprises rainfall and runoff from terrestrial sources that flow over the sea cliff, both in gullies and as sheet-flow, to incise and undercut parts of the face of the cliff. The second agent is the ocean which attacks and removes material from the base of the sea cliff, leaving higher parts unsupported and subject to collapse.

The erosion occurs intermittently and gradually over a period of years and results in the headward (landward) movement of the cliff. Although there are not precise measurements of the rate of such erosion, it is the opinion of the project geotechnical engineer (Neblett & Associates/Law Crandall) that the average rate would be on the order of only one inch per year or less. Locally, there are areas that may have somewhat greater erosion rates.

The main factor governing the rate of erosion is the hardness of the bedrock both within the sea cliff and along much of the near-offshore area. Much of the intratidal area adjacent to the property is marked by wide, shallow wave-cut platforms of hard basaltic rocks that dissipate wave energy. The presence of widespread talus deposits along the lower reaches of much of the sea cliff indicates that marine erosion is less significant here than subaerial or terrestrial erosion.

On the basis of visual examination of the existing sea cliff, logs of the exploratory borings, and the stability calculations, a geologic setback line for the property has been defined by Law/Crandall (1991), Vonder Linden (1989), and Converse, Davis and Associates (1971a, 1971b) and it appears on Figure 1-Resort Area Geologic Map. Assuming that future site development does not result in a substantial increase in runoff that erodes the bluff edge, the setback line shown represents a limit beyond which sea cliff retreat would not be expected to migrate within the next two hundred years. This limit averages about 50 feet from the bluff edge; it is closer to the edge in some areas and farther away in others. The differences reflect local geologic conditions. This limit is not meant to be a precise foundation setback line; however, it can be used as an approximate delineation of the "coastal structure setback" line referred to in Section 1772.040 of the City Development Code, which requires all new permanent structures to be set back a minimum of 25 feet from the coastal setback. Essentially, this line should be interpreted as the limit of any future development activities. Beyond, i.e., oceanward of this line, only open space uses (no roadways or structures) or minor structures per Section 1772.040 (C) are allowed.

3.0 THRESHOLDS OF SIGNIFICANCE

Earth resource and/or topographic impacts resulting from the proposed project could be considered significant if any of the following occur:

- exposure of people or property to substantial geological hazards, such as landslides, mudslides, ground failure or similar hazards, or soil and/or seismic conditions so unfavorable that they could not be overcome by design using reasonable construction and/or maintenance practices;
- location of a structure within a mapped hazard area or within a structural setback zone;
- triggering or acceleration of geologic processes, such as landslides or erosion that could result in slope failure;
- substantial irreversible disturbance of the soil materials at the site or adjacent sites, such that their use is compromised;

- modification of the surface soils such that abnormal amounts of windborne or waterborne soils are removed from the site;

- earthquake induced ground shaking capable of causing sea cliff failures or surface cracks resulting in the substantial damage to people and/or property;

- deformation of foundations by expansive soils (those characterized by shrink/swell potentially); and

- modification of the on-site soils (i.e., grading) in a manner that results in decreased stability for adjacent developments, such as the nearby residential enclaves.

4.0 IMPACTS

The level of geotechnical and landform information contained herein is adequate to analyze the potential project effects on earth resources and landforms, and to determine appropriate mitigation measures. For certain items, the project geotechnical engineer has recommended further testing and review of on-site conditions as part of the final design work. This additional work will further refine details for site design, but is not anticipated to alter the conclusions of significance contained herein. In accordance with CEQA case law, this later additional refinement is not a deferral of mitigation. Rather, it is a design refinement, consistent with the commitment to mitigation included in this EIR.

The current land use maps indicate the proposed project development will include three distinct land use categories; conservation, recreation, and a resort hotel. The recreation area includes a 9-hole golf course and practice facility, as well as public parking areas, parks, trails, and beach access areas. According to the land use maps, five (5) of the nine(9) golf holes along with conservation areas, will occupy the entire Upper Point Vincente Area. The resort hotel will occupy the southern two-thirds of the "Resort Area."

At the present time, due to the programmatic nature of this document, there are only conceptual grading concepts that denote the nature and extent of proposed grading activities. Until a grading plan has been prepared and approved, impacts cannot be fully addressed. However, there are a number of short-term and long-term impacts to the current physical/geological

setting that can be generally expected from grading and development activities. These are described in the following impacts sections.

4.1 EFFECTS FOUND NOT TO BE SIGNIFICANT

Based on the information presented above, the following geologic hazards are not considered to be a significant impact on the proposed development:

- liquefaction
- settlement
- ground rupture
- ground lurching
- lateral spreading
- tsunamis
- seich/flooding

4.2 POTENTIALLY SIGNIFICANT IMPACTS

The most significant potential impacts to site development would be caused by changes in exiting topography, sea cliff/bluff retreat, erosion of surficial soil deposits, potential localized groundwater buildup, ground shaking from earthquakes, and seismically induced sea cliff failures from nearby seismic sources, as well as the potential for seismically induced reactivation of existing landslides.

Impact 4.2.1 Landslides

Based on information currently available, these portions of the development adjacent to the existing landslides could be significantly impacted by renewed landslide movement resulting from strong ground motion from nearby earthquakes, potential groundwater buildup within the landslides, erosion at the toe of the bluff from storm generated waves, and ongoing natural erosion of the buffs.

Impact 4.2.2 Sea Cliff Retreat

Active sea cliff/bluff retreat may pose a significant impact to any form or development within 50 to 75 feet of the current bluff top area. Reactivation or renewed landsliding on the sea cliff, and continual (albeit episodic) spalling of large blocks of bedrock along the sea cliffs, present hazards which cannot be practically mitigated, except with an adequate setback from the top of the actively eroding bluff. Moreover, numerous human contributions associated with anticipated construction activities typically leads to increased area erosion through construction of storm drains, fences and stairways, removal of plant/soil cover; oversteepening/overloading of slopes; and both accidental and purposeful release of water onto and into the marine terrace sands and bedrock. These impacts would be considered potentially significant if not mitigated.

Impact 4.2.3 Soil Erosion

The existing artificial fill soils and marine terrace deposits blanketing much of the Resort Area and capping the bluff are highly erodible. Adverse surface drainage could promote accelerated soil erosion which could undermine proposed structures and lead to surficial slope failures on either manufactured or natural slopes. This impact would be considered significant if not mitigated.

Impact 4.2.4 Ground Shaking

Given the highly seismic character of the Southern California Region, moderate to severe groundshaking can be expected within the project area due to moderate to large earthquakes on the nearby Palos Verdes Fault or other nearby faults (i.e. Compton Blind Thrust Fault). This impact would be considered significant if not mitigated.

Impact 4.2.5 Seismically Induced Landslides

Strong earthquake-generated ground motions can worsen the existing unstable slope conditions along the seacliff/bluffs with in the Resort Area. The most common types of earthquake induced landsliding in terrain similar to that in the project area are soil slips, shallow slumps, shallow slides within the marine terrace deposits, and rockfalls on the seacliff, Moreover, existing landslides could be reactivated as the result of strong ground motion from future nearby earthquakes. This impact would be considered significant if not mitigated.

Impact 4.2.6 Groundwater Buildup

The addition of landscape irrigation for the golf course and resort areas could result in the localized building up of groundwater beneath the project area. With the buildup of groundwater comes the increased potential of localized failures on the bluffs and/or reactivation of existing landslides due to the buildup of pore pressure in the rock and oil, and the possibility of groundwater acting to lubricate weak rock and soil layers. This impact would be considered potentially significant if not mitigated.

Impact 4.2.7 Construction Related Impacts

Grading activities within the project area would modify current landforms/topography. The greatest changes to existing topography would likely occur within the Upper Point Vincente Area, where the golf course is planned. Only by proper design and implementation during grading activities can impacts related to grading be mitigated and/or reduced to a less than significant level.

5.0 MITIGATION

Numerous controls are imposed on new developments through the permitting process. In general, public agencies regulate development (and reduce potential geologic impacts) under the requirements of the California Building code, the Alquist-Priolo Special Studies Zone Act, local land use policies and zoning, and project-specific mitigation measures, such as the need for building setbacks along the top of the coastal bluff. In addition, municipalities require that grading plans and erosion control measures be developed and implemented for most proposed projects.

The impacts to the proposed Resort Area from existing landslides, sea cliff instability/erosion can be mitigated by the building setback line previously approved by the City of Rancho Verdes. A minimum building setback is based upon the local geologic conditions, rates of erosion of sea cliff retreat, and the economic life expectance of the proposed structures. For instance, it may be appropriate to place walls, fences, viewpoints and pathways in close proximity to the top of the cliffs for the purposes of walking and observing the sights.

However, some of these features may need to be moved back if cliff areas recede or become subject to local instability. The same is true for other temporary or low-cost structures such as gazebos, patios, cantinas, or outdoor service areas. However, permanent structures and structures of all-hours occupancy should be placed landward of reasonably derived building setbacks, such as the existing City-approved building setback line shown in Figure 1.

In order to mitigate against the potential instability associated with the adverse (i.e., out-of-slope) bedding along the southern margin of the Upper Point Vincente Area, a structural (building) setback line has been established by the geotechnical consultant (Neblett & Associates, 2000). The setback line, as shown on Figure. 2, was determined by calculating the location (of the line) at which a minimum factor of safety (e.g., F.S. = 1.50) was exceeded.

In order to evaluate the impact an provide mitigating measures due to the postulated landslide located in the southeast corner of the Upper Point Vincente Area, a comprehensive subsurface investigation by the project's geotechnical consultant will be necessary. The study should also include preparation of appropriate geologic cross sections to be used to perform slope/landslide stability analysis. Based on the results of the analysis, a mitigation concept/plan can be implemented.

The potential for the building of groundwater beneath the project area due to infiltration of landscape irrigation, storm water runoff, etc. appears to be unlikely given the pervasive fracturing of the bedrock beneath the area. However, a combination of shallow (30 feet), intermediate (80 to 100 feet), and deep (200 feet) groundwater monitoring wells should be installed at various locations throughout the project area. The location of these wells should be identified by the Applicant's geotechnical consultant, and then reviewed by the City's geotechnical reviewer(s) prior to their installation. These wells should be monitored at least every month for the first five years after issuance of the Certificate of Occupancy. A monthly report should be prepared presenting the groundwater level monitoring data and submitted to the City for review.

In the event the groundwater level monitoring data indicates either a rise of more than 10 feet within the regional water table, or the presence of groundwater if no groundwater was documented immediately following installation of the well(s), additional wells will need to be installed in order to assess the nature and extent of the change in the groundwater conditions beneath the area. If this condition were to occur, a well drilling plan should be submitted to the City for review by their geotechnical/hydrogeologic reviewers.

In addition, a biannual visual reconnaissance of the sea cliffs and the lower portions of the Upper Point Vincente Area should be performed for at least 5 years after issuance of the Certificate of Occupancy to access the presence of seeps or springs which may develop overtime. The results of this evaluation should be included in the appropriate monthly groundwater monitoring report discussed above along with recommendations to mitigate any adverse seepage noted during the reconnaissance.

Prior to issuance of a grading permit by the City /Director of Public Works, the following should be required.

- Geotechnical studies performed on the project site to date are not adequate for design and construction of the project. Additional design-level geotechnical studies shall be performed to provide the adequate level of information to properly design and engineer the project. The Applicant should submit a geotechnical report for review and approval by the Director of Public works. This report will primarily involve assessment of potential soil related constraints and hazards such as slope and sea cliff instability, sea cliff erosion, or related secondary seismic impacts, where determined to be appropriate by the director of Public Works. The report shall also include an evaluation of potentially expansive soils and recommend construction procedures and/or design criteria to minimize the effect of these soils on the proposed development. All reports shall recommend appropriate mitigation measures and be completed in the manner specified by the City.

- The Applicant shall submit a report by an engineering geologist indicating the ground surface acceleration from earth movement for the subject property. All structures within this development shall be constructed in compliance with the g-factors as indicated by the geologist's report. Calculations for footings and structural members to withstand anticipated g-factors shall be submitted for review and approval by the Director of Public Works.

- The Applicant shall submit a grading/drainage plan for review and approval by the Director of Public works. Said plan shall incorporate the following design objectives.

- All surface and subsurface runoff shall be directed to the nearest acceptable drainage facility via sump pumps if necessary, as determined by the Director of Public Works.

- On-site drainage and subdrain systems shall not drain over the bluff top. All roof gutter drains shall be required to connect into a tight line drainage pipe or concrete swales that drain to an acceptable drainage facility, as determined by the Director of Public Works.

- A soils/geotechnical report addressing the extent of uncompacted fill and remedial grading on site. The report, including the recommended bluff protection measures and vibration monitoring system, shall be submitted for the review and approval of the Director of Public Works. Heavy vibrating compaction equipment will not be allowed near the bluff face.

- Incorporate all recommendations of the approved soils/geotechnical report into the construction design of the project.

- A construction monitoring plan shall be prepared to protect coastal resources within and surrounding proposed development areas during construction phases of the project. The construction monitoring plan shall be submitted to the Director of Community Development for review and approval. The construction monitoring plan will identify measures for the protection of resources and monitoring procedures to determine compliance. Such measures include, but are not limited to, Best Management Practices, erosion control measures and protective fencing.

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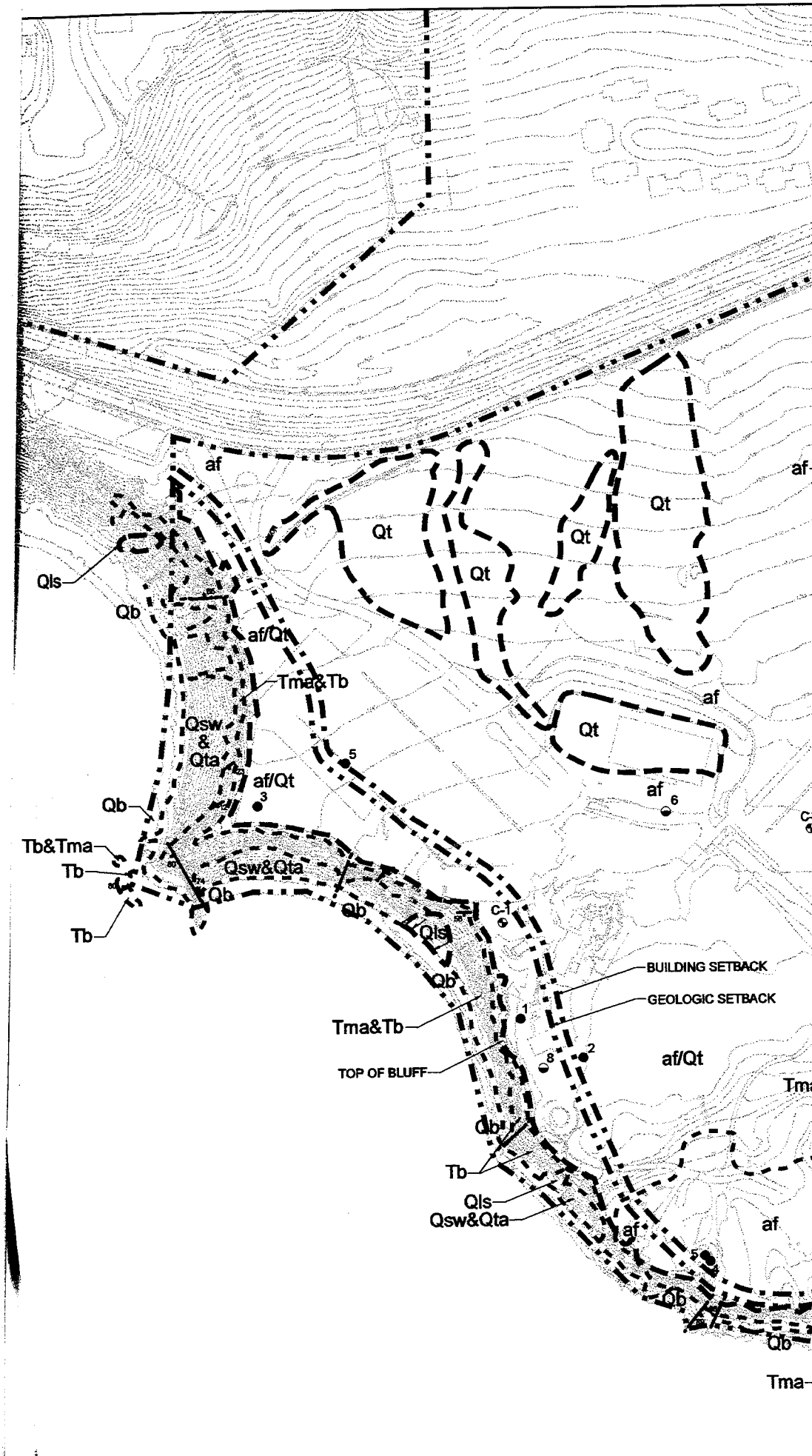
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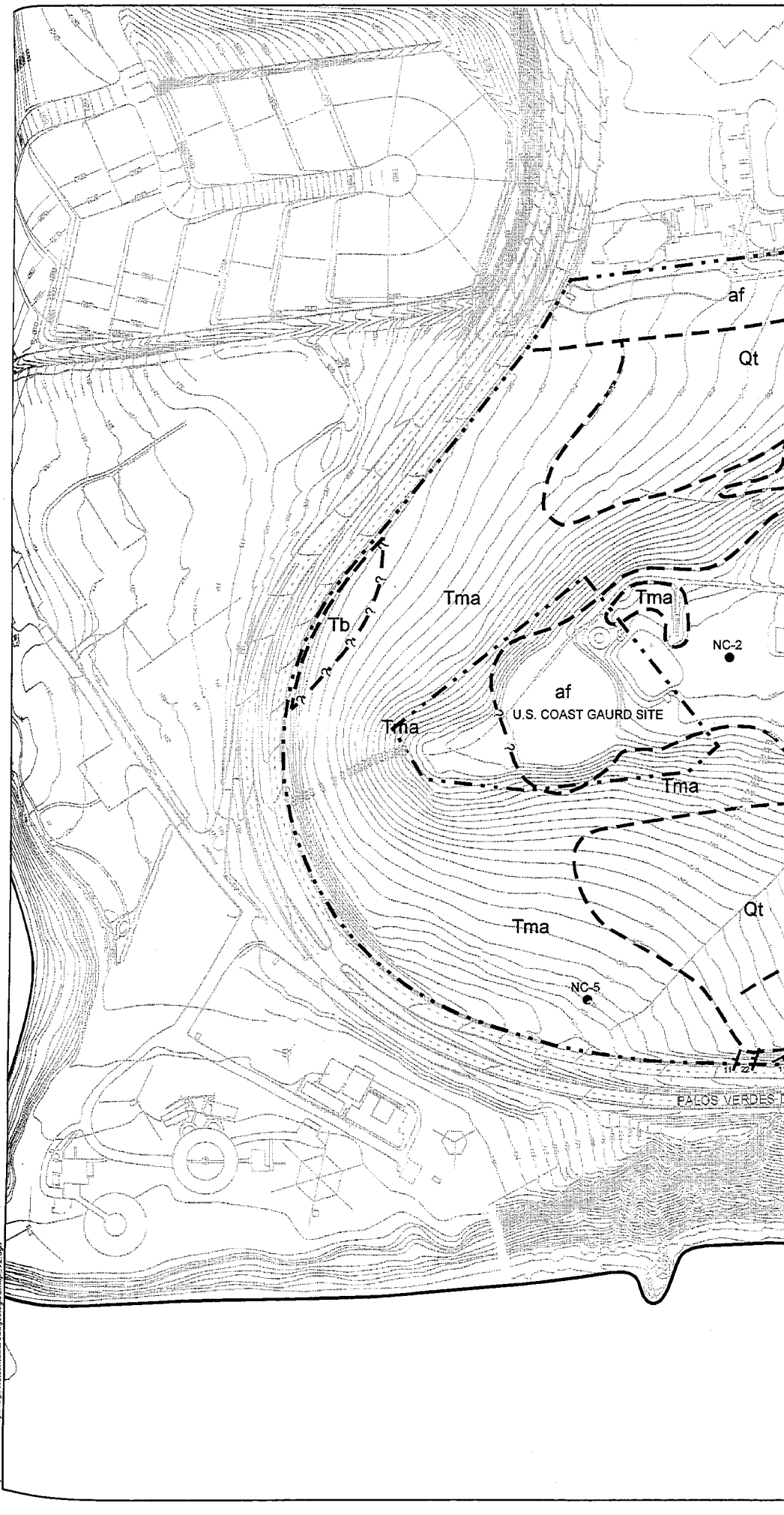

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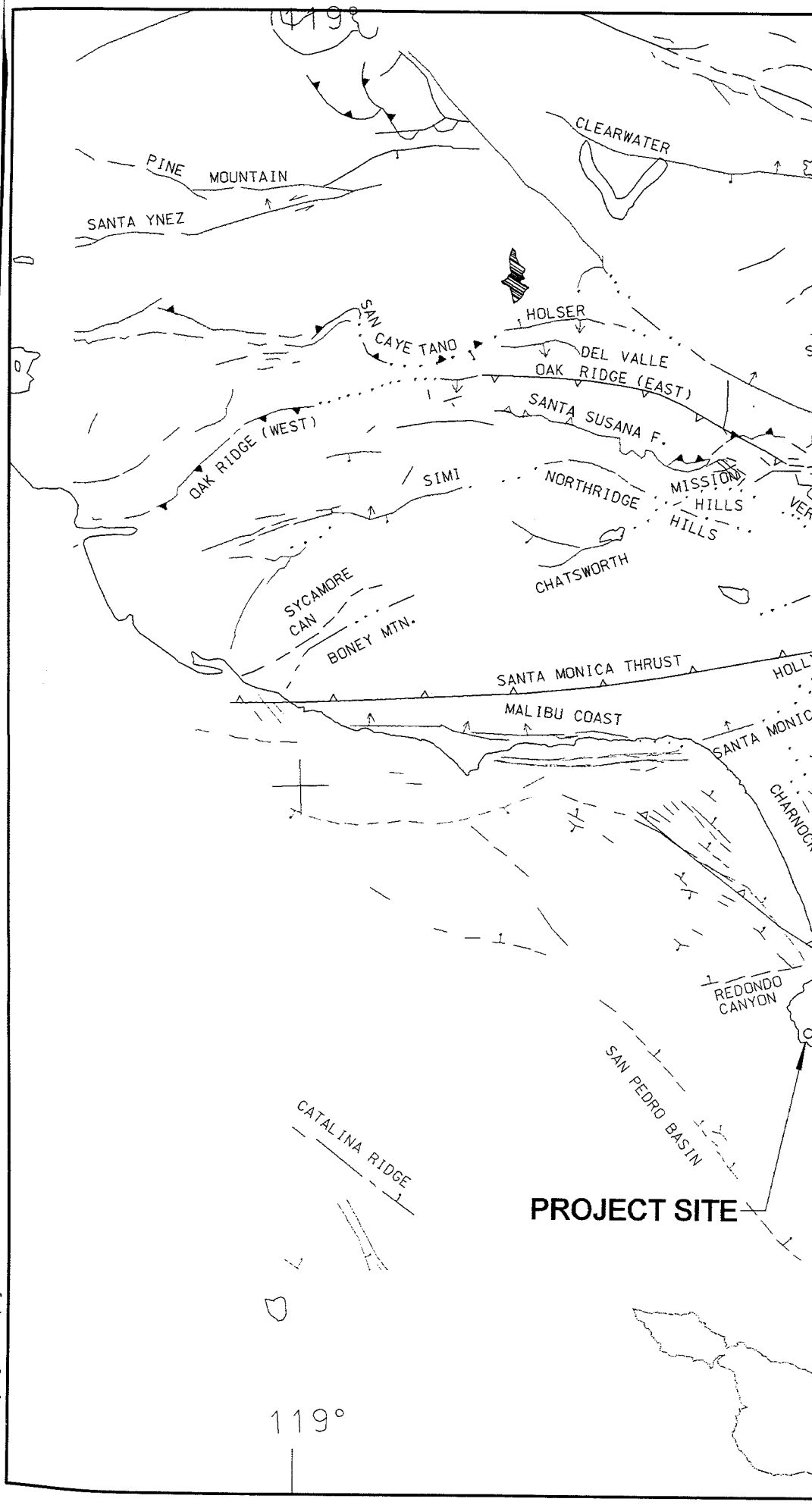
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MISSION HILLS
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SYCAMORE CAN
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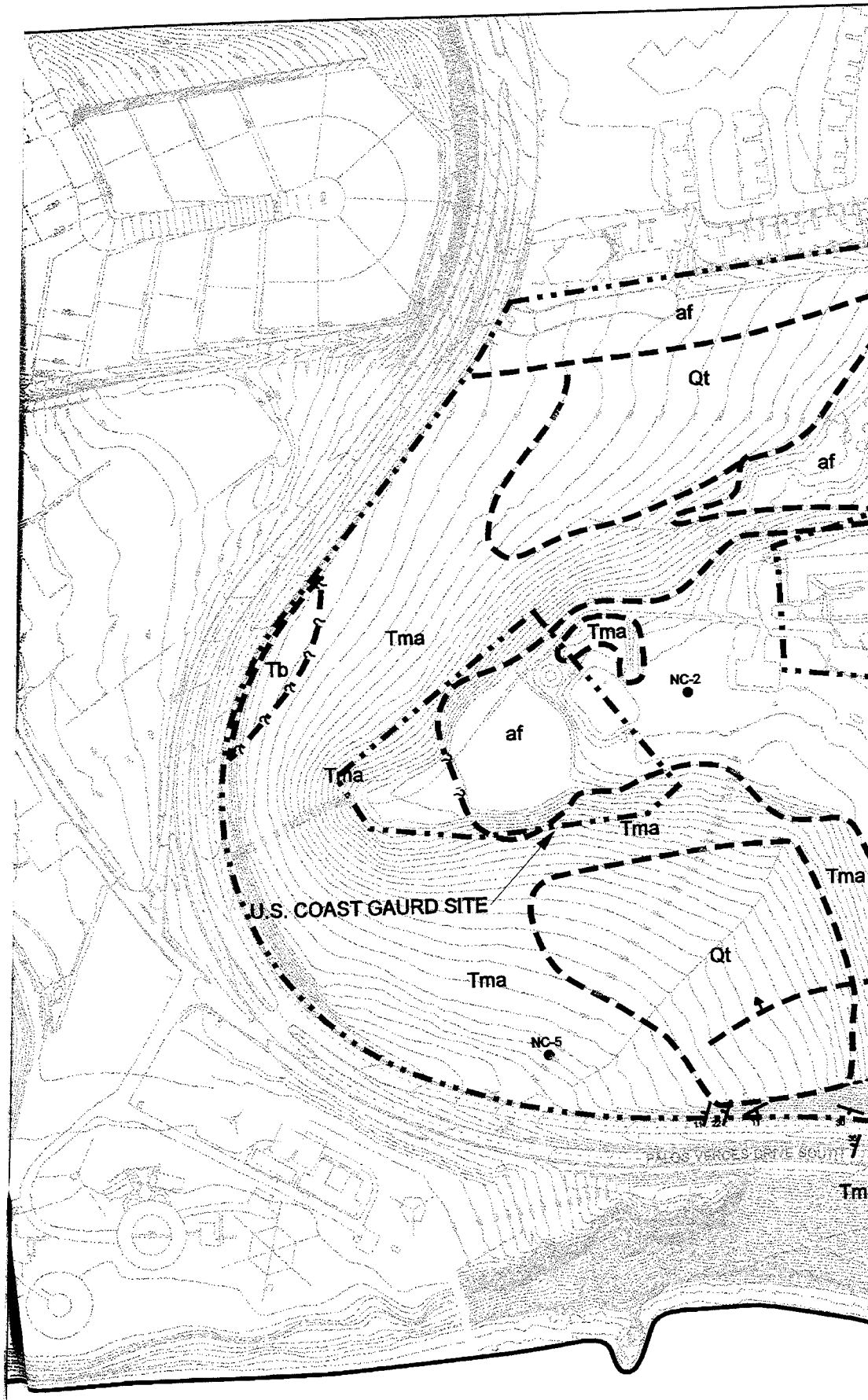
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PALOS VERDES DRIVE SOUTH

15.6 Hydrology and Water Quality Report

LONG POINT SPECIFIC PLAN EIR
HYDROLOGY AND WATER QUALITY
TECHNICAL APPENDIX

Prepared For:

City of Rancho Palos Verdes

Prepared By:

RBF CONSULTING

PLANNING ■ DESIGN ■ CONSTRUCTION

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January 2001

PN 10-034194

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1.0 INTRODUCTION

The following study is the Hydrology and Drainage Technical Appendix prepared as part of the *Long Point Specific Plan Environmental Impact Report (EIR)*. The Long Point Resort project site is located along the coast in the City of Rancho Palos Verdes in Los Angeles County, California. The project site encompasses approximately 168 acres. This report is a technical engineering study/evaluation solely to support the environmental document for the project on issues related to drainage and surface hydrology. The level of analysis prepared is compatible with the level of planning information available.

All assessments and technical analysis in this report are the compliance with the local drainage policies and requirements for the City of Rancho Palos Verdes, Los Angeles Regional Water Quality Control Board, Los Angeles County, and the California Environmental Quality Act (CEQA) of 1970, as amended. The hydrology analysis and drainage assessments have been prepared at a preliminary engineering level based upon the details of the available information for an environmental document.

1.1 Background and History

The project site includes two distinct areas. The largest area, 103.5 acres, occupies the old Marineland site and is referred to as the Resort Hotel Area. The Resort Hotel Area is located within the Rancho Palos Verdes' Coastal Specific Plan. This area is located south of Palos Verdes Drive South and east of Point Vicente County Park. The southern property line is the Pacific Ocean. The second area, referred to as the Upper Point Vicente Area, encompasses the Rancho Palos Verdes City Hall site. The Upper Point Vicente is located outside of the City's Coastal Specific Plan Area and the State's Coastal Zone. This area consists of approximately 64.9 acres and is bounded on the north by open space, on the east by the Western Regional Headquarters of the Salvation Army, and on the west and south by Palos Verdes Drive South. A 3.9 acre U.S. Coast Guard Site forms an island within the Upper Point Vicente Area, west of the City Hall, however, is not part of the project. Both areas are shown on Figure 1.

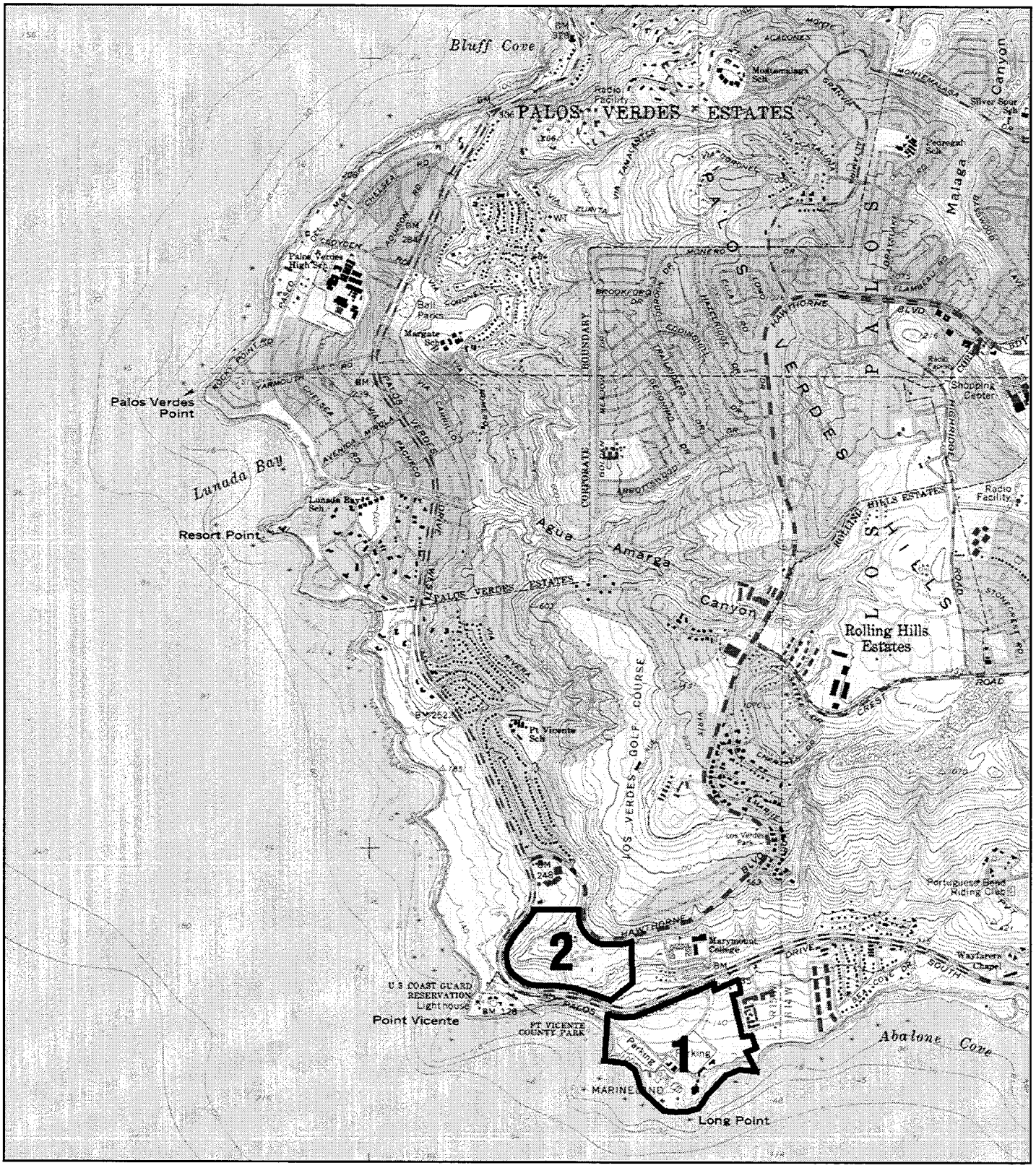
For the purposes of the hydrology analysis, the study area is defined as the watersheds in which the Long Point project is located. The watersheds are illustrated on the Hydrology Map following the main text. The watersheds extend as far north as the Los Verdes Golf Course and surrounding residential areas. The study also includes the properties south and west of the sight such as the Interpretive Center.

1.2 Definition of Level of Significance

The purpose of this technical evaluation is to determine the impact of the proposed project on surface water drainage and stormwater quality within the City of Rancho Palos Verdes and the Pacific Ocean. Should the analysis determine that the proposed project significantly impacts

surface water drainage or stormwater quality, appropriate mitigation will be identified to minimize the project impact to a less than significant level.

The evaluation of impacts to surface water drainage are governed by federal, state and local drainage laws and regulations. For this evaluation, impacts to surface water drainage would be considered significant if the project alters the drainage patterns of the site which would result in substantial erosion, siltation, or increase runoff which would result in increased flooding. Increases



Source: Redondo Beach Quadrangle, photo revised 1981.

Not to Scale

- Subject Site

1 - Resort Hotel Area
2 - Upper Point Vicente Area

CITY OF RANCHO PALOS VERDES
LONG POINT RESORT PHASE 1 ESA

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09/00 JN 10-034194

Site Vicinity

FIGURE 1

in the amount of runoff would not be considered a significant impact for this project because the receiving water is the Pacific Ocean.

The evaluation of impacts to stormwater quality are of growing concern throughout the country. In Southern California, poor stormwater quality is the primary cause of numerous beach closures each year. Recently, the Los Angeles Regional Water Quality Control Board increased its requirements for the Municipal National Pollution Discharge Elmination System (NPDES) Permit. The new requirements of the Municipal NPDES permit require the development of a Standard Urban Stormwater Mitigation Plan (SUSMP). Guidelines for the requirements associated with the SUSMP are described in detail in the *Development Planning for Storm Water Management - A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP)* dated May 2000 by the Los Angeles County Department of Public Works.

According to the *Development Planning for Storm Water Management*:

> The requirement to implement a program for development planning was based on federal and state statutes including: Section 402 9p) of the Clean Water Act, Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990, and the California Water Code. The Clean Water Act amendments of 1987 established a framework for regulating storm water discharges from municipal, industrial, and construction activities under the NPDES program. The primary objectives of the municipal storm water program requirements are to:
>
> 1. Effectively prohibit non-storm water discharges, and
> 2. Reduce the discharge of pollutants from storm water conveyance system to the Maximum Extent Practicable

For this evaluation, impacts to stormwater quality would be considered significant if the project did not attempt to address stormwater pollution to the Maximum Extent Practicable. Currently, there are no definitive water quality standards that require stormwater quality leaving a project site to meet standards for individual pollutants. Therefore, impacts to stormwater quality will be considered less than significant if they meet the requirements of the SUSMP.

The SUSMP requirements for commercial developments include the following:

1. Post Development peak storm discharge rates shall not exceed the estimated pre-development rate for developments where increased peak storm water discharge rate will result in increased potential for downstream erosion.
2. Conserve natural areas by using cluster development, limiting clearing and grading of native vegetation, maximize trees and other vegetation, promote natural vegetation, and preserve riparian area and wetlands.
3. Minimize stormwater pollutants of concern by incorporating BMPs or combinations of BMPs best suited to maximize the reduction of pollutant loadings in runoff to the Maximum Extent Practicable.

4. Protect slopes and channels to decrease the potential of slopes and channels from eroding and impacting stormwater runoff.
5. Provide storm drain system stenciling and signage.
6. Properly design outdoor material storage areas.
7. Properly design trash storage areas.
8. Provide proof of ongoing BMP maintenance.
9. Comply with SUSMP standards for design of structural or treatment control BMPs.
10. Properly design loading/unloading dock areas.
11. Properly design repair/maintenance bays.
12. Properly design vehicle/equipment wash areas.
13. Design parking areas to reduce impervious land coverage, infiltrate runoff, and treat runoff before it enters the storm drain system.

2.0 EXISTING CONDITIONS

The purpose of this existing conditions evaluation is to establish a baseline for comparison of the pre-project and the post-project conditions. Baseline conditions investigated include: land use, hydrology, floodplain mapping, and surface water quality.

2.1 Existing Land Use

Existing land use on site can be broken into two distinct land uses areas. The proposed Resort Hotel Area currently contains the remnants of the old Marineland Site which operated between 1954 and 1987. Subsequent to the closure of the park, some of the buildings and infrastructure were demolished or have deteriorated and are not longer effective. The most significant remaining portions of infrastructure are the large parking lot and access road. The site is still used for a few functions and also houses some offices. The second land use area is the Upper Point Vicente Area which was historically owned by the military. The site has been extensively graded and currently contains an inoperative Nike missile-defense site which contains some buildings and paved areas. The City Hall is located in the Upper Point Vicente Area. The balance of the site is used for agriculture.

2.2 Hydrology

Hydrologic calculations to evaluate surface runoff associated with the 25- and 50-year hypothetical design storm frequencies from the tributary drainage areas were performed using the Los Angeles County Modified Rational Method (F0601) for watersheds greater than 50 acres. The Los Angeles County Rational Method was used to calculate the time of concentrations for subarea inputs to the F0601 program.

The watershed subarea boundaries were delineated utilizing topographic mapping and several site visits to determine the existing drainage patterns. Hydrologic parameters used in the analysis, such as rainfall and soil classification, are as presented in the *Los Angeles County Hydrology Manual.* The Hydrology Map displaying the subareas is located following the main text of this report.

2.2.1 Existing Watershed Description

The majority of the proposed acre site is vegetated with typical annual grasses and low brush associated with Coastal Sage Scrub habitat. The historic drainage pattern for the areas follow the natural topography with the majority of the drainage flowing south towards the bluffs and down into the ocean. Those portions of the study area north of Point Vicente, a small portion of the City Hall site, drain westerly to the ocean. The project watershed includes some offsite drainage which passes through the project site. Also, some onsite drainage discharges onto other properties. A portion of the offsite drainage is conveyed from an open space area north of Hawthorne Boulevard through two 18" RCP and discharged on the eastern portion of the City Hall site. The majority of the offsite drainage crossing the project area originates from the Los Verdes Golf Course and adjacent residential development. Although not much information is known about this portion of the

drainage, it appears that two storm drains convey flow from the golf course underneath a residential development at this point, runoff from the residential area is combined with the golf course runoff. The flow then crosses Hawthorne Boulevard to open space east of the Western Regional Headquarters of Salvation Army. Once the flow exits the open space, it is likely that the flows are conveyed in Palos Verdes Drive South towards the property.

Existing drainage facilities consist of (1) four road culverts under Hawthorne Boulevard, (2) three road culverts under Palos Verdes Drive West, (3) six existing road culverts under Palos Verdes Drive South, and (4) a small earthen trapezoidal channel along the northern Long Point property boundary which drains into a 42" corrugated metal pipe (CMP) culvert to the western bluff. Many of the culverts have been identified by the City of Rancho Palos Verdes as having capacity deficiencies. Table No. 1 identifies the existing facility and its recommended upgrade as defined by the City. The facilities crossing each road are listed from the westernmost to the easternmost. All facilities described in Table No. 1 are illustrated on the Hydrology Map following the main text.

Table No. 1 - Existing Facilities

Facility Size	Material	Required Size	Recommended Facility
Facilities Crossing Hawthorne Boulevard			
24"	Reinforced Concrete Pipe (RCP)	60"	48" Parallel RCP
18"	RCP	NA	NA
Two 18"	RCP	2-30"	2-30" RCP
30"	Corrugated Metal Pipe (CMP)	NA	NA
Facilities Crossing Palos Verdes Drive West (from south to north)			
24"	RCP	60"	60" RCP
27"	RCP	NA	NA
18"	RCP	NA	NA
Facilities Crossing Palos Verdes Drive South			
24"	RCP	NA	NA
18"	RCP	54"	54" RCP
24"	RCP	54"	48" Parallel RCP
36"	RCP	48"	48" RCP

Table No. 1 - Existing Facilities			
Facility Size	**Material**	**Required Size**	**Recommended Facility**
18"	RCP	36"	36" RCP
30"	RCP	4' x 4'	4' x 4' Dbl. Reinforced Concrete Box (RCB)
Northern Long Point Boundary			
~ 3' wide	Natural trapezoidal channel	NA	NA
42"	CMP	NA	NA

2.2.2 Rational Method

The Rational Method and Modified Rational Method are empirical computation procedures for developing a peak runoff rate (discharge) for storms of a specific recurrence interval. Rational Method equations are based on the assumption that the peak flowrate is directly proportional to the drainage area, rainfall intensity, and a loss coefficient which describes the effects of land use and soil type. The design discharges were computed by generating a hydrologic "link-node" model which divides the area into drainage subareas, each tributary to a concentration point or hydrologic "node" point determined by the existing terrain or street layout. The following assumptions/guidelines were applied for use of the Rational and Modified Rational Methods:

1. The Rational Method hydrology includes the effects of infiltration caused by soil surface characteristics. The soils map from the *Los Angeles County Hydrology Manual* indicates that the study area consists of soil type "002."

2. The infiltration rate is also affected by the type of vegetation or ground cover and percentage of impervious surfaces. The amount of imperviousness used for the existing condition ranged from 0% for natural, open areas to 95% for the parking lot and building subareas.

3. The Kirpich formula was used to determine the times of concentration (T_c) for initial upstream subareas. Initial subareas were drawn to be less than 10 acres in size and less than 200 feet in length per County guidelines. Approximately fifty percent of the subarea T_c's were estimated based on the results from the Rational Method per County guidelines. Then, the T_c's were then input into the Modified Rational Method Program. Examples of the output from the Rational Method T_c calculation can be found in Appendix A: Existing Condition Rational Method.

4. In the existing condition, mountain channel conveyance, natural trapezoidal channel or street flow was used with a Manning's "n" value ranging from 0.02 for roadways to 0.06 for open space areas.

5. Standard rainfall intensity data was based on the area being within the "K" rainfall zone per the Los Angeles County Hydrology Manual.

6. Drainage patterns were assumed to follow existing topographic features for determining the tributary area to each culvert or bluff discharge point in the existing condition. Drainage patterns on the offsite area, just north of the project site, were developed from 1985 City of Rancho Palos Verdes topography and from master plan information provided by the City.

2.2.3 Existing Condition Surface Water Hydrology

The hydrologic characteristics which define the existing condition include the hydrologic soil type, proportion impervious, and watershed geometry. According to the *Los Angeles County Hydrology Manual*, this site contains soil type 002, which is the Altamont Clay Loam. The maximum average elevation differential of the watershed is approximately 531 feet (from elevation 546 at the open space area north of Hawthorne Boulevard to elevation 15 at the west bluffs of the Long Point property boundary) extending a maximum flow length of 3,240 feet or 0.6 miles. Most of the site was considered mountainous (slope > 10%). Due to limitations in the modeling software, the project site was split into three areas, one on the west, one in the middle and one on the east. The western area was broken into 8 subareas. Thee middle area was broken into 15 subareas. The eastern area was broken into 10 subareas. The subareas are illustrated on the fold out map following the main report.

The existing terrain and topographic conditions at the site were examined to determine the natural surface drainage patterns and to delineate the watershed sub-basin boundaries. Hydrologic properties such as slope, drainage patterns, soil type, or vegetation were characterized for each subarea. The watershed subareas are utilized to develop a "link-node" model which allows transformation of a physical process into a mathematical simulation or model. The subareas ranged from 2 to 49 acres in size. The characteristics used for each subarea are indicated in the following table.

Table No. 2 - Natural Subwatershed Characteristics				
Designation	**Area (Acres)**	**Length (Feet)**	**Elevation Change (Feet)**	**Proportion Impervious**
West Area				
W1A	4	650	550-340	0
W2A	2	40	370-340	0.9
W3A	3	600	350-250	0
W4A	5	1300	370-227	0.1
W5B	14	1500	360-205	0.1
W6C	8	650	318-190	0.1
W7D	33	1800	373-177	0.2
W8E	10	1350	373-180	0.2
Middle Area				
M1A	12	1650	690-500	0.00
M2A	3	400	500-450	0.42
M3A	6	450	546-370	0.00
M4A	35	1370	370-170	0.20
M5B	7	1350	685-540	0.00
M6B	18	900	585-500	0.42
M7C	23	100	690-585	0.00
M8C	18	600	585-500	0.12
M9C	42	1400	500-220	0.22
M11B	3	1240	240-200	0.90
M12B	2	930	200-170	0.95
M14D	16	1400	405-175	0.00
M15A	4	900	170-15	0.20
M17E	42	1540	205-103	0.35
M18F	5	900	128-100	0.95

Table No. 2 - Natural Subwatershed Characteristics				
Designation	**Area (Acres)**	**Length (Feet)**	**Elevation Change (Feet)**	**Proportion Impervious**
M20E	27	1050	103-9	0.45
East Area				
E1A	25	1800	930-745	0.42
E2B	29	1900	790-700	0.42
E4A	8	1300	530-245	0.00
E5C	5	2200	850-705	0.90
E6C	9	1050	745-600	0.00
E7C	5	600	600-530	0.42
E8D	4	1700	705-560	0.90
E10C	14	1600	560-245	0.00
E12A	49	2200	280-130	0.42
E13A	24	1800	205-20	0.20
E14E	5	900	125-87	0.42

To establish the baseline conditions for the site, hydrology for the 25-year frequency storm and the 50-year frequency storm. The flows for the 25-year storm are used to determine local storm drain sizing, while the 50-year analysis is used for larger master plan facilities and floodplain mapping. The predominant hydrologic soil classification of the natural watershed is Altamont Clay Loam which corresponds to a high runoff potential, with the soil having slow infiltration rates consistent with clay soils. Appendix B displays the results from the 25-year clearwater flows and the 50-year clearwater flows. Results of the existing condition or "pre-development" hydrologic analysis is summarized in the following table.

Table No. 3 - Existing Conditions Peak Flowrates							
Subarea	**Area (AC)**	**Tc Calc**	**Tc Est.**	**Subarea 25-Yr. Peak Q**	**Total 25-Yr. Peak Q**	**Subarea 50-Yr. Peak Q**	**Total 50-Yr. Peak Q**
W1A	4	5	-	16	16	17	17
W2A	2	5	-	8	24	9	25
W3A	3	-	5	12	31	13	36

Table No. 3 - Existing Conditions Peak Flowrates							
Subarea	**Area (AC)**	**Tc Calc**	**Tc Est.**	**Subarea 25-Yr. Peak Q**	**Total 25-Yr. Peak Q**	**Subarea 50-Yr. Peak Q**	**Total 50-Yr. Peak Q**
W4A	5	-	5	20	46	21	53
W5B	14	-	5	55	55	59	59
W6C	8	6	-	28	28	30	30
W7D	33	10	-	83	83	95	95
W8E	10	9	-	27	27	30	30
M1A	12	10	-	29	29	34	34
M2A	3	10	-	8	37	9	42
M3A	6	5	-	23	58	25	67
M4A	35	9	-	94	138	107	154
M5B	7	10	-	17	17	20	20
M6B	18	9	-	50	67	56	76
M7C	23	6	-	79	79	86	86
M8C	18	9	-	50	126	56	140
M9C	42	7	-	133	229	147	258
M10BC				229	279	258	324
M11B	3	6	-	11	286	12	332
M12B	2	5	-	9	284	9	329
M13AB				284	422	329	480
M14D	16	7	-	50	50	55	55
M15A	4	8	-	12	424	13	488
M16AD				48	465	53	538
M17E	42	7	-	135	135	149	149
M18F	5	6	-	19	19	20	20
M19EF				19	154	20	169
M20E	27	8	-	81	230	90	253

Table No. 3 - Existing Conditions Peak Flowrates							
Subarea	**Area (AC)**	**Tc Calc**	**Tc Est.**	**Subarea 25-Yr. Peak Q**	**Total 25-Yr. Peak Q**	**Subarea 50-Yr. Peak Q**	**Total 50-Yr. Peak Q**
E1A	25	11	-	61	61	70	70
E2B	29	71	-	56	56	66	66
E3AB				56	117	66	136
E4A	8	7	-	25	140	27	161
E5C	5	5	-	21	21	23	23
E6C	9	6	-	31	47	34	52
E7C	5	13	-	11	58	13	65
E8D	4	5	-	17	17	18	18
E9CD				17	73	18	81
E10C	14	7	-	43	99	48	114
E11AC				99	238	114	274
E12A	49	6	-	176	361	191	424
E13A	24	11	-	57	416	66	484
E14E	5	6	-	19	19	20	20
E15AE				18	434	20	504

For later comparison purposes, the results of the baseline hydrology for the 25-year storm can be summarized in a cfs/acre for the western model and for a combination of the middle and eastern models. The western model yields a 25-year flowrate of 3.6 cfs/acre. The middle and eastern models yield a 25-year flowrate of 3.1 cfs/acre. A flow rate of 3 cfs/acre is generally considered high. The high runoff results of the baseline models reflect several characteristics of the watershed, including the fact that a large portion of the off-site drainage is developed, the predominant soil type is a clay, and a significant portion of the Upper Point Vicente Area is steep.

2.3 Floodplain Mapping

The City of Rancho Palos Verdes is a participant in the national Flood Insurance Program (NFIP). Communities participating in the NFIP must adopt and enforce minimum floodplain management standards, including identification of flood hazards and flooding risks. Participation in the NFIP allows communities to purchase low cost insurance protection against losses from flooding. The

published Flood Insurance Rate Maps (FIRMs) for the project site are included on Community Panel Nos. 065043 1015B and 1020B dated September 7, 1984. The FIRMs indicated that there are no existing flood hazards within the project site.

2.4 Stormwater Quality

As indicated in Section 1.2, stormwater quality is a significant concern in Southern California. This section discusses typical pollutants found in stormwater runoff and discusses what sort of contaminants maybe found in existing stormwater runoff.

2.4.1 Nonpoint Source Pollutants

A net effect of urbanization can be to increase pollutant export over naturally occurring conditions. The impact of the higher export can be on the adjacent streams and also on the downstream receiving waters. However, an important consideration in evaluating stormwater quality from the project is to assess if it impairs the beneficial use to the receiving waters. Nonpoint source pollutants have been characterized by the following major *categories* in order to assist in determining the pertinent data and its use. Receiving waters can assimilate a limited quantity of various constituent elements, but there are thresholds beyond which the measured amount becomes a pollutant and results in an undesirable impact. Background of these standard water quality categories provide understanding of typical urbanization impacts.

Sediment—Sediment is made up of tiny soil particles that are washed or blown into surface waters. It is the major pollutant by volume in surface water. Suspended soil particles can cause the water to look cloudy or turbid. The fine sediment particles also act as a vehicle to transport other pollutants including nutrients, trace metals, and hydrocarbons. Construction sites are the largest source of sediment for urban areas under development. Another major source of sediment is streambank erosion, which may be accelerated by increases in peak rates and volumes of runoff due to urbanization.

Nutrients—Nutrients are a major concern for surface water quality, especially phosphorous and nitrogen, can cause algal blooms and excessive vegetative growth. Of the two, phosphorus is usually the limiting nutrient that controls the growth of algae in lakes. The orthophosphorous form of phosphorus is readily available for plant growth. The ammonium form of nitrogen can also have severe effects on surface water quality. The ammonium is converted to nitrate and nitrite forms of nitrogen in a process called nitrification. This process consumes large amounts of oxygen which can impair the dissolved oxygen levels in water. The nitrate form of nitrogen is very soluble and is found naturally at low levels in water. When nitrogen fertilizer is applied to lawns or other areas in excess of plant needs, nitrates can leach below the root zone, eventually reaching ground water. Orthophosphate from auto emissions also contributes phosphorus in areas with heavy automobile traffic. As a general *rule of thumb*, nutrient export is greatest from development sites with the most impervious areas. Other problems resulting from excess nutrients are 1) surface algal scums, 2) water discolorations, 3) odors, 4) toxic releases, and 5) overgrowth of plants. Common measures

for nutrients are total nitrogen, organic nitrogen, total Kjeldahl nitrogen (TKN), nitrate, ammonia, total phosphate, and total organic carbon (TOC).

Trace Metals—Trace metals are primarily a concern because of their toxic effects on aquatic life, and their potential to contaminate drinking water supplies. The most common trace metals found in urban runoff are lead, zinc, and copper. Fallout from automobile emissions is also a major source of lead in urban areas. A large fraction of the trace metals in urban runoff are attached to sediment and this effectively reduces the level which is immediately available for biological uptake and subsequent bioaccumulation. Metals associated with the sediment settle out rapidly and accumulate in the soils. Also, urban runoff events typically occur over a shorter duration which reduces the amount of exposure which could be toxic to the aquatic environment. The toxicity of trace metals in runoff varies with the hardness of the receiving water. As total hardness of the water increases, the threshold concentration levels for adverse effects increases.

Oxygen-Demanding Substances—Aquatic life is dependent on the dissolved oxygen in the water and when organic matter is consumed by microorganisms then dissolved oxygen is consumed in the process. A rainfall event can deposit large quantities of oxygen demanding substance in lakes and streams. The biochemical oxygen demand of typical urban runoff is on the same order of magnitude as the effluent from an effective secondary wastewater treatment plant. A problem from low DO results when the rate of oxygen-demanding material exceeds the rate of replenishment. Oxygen demand is estimated by direct measure of DO and indirect measures such as biochemical oxygen demand (BOD), chemical oxygen demand (COD), oils and greases, and total organic carbon (TOC).

Bacteria—Bacteria levels in undiluted urban runoff exceed public health standards for water contact recreation almost without exception. Studies have found that total coliform counts exceeded EPA water quality criteria at almost every site and almost every time it rained. The coliform bacteria that are detected may not be a health risk in themselves, but are often associated with human pathogens.

Oil and Grease—Oil and grease contain a wide variety of hydrocarbons some of which could be toxic to aquatic life in low concentrations. These materials initially float on water and create the familiar rainbow-colored film. Hydrocarbons have a strong affinity for sediment and quickly become absorbed to it. The major source of hydrocarbons in urban runoff is through leakage of crankcase oil and other lubricating agents from automobiles. Hydrocarbon levels are highest in the runoff from parking lots, roads, and service stations. Residential land uses generate less hydrocarbons export, although illegal disposal of waste oil into storm waters can be a local problem.

Other Toxic Chemicals—Priority pollutants are generally related to hazardous wastes or toxic chemicals and can be sometimes detected in stormwater. *Priority pollutant scans* have been conducted in previous studies of urban runoff which evaluated the presence of over 120 toxic chemicals and compounds. The scans rarely revealed toxins that exceeded the current safety criteria. The urban runoff scans were primarily conducted in suburban areas not expected to have many sources of toxic pollutants (with the possible exception of illegally disposed or applied

household hazardous wastes). Measures of priority pollutants in stormwater include: 1) phthalate (plasticizer compound), 2) phenols and creosols (wood preservatives), 3) pesticides and herbicides, 4) oils and greases, 5) metals.

2.4.2 Physical Characteristics of Surface Water Quality

Standard parameters which can assess the quality of stormwater provide a method of measuring impairment. Background of these typical characteristics assist in understanding water quality requirements. The quantity of a material in the environment and its characteristics determine the degree of availability as a pollutant in surface runoff. In an urban environment, the quantity of certain pollutants in the environment is a function of the intensity of the land use. For instance, a high density of automobile traffic makes a number of potential pollutants (such as lead and hydrocarbons) more available. The availability of a material, such as a fertilizer, is a function of the quantity and the manner in which it is applied. Applying fertilizer in quantities that exceed plant needs leaves the excess nutrients available for loss to surface or ground water.

The physical properties and chemical constituents of water traditionally have served as the primary means for monitoring and evaluating water quality. Evaluating the condition of water through a *water quality standard* refers to its physical, chemical, or biological characteristics. Water quality parameters for stormwater comprise a long list and are classified in many ways. In many cases, the concentration of an urban pollutant, rather that the annual load of that pollutant, is needed to assess a water quality problem. Some of the physical, chemical or biological characteristics that evaluate the quality of the surface runoff are:

Dissolved Oxygen—Dissolved oxygen in the water has a pronounced effect on the aquatic organisms and the chemical reactions that occur. It is one of the most important biological water quality characteristics in the aquatic environment. The dissolved oxygen concentration of a water body is determined by the solubility of oxygen, which is inversely related to water temperature, pressure, and biological activity. Dissolved oxygen is a transient property that can fluctuate rapidly in time and space. Dissolved oxygen represents the status of the water system at a particular point and time of sampling. The decomposition of organic debris in water is a slow process and the resulting changes in oxygen status respond slow also. The oxygen demand is an indication of the pollutant load and includes measurements of *biochemical oxygen demand or chemical oxygen demand.*

Biochemical Oxygen Demand (BOD)—The biochemical oxygen demand (BOD) is an index of the oxygen-demanding properties of the biodegradable material in the water. Samples are taken from the field and incubated in the laboratory at 20°C, after which the residual dissolved oxygen is measured. The BOD value commonly referenced is the standard 5-day values. These values are useful in assessing stream pollution loads and for comparison purposes.

Chemical Oxygen Demand—The chemical oxygen demand (COD) is a measure of the pollutant loading in terms of complete chemical oxidation using strong oxidizing agents. It can be determined

quickly because it does not rely on bacteriological actions as with BOD. COD does not necessarily provide a good index of oxygen demanding properties in natural waters.

Total Dissolved Solids (TDS)—TDS concentration is determined by evaporation of a filtered sample to obtain residue whose weight is divided by the sample volume. The TDS of natural waters varies widely. There are several reasons why TDS is an important indicator of water quality. Dissolved solids affect the ionic bonding strength related to other pollutants such as metals in the water. TDS are also a major determinant of aquatic habitat. TDS affects saturation concentration of dissolved oxygen and influences the ability of a water body to assimilate wastes. Eutrophication rates depend on total dissolved solids.

pH—The pH of water is the negative log, base 10, of the hydrogen ion (H^+) activity. A pH of 7 is neutral; a pH greater than 7 indicates alkaline water; a pH less than 7 represents acidic water. In natural water, carbon dioxide reactions are some of the most important in establishing pH. The pH at any one time is an indication of the balance of chemical equilibrium in water and affects the availability of certain chemicals or nutrients in water for uptake by plants. The pH of water directly affects fish and other aquatic life and generally toxic limits are pH values less than 4.8 and greater than 9.2.

Alkalinity—Alkalinity is the opposite of acidity, representing the capacity of water to neutralize acid. Alkalinity is also linked to pH and is caused by the presence of carbonate, bicarbonate, and hydroxide, which are formed when carbon dioxide is dissolved. A high alkalinity is associated with a high pH and excessive solids. Most streams have alkalinities less than 200 mg/l and ranges of alkalinity of 100-200mg/l seem to support well-diversified aquatic life.

Specific Conductance—The specific conductivity of water, or its ability to conduct an electric current, is related to the total dissolved ionic solids. Long term monitoring a project waters can develop a relationship between specific conductivity and TDS. Its measurement is quick and inexpensive and can be used to approximate TDS. Specific conductivities in excess of 2000 µohms/cm indicate a TDS level too high for most freshwater fish.

Turbidity—The clarity of water is an important indicator of water quality that relates to the alkalinity of photosynthetic light to penetrate. Turbidity is an indicator of the property of water that causes light to become scattered or absorbed. Turbidity is caused by suspended clays and other organic particles. It can be used as an indicator of certain water quality constituents such as predicting the sediment concentrations.

Nitrogen (N)—Sources of nitrogen in stormwater are from the additions of organic matter to water bodies or chemical additions. Ammonia and nitrate are important nutrients for the growth of algae and other plants. Excessive nitrogen can lead to eutrophication since nitrification consumes dissolved oxygen in the water. Nitrogen occurs in many forms. Organic Nitrogen breaks down into ammonia, which eventually becomes oxidized to nitrate-nitrogen, a form available for plants. High concentrations of **nitrate-nitrogen (N/N)** in water can stimulate growth of algae and other aquatic plants, but if phosphorus (P) is present, only about 0.30 mg/l of nitrate-nitrogen is needed for algal

blooms. Some fish life can be affected when nitrate-nitrogen exceeds 4.2 mg/l There are a number of ways to measure the various forms of aquatic nitrogen. Typical measurements of nitrogen include Kjeldahl nitrogen (organic nitrogen plus ammonia); ammonia; nitrite plus nitrate; nitrite; and nitrogen in plants. The principal water quality criteria for nitrogen focus on nitrate and ammonia.

Phosphorus (P)—Phosphorus is an important component of organic matter. In many water bodies, phosphorus is the limiting nutrient that prevents additional biological activity from occurring. The origin of this constituent in urban stormwater discharge is generally from fertilizers and other industrial products. Orthophosphate is soluble and is considered to be the only biologically available form of phosphorus. Since phosphorus strongly associates with solid particles and is a significant part of organic material, sediments influence concentration in water and are an important component of the phosphorus cycle in streams. Important methods of measurement include detecting orthophosphate and total phosphorus.

2.4.3 Existing Stormwater Quality

The project site lacks any measured data on stormwater runoff quality. In the absence of site specific data, expected stormwater quality can be qualitatively discussed by relating typical pollutants to specific land uses.

Currently, the majority of the Resort Hotel Area contains few structures and is only used for banquets, property offices, and occasional movie shoots. Most of the infrastructure associated with the old Marineland site was demolished in 1988. Remaining improvements include parking lots and roads, the Galley West Restaurant and Bar, Pereira Motel, Lookout Point Bar, and the currently operating Catalina Room. The majority of the site drains overland towards the cliffs and down to the ocean. The only expected existing pollutants in the existing condition stormwater runoff from the Resort Hotel Area would be suspended solids and minor amounts of oil and grease from automobile use. In several areas along the ocean bluff, on the Resort Hotel Area erosion has resulted in incised channels, significant bluff erosion and increased suspended soils in the stormwater runoff entering the Pacific Ocean.

It is likely that off-site runoff which crosses the Resort Hotel Area would contain pollutants from both residential development and golf course maintenance. Pollutants associated with residential development include trash, nutrients, bacteria, oil and grease, and household hazardous wastes. Maintenance of the Los Verdes Golf Course likely introduces nirtogen and phosphorus into the runoff.

The majority of the Upper Point Vicente area primarily consists of permeable surfaces including open space and agricultural land use. A small portion of the site is used for City Hall which contains a high concentration of impermeable surfaces. Expected existing pollutants in the stormwater runoff from Upper Point Vicente are suspended solids, nitrogen, and phosphorus commonly associated agricultural practices and oil and grease associated with the City Hall parking lots.

Currently, the site does not contain any structural Best Management Practices (BMP) which would potentially decrease the amount of pollutants in stormwater runoff. It is likely that a portion of potential pollutants are removed through the use of natural conveyance rather than a storm drain system. Conveying flows overland through vegetation affords some infiltration and biofiltration of runoff and thus, potential pollutant removal. A draw back to conveying flows overland, is that it tends to create erosion problems and thus increase suspended solids in the runoff. Problems associated with erosion are evident on the Resort Hotel Site at the existing over-the-cliff discharge points to the Ocean. Therefore, runoff discharging over the cliffs is expected to have a significant amount suspended solids, which as discussed in Section 2.4.1 has the capability of increasing the transport of other potential pollutants.

3.0 PROPOSED PROJECT

This section discusses the proposed project evaluation which is then compared to the existing conditions analysis to determine impacts associated with the development of the property. Proposed conditions investigated include: land use, proposed storm drain configuration, hydrology, floodplain mapping, and surface water quality.

3.1 Proposed Land Use Plan

Long Point is intended to be a multi-faceted designation resort. The resort is planned to provide approximately 31.6 acres of conserved and enhanced habitat and approximately 81 acres of public open space and recreation facilities including 100 general public parking spaces, two shoreline access ramps, seven public parks and overlooks, 11.1 miles of public walking/hiking trails, a public golf practice facility, and a 9-hole public-use golf course. These public trails link visitor-serving areas of the Resort with public facilities within the surrounding area (i.e. Rancho Palos Verdes City Hall, Point Vicente Interpretive Center, and the County's Point Vicente Fishing Access).

The cornerstone of the Long Point Resort is a full-service hotel which would provide a main hotel building, bungalows, and casitas accommodations, as well as indoor and outdoor restaurants and bars, flexible meeting and function spaces, and outdoor features including swimming pools, viewing decks, landscaped gardens, and other public areas.

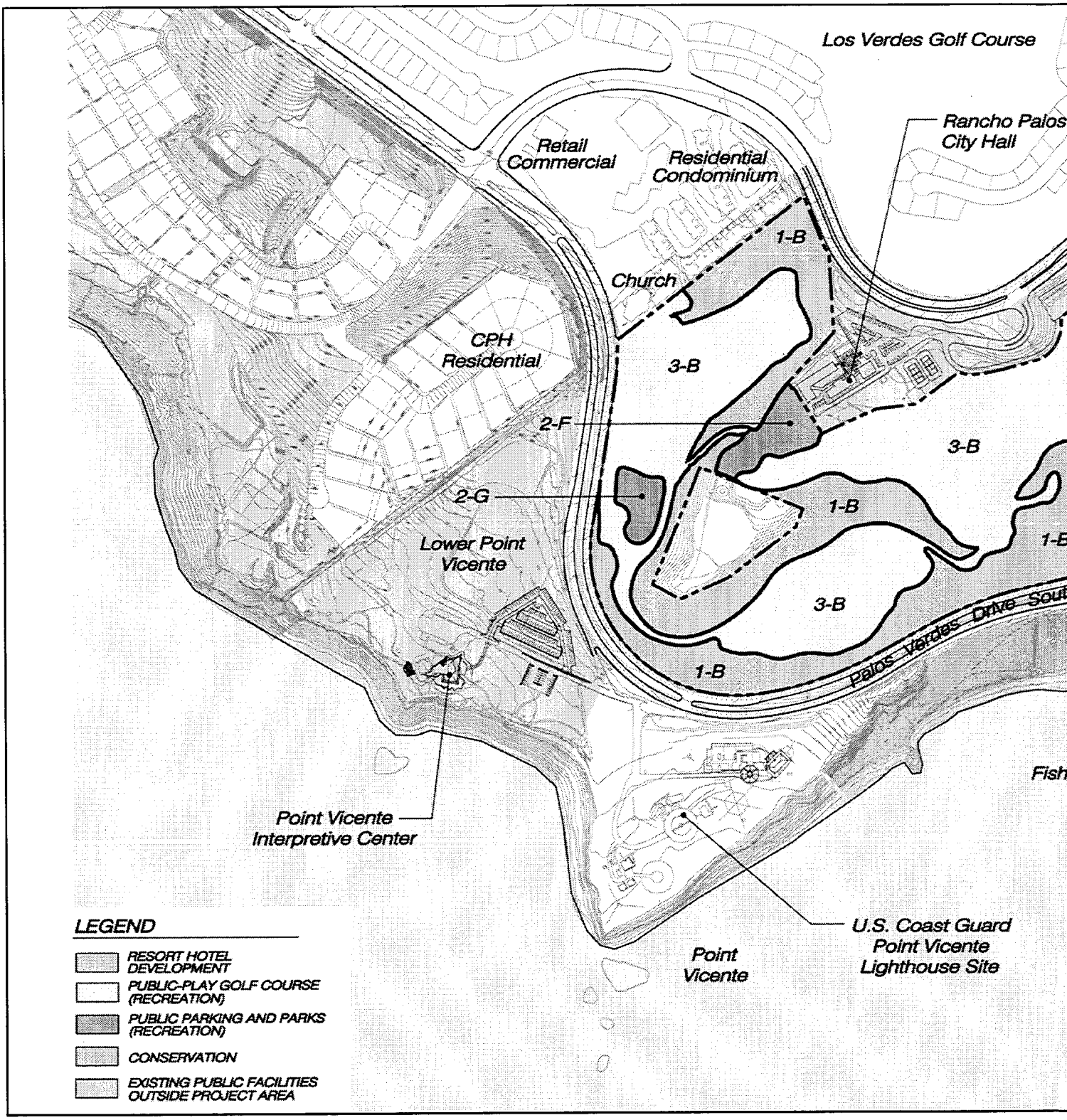
Additionally, the proposed project involves improvements to the City-owned property situated off-site between the Upper Point Vicente Area and Hawthorne Boulevard. Proposed improvements include reconfiguration of the Rancho Palos Verdes City Hall parking area and relocation of the City's existing Corporate Yard. The proposed Corporate Yard and approximately 3,150-square foot equipment storage building (with office space), outdoor bulk storage space, and a parking area.

The land use plan for the Long Point Resort is shown in Figure 2. Land Use Map, and outlined in Table 4, Land Use Summary. The project is divided into three distinct land use districts: the Conservation District; the Recreation District; and the Resort Development District. These Districts are divided into four planning areas which in turn are divided into 12 project components.

Table No. 4 - Land Use Summary

Land Use Plan Category	Planning Area	Resort Component	Gross Acres	Percent of Total Area
Conservation	1	Habitat Conservation/Enhancement		
	1-A	Bluff-face/Habitat Reserve Below Resort Hotel	6.7	4%

Table No. 4 - Land Use Summary				
Land Use Plan Category	**Planning Area**	**Resort Component**	**Gross Acres**	**Percent of Total Area**
	1-B	Upper Point Vicente Coastal Sage Scrub Habitat	24.9	15%
		Subtotal Conservation	31.6	19%
Recreation	2	Public Parking, Parks, Trails, Coastal Access, and Shore Area		
	2-A	Fishing Access Parking Expansion	1.0	1%
	2-B	Bluff-Top Park	2.2	1%
	2-C	Palos Verdes Drive Trails Corridor/Flowerfield Trail Corridor	3.8	2%
	2-D	Resort Coastal Access Parking Area	0.4	0%
	2-E	Long Point Overlook	0.2	0%
	2-F	City Hall Park Expansion	1.6	1%
	2-G	Point Vicente Overlook	1.0	1%
	3	Public Use Golf Course and Practice Facility		
	3-A	Resort Development Area (Holes 1 and 6-9, Clubhouse, and Parking	33.9	20%
	3-B	Upper Point Vicente (Holes 2-5, Public Golf Practice Facility, Maintenance Facility and Parking	37.1	22%
		Subtotal Recreation	81.2	47%
Resort Hotel Development	4-A	Resort Hotel (includes accommodations, public areas, food and beverage areas, pre-function/function/meeting areas, spa/health center, pools and decks, landscaped grounds, and surface/underground parking facilities)	55.6	33%
		Subtotal Resort Hotel Development	55.6	33%
TOTAL			168.4	100%



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3.2 Hydrology

Proposed project hydrology was completed by RBF Consulting. Hydrologic calculations to evaluate surface runoff associated with the 25 and 50-year hypothetical design storm frequencies from the tributary drainage areas were performed using the Los Angeles County Modified Rational Method (F0601) for watersheds greater than 50 acres. The Los Angeles County Rational Method was used to calculate the time of concentrations for subarea inputs to the F0601 program.

The watershed subarea boundaries were delineated utilizing topographic mapping and current proposed project maps. Hydrologic parameters used in the analysis, such as rainfall and soil classification, are as presented in the *Los Angeles County Hydrology Manual.* The Proposed Conditions Hydrology Map (Figures 3 and 4) displaying the subareas is located on the following pages.

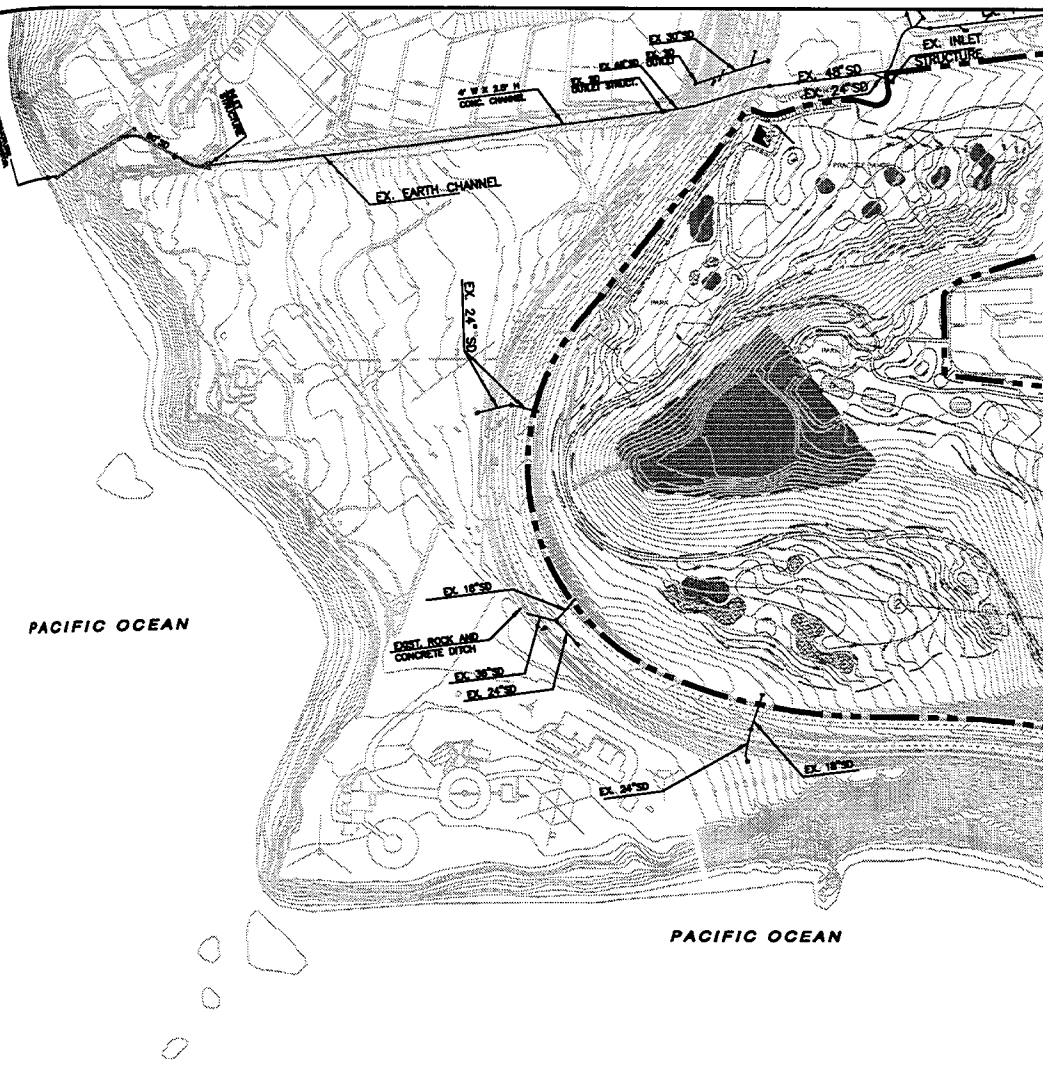
3.2.1 Proposed Watershed Description

The project contains a proposed storm drain system that utilizes both the existing storm drain system and new proposed storm drains. Figure 5 shows the conceptual storm drain layout as described below. The new system is divided into 3 areas, the western, middle, and eastern area. The western area is tributary to the existing small diameter culverts under Palos Verdes Drive. The middle area corresponds to areas tributary to Discharge Point 2. The eastern model conveys flows to Discharge Point 1.

The storm drain system that is remaining in place is located on the Upper Point Vicente Area and consists of small diameter (18' to 36" RCP) culverts which carry flow from Upper Point Vicente under Palos Verdes Drive towards the Pacific Ocean. One existing larger diameter pipe (54"RCP) adjacent to the east property line conveys offsite flows under Palos Verdes Drive South and into the adjacent housing tract. Eventually, the runoff is conveyed into a new onsite (Hotel Resort Area) storm drain and discharged to the ocean at Discharge Point 1.

The new storm drain improvements are located on the Hotel Resort Area. Two separate systems will operate onsite. The first is tributary to Discharge Point 1. Which conveys flows from portions of the golf course in the Upper Point Vicente Area, onsite golf course, and offsite areas to the 54" RCP. The pipe sizes in the system range from 18" to 72" and include significant lengths of swales rather than pipe. The discharge at Point 1 is carried in a 72" pipe to the base of the bluffs, where a rock rip-rap energy dissipator will reduce velocities and mitigate shoreline erosion and scour.

The areas tributary to Discharge Point 2, are proposed to conveys flows from the Resort Hotel Area that contain areas of high percentage imperviousness, such as parking lots, the main resort area, the resort villas, and a small portion of the golf course. Pipe sizes for this system range from 18" to 60". The discharge at Point 2 is carried in a 60" pipe to the base of the bluffs, where a rock rip-rap energy dissipator will reduce velocities and mitigate shoreline erosion and scour.



SOURCE: PBS&J RUNOFF MANAGEMENT PLAN/
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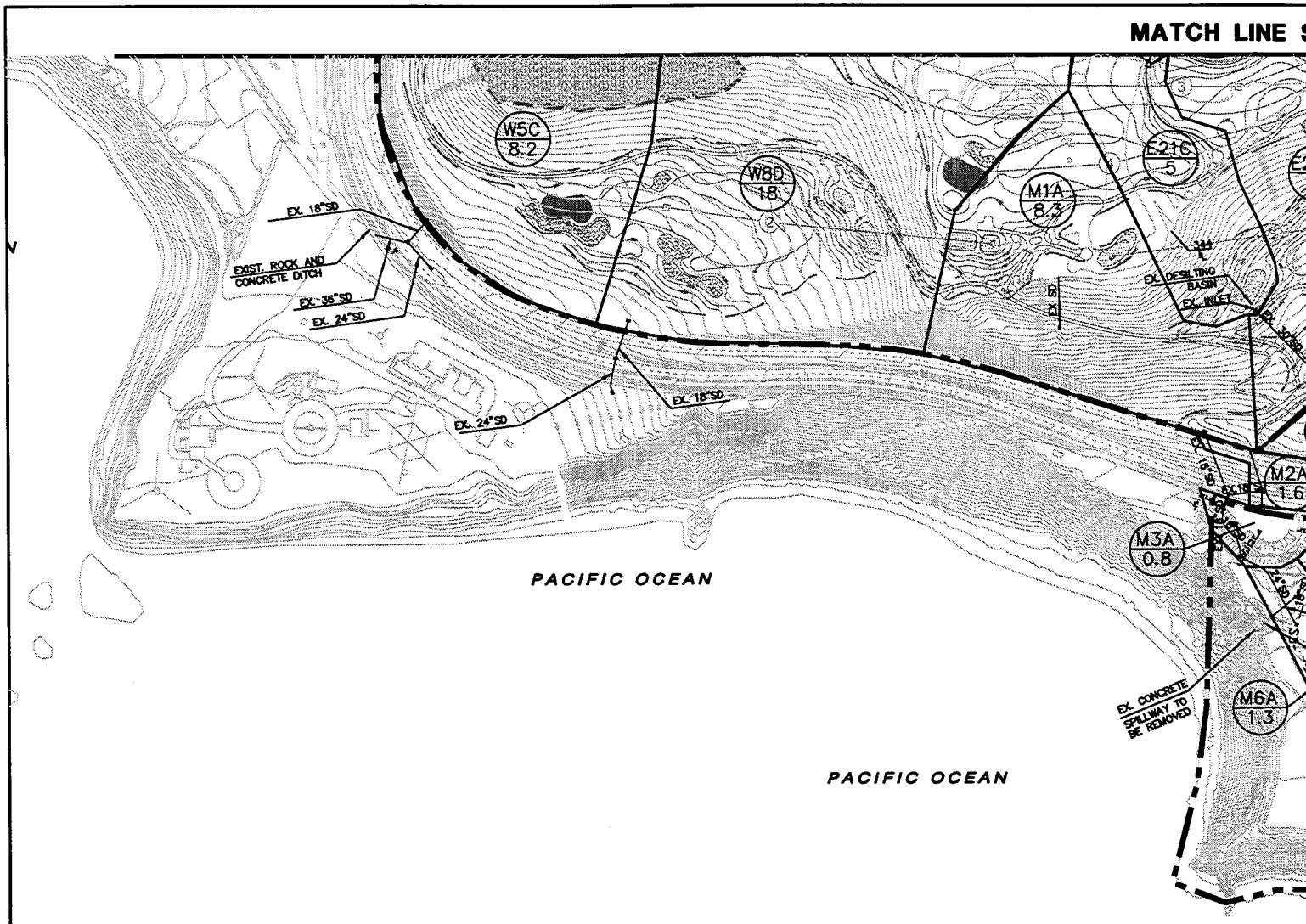

SOURCE: PBS&J RUNOFF MANAGEMENT PLAN/
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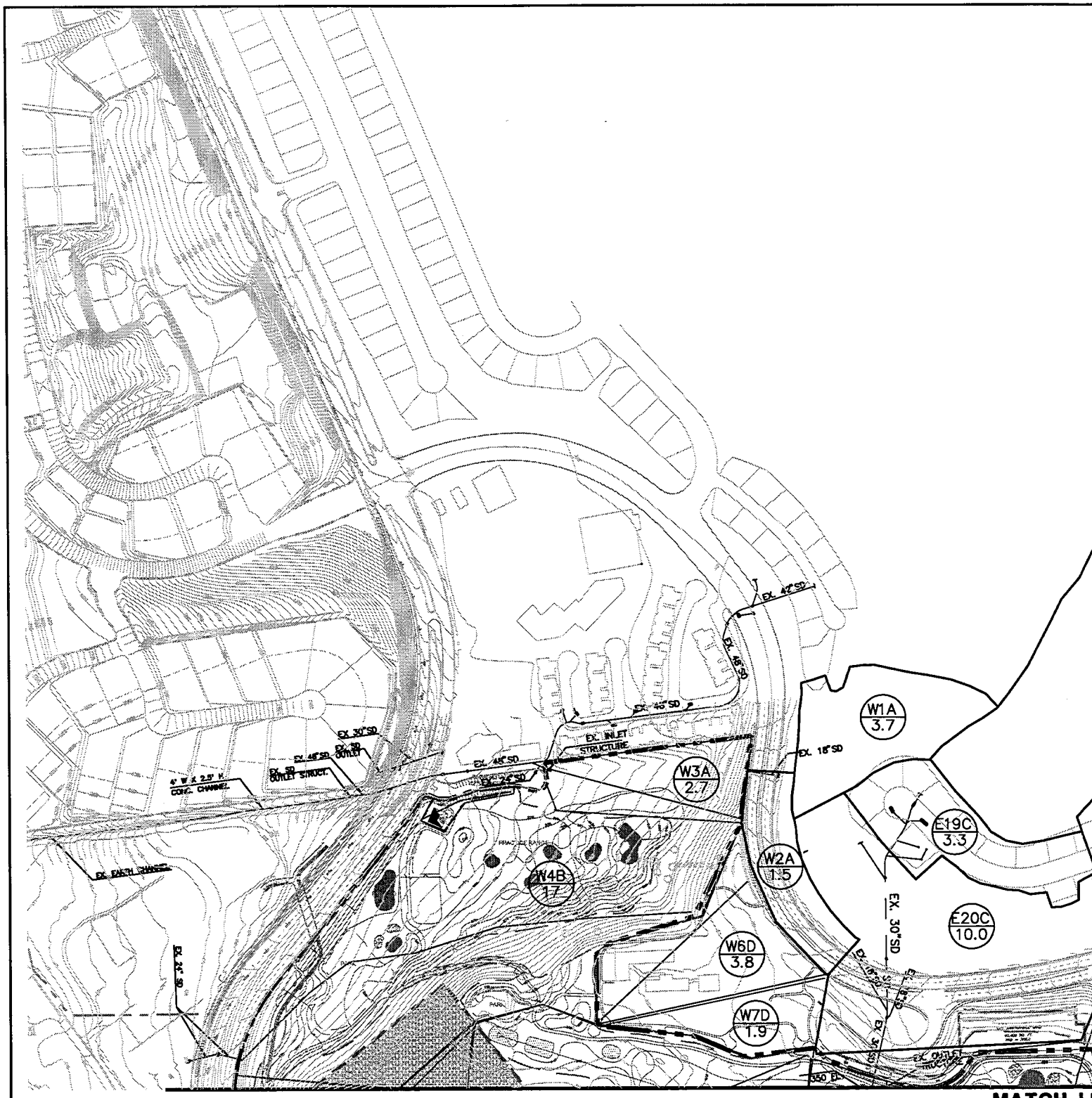

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3.2.2 Rational Method

The Rational Method and Modified Rational Method are empirical computation procedures for developing a peak runoff rate (discharge) for storms of a specific recurrence interval. Rational Method equations are based on the assumption that the peak flowrate is directly proportional to the drainage area, rainfall intensity, and a loss coefficient which describes the effects of land use and soil type. The design discharges were computed by generating a hydrologic "link-node" model which divides the area into drainage subareas, each tributary to a concentration point or hydrologic "node" point determined by the existing terrain or street layout. The following assumptions/guidelines were applied for use of the Rational and Modified Rational Methods:

1. The Rational Method hydrology includes the effects of infiltration caused by soil surface characteristics. The soils map from the *Los Angeles County Hydrology Manual* indicates that the study area consists of soil type "002."

2. The infiltration rate is also affected by the type of vegetation or ground cover and percentage of impervious surfaces. The amount of imperviousness used for the proposed condition ranged from 0% for natural open areas, 10% for golf course uses, 42% for residential development to 100% for the parking lot and building subareas.

3. The Kirpich formula was used to determine the times of concentration (T_c) for initial upstream subareas. Initial subareas were drawn to be less than 10 acres in size and less than 200 feet in length per County guidelines. Approximately fifty percent of the subarea T_c's were estimated based on the results from the Rational Method per County guidelines. Then, the T_c's were then input into the Modified Rational Method Program. Examples of the output from the Rational Method T_c calculation can be found in Appendix C: Proposed Condition Rational Method.

4. In the proposed condition, mountain channel conveyance, natural trapezoidal channel, or RCP was used with a Manning's "n" value ranging from 0.013 for RCP to 0.06 for open space areas.

5. Standard rainfall intensity data was based on the area being within the "K" rainfall zone.

6. Drainage patterns were assumed to follow existing topographic features and the proposed drainage system as illustrated in Figure 5. Drainage patterns on the offsite area, just north of the project site, were developed from 1985 City of Rancho Palos Verdes topography.

3.2.3 Proposed Condition Hydrology

The existing terrain and topographic conditions at the site were examined to determine the natural surface drainage patterns and to delineate the watershed sub-basin boundaries. Due to the drainage patterns, the watershed was divided into 3 models (West, Middle and East) as described in Section 3.2.1. Hydrologic properties such as slope, drainage patterns, soil type, or vegetation were characterized for each subarea. The watershed subareas are utilized to develop a "link-node" model which allows transformation of a physical process into a mathematical simulation or model. The subareas ranged from 1 to 49 acres in size.

Appendix C displays the results from the 25-year clearwater flows and the 50-year clearwater flows. Results of the proposed condition or "post-development" hydrologic analysis are summarized in the following table.

Table No. 5 - Proposed Conditions Peak Flowrates

Subarea	Area (AC)	Tc Calc	Subarea 25-Yr. Peak Q	Total 25-Yr. Peak Q	Subarea 50-Yr. Peak Q	Total 50-Yr. Peak Q
W1A	4	5	16	16	17	17
W2A	2	5	8	24	9	25
W3A	3	5	12	30	13	35
W4B	17	6	59	59	64	64
W5C	8	6	28	28	30	30
W6D	4	5	17	17	18	18
W7D	2	5	8	25	9	27
W8D	18	6	63	84	68	90
M1A	8	5	31	31	34	34
M2A	2	5	8	38	9	42
M3A	1	5	4	42	5	46
M4B	1	5	4	4	4	4
M5AB			4	45	4	50
M6A	1	5	4	48	4	54
M7A	6	5	24	63	26	74
M8A	4	5	17	76	18	88

Table No. 5 - Proposed Conditions Peak Flowrates						
Subarea	**Area (AC)**	**Tc Calc**	**Subarea 25-Yr. Peak Q**	**Total 25-Yr. Peak Q**	**Subarea 50-Yr. Peak Q**	**Total 50-Yr. Peak Q**
M9C	7	10	17	17	20	20
M10C	1	5	4	21	5	24
M11C	6	5	26	41	27	48
M12D	2	5	9	9	9	9
M13CD			8	49	9	56
M14AC			48	125	56	144
M15A	2	5	8	128	8	147
M16E	2	5	8	8	9	9
M17AE	2		8	135	9	155
M18F	8	5	34	34	36	36
M19F	3	5	12	44	13	48
M20AF			44	174	48	201
E1A	25	11	61	61	70	70
E2B	29	17	56	56	66	66
E3AB			56	117	66	136
E4A	8	7	25	140	27	161
E5C	5	5	21	21	23	23
E6C	9	6	31	47	34	52
E7C	5	13	11	58	13	65
E8D	4	5	17	17	18	18
E9CD			17	73	18	81
E10C	14	7	43	99	48	114
E11AC			99	238	114	274
E12A	49	6	176	361	191	424
E13B	23	6	79	79	86	86

Table No. 5 - Proposed Conditions Peak Flowrates						
Subarea	**Area (AC)**	**Tc Calc**	**Subarea 25-Yr. Peak Q**	**Total 25-Yr. Peak Q**	**Subarea 50-Yr. Peak Q**	**Total 50-Yr. Peak Q**
E14B	18	9	50	126	56	140
E15B	20	7	62	163	68	188
E16B	3	5	12	169	13	193
E17B	11	8	32	189	35	218
E18C	12	10	29	29	34	34
E19C	3	10	8	37	9	42
E20C	10	5	39	73	42	83
E21C	5	5	20	75	21	89
E22C	10	5	39	100	42	122
E23C	2	5	8	106	8	128
E24C	13	7	40	146	44	169
E25C	4	5	16	154	17	180
E26D	7	10	17	17	20	20
E27D	18	9	67	67	56	76
E28D	30	7	50	144	105	162
E29D	6	5	95	159	26	182
E30CD			24	311	180	360
E31C	9	13	157	313	22	364
E32BC			19	499	364	582
E33B	1	5	313	499	4	581
E34B	1	5	4	500	4	582
E35AB			4	835	582	975
E36A	2	5	500	835	9	970
E37A	2	5	8	831	8	971
E38E	2	5	8	8	9	9
E39AE			8	834	9	975

Table 6, summarizes the proposed hydrology by discharge location. The discharge locations are illustrated on the Hydrology Maps, Figures 3 and 4.

Table No. 6 - Proposed Hydrology at Outlet Locations			
Discharge Point	**Description**	**Hydrologic Model and Subarea**	**25-Year Flowrate**
Ex. 24" Storm Drain	Northern most storm drain adjacent to church	West - Subarea W3A	30 cfs
Ex. 24" Storm Drain	Culvert under PV Drive	West - Subarea W4B	59 cfs
Ex. 18" Storm Drain	Culvert under PV Drive	West- Subarea W5C	28 cfs
Ex. 18" Storm Drain	Culvert under PV Drive	West-Subarea W8D	84 cfs
Proposed 72" RCP	New Discharge Point 1 at bluff on resort hotel site	East-Subarea E39AE	834 cfs
Proposed 60" RCP	New Discharge Point 2 at bluff on resort hotel site	Middle-Subarea M20AF	174 cfs

3.2.4 Hydrology Impact Analysis

As discussed is Section 3.2.1, the proposed storm drain configuration onsite redirects flows to two main discharge locations on the Long Point Site, Discharge Point 1 and Discharge Point 2. Usually, redirection of flows in the proposed conditions can create significant downstream impacts. However, since the watersheds drain directly to the ocean and adequate outlet structures at the base of the cliffs have been included in the proposed plan, increases in flows are not a significant issue. It is important to note that the City is considering requiring the applicant to provide slant drain outlets rather than traditional outlets.

Due to redirection of flows, it is not reasonable to directly compare pre- and post- development flowrates at specific points. Therefore, in order to accurately describe the effects of the proposed development, it is reasonable to compare the pre-and the post-development hydrology on a flowrate per area (cfs/acre) increase. For comparison purposes, the analysis compares the West models (Upper Point Vicente/City Hall/Golf Course) as one area and the Middle and East Models as another comparison. The results are shown in Table 7. As expected there is not a significant increase in flow per acre for the western model, where most of the land use remained permeable. There is a

larger increase in the middle and eastern models which is likely due to increases in impermeable surfaces and the use of storm drains to contain flow. Neither of these increases are considered significant because the flows are contained in storm drains with proper bluff drainage to minimize bluff erosion (the middle and east models) and the increases should not cause or increase flooding on adjacent property.

Table No. 7 - Hydrology Comparison (25-Year Storm)

Area	Existing Condition (cfs/acre)	Proposed Condition (cfs/acre)	Difference (cfs/acre)
West (Majority of Upper Point Vicente Area)	3.6	3.8	+0.2
Middle & East (Majority of Hotel Resort Area	3.1	3.5	+0.4

3.3 Floodplain Mapping

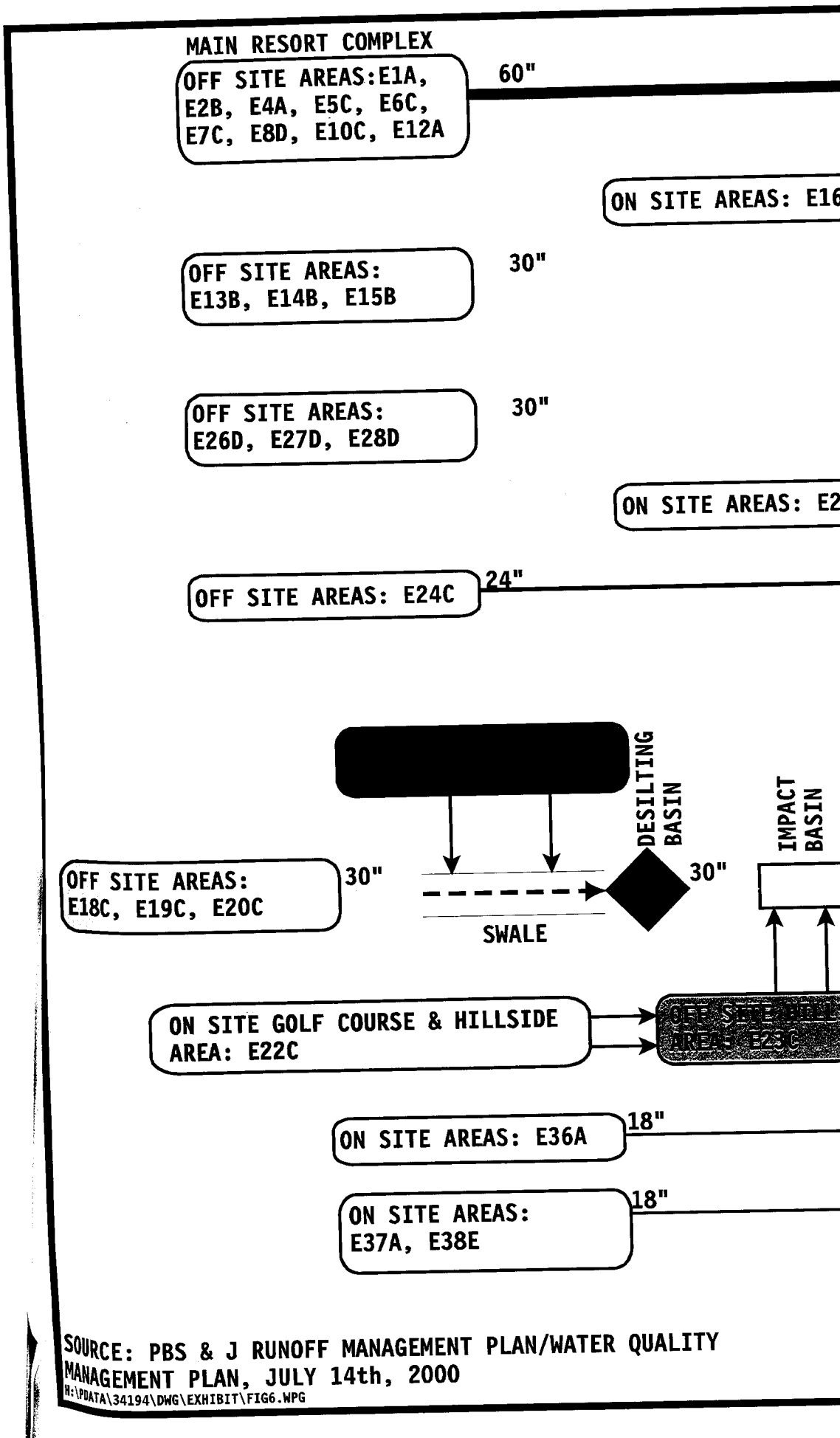
Since the project is not in a mapped floodplain, the proposed development will not impact any existing floodplains.

3.4 Stormwater Quality

Due to the increasing stormwater quality concerns, the Long Point Project has taken a proactive approach to stormwater quality management. The project includes stormwater mitigation in the form of a Water Quality Management Plan, which includes Best Management Practices (BMPs), Structural Measures, and Adaptive Management. The Water Quality Management Plan has been developed for the Long Point Property under the guidelines in *Development Planning for Storm Water Management- A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP)* prepared by Los Angeles County Department of Public Works dated May 2000. The SUSMP is a new National Pollutant Discharge Elimination System (NPDES) Permit requirement for Los Angeles County. This section discusses the proposed stormwater quality controls, assess the effectiveness of the Long Point Water Quality Management Plan in conforming to the requirements of the SUSMP, and evaluates the impacts of the development.

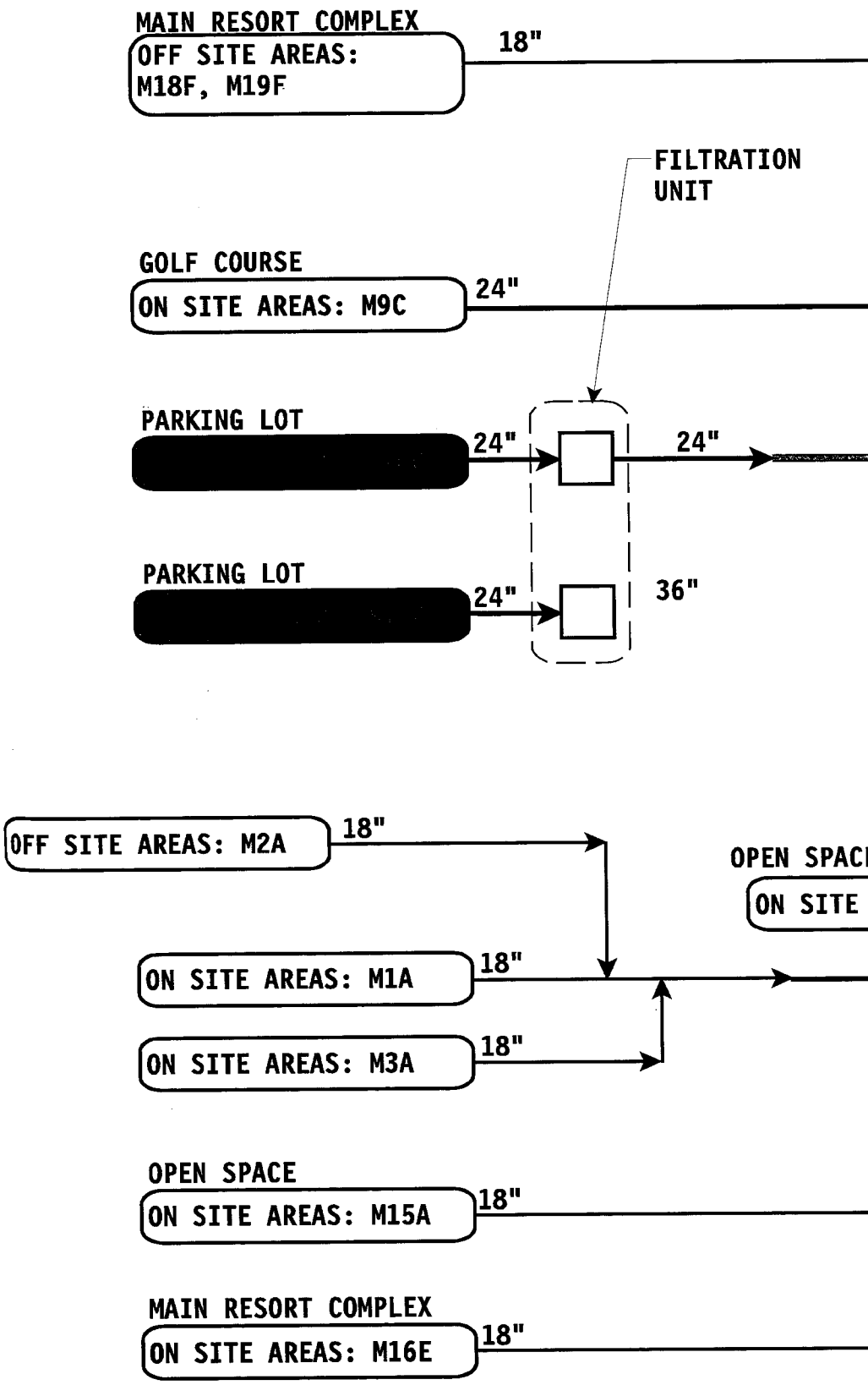
3.4.1 Proposed Stormwater Quality Controls

The proposed water quality plan for the Long Point property utilizes state-of-the-art pollution control measures to ensure that no detrimental effects occur to the quality of the runoff or the beneficial uses of the runoff and receiving waters. The proposed plan is described in *Runoff Management Plan/Water Quality Management Plan - Long Point Resort and Golf Course* prepared by PBS&J dated July 14, 2000. Schematics of the proposed treatment facilities associated with the development are illustrated in Figures 6 and 7.



SOURCE: PBS & J RUNOFF MANAGEMENT PLAN/WATER QUALITY MANAGEMENT PLAN, JULY 14th, 2000

H:\PDATA\34194\DWG\EXHIBIT\FIG6.WPG



SOURCE: PBS & J RUNOFF MANAGEMENT PLAN/WATER QUALITY MANAGEMENT PLAN, JULY 14th, 2000

H:\PDATA\34194\DWG\EXHIBIT\FIG7.WPG

3.4.1.1 Non-structural Control

The Long Point Water Quality Management Plan contains several non-structural BMP controls including: minimization of impermeable surfaces, grounds maintenance practices, golf course management, and Standard BMPs as described below:

Minimization of Impermeable Surfaces

The proposed development maximizes permeable surfaces, such as landscaped and natural areas. The project also minimizes impermeable surfaces such as paved areas, rooftops, and paths. In fact a large portion of the project will be permeable due to its development as a golf course.

Grounds Maintenance

Maintenance of the proposed development will limit trash and debris that could be picked up by runoff and stormwater. The internal roads and parking lots onsite will be cleaned weekly by street sweepers.

Golf Course Management

The proposed golf course water quality management program consists of five areas: computerized irrigation, fertilizer control, integrated pest management, storage design, and disposal program. Computerized irrigation controls for the golf course will be connected to a weather monitoring system. The system will calculated evapotransporation and will adjust the amount of irrigation required based on the turfs needs. The method of irrigation control reduces the amount of water used for irrigation and minimizes the potential for nuisance runoff.

Fertilizers will only be applied during the turf growth periods. The type of fertilizers to be used on site will have a low leaching potential and will be applied at the lowest acceptable rate. Fertilizer application and irrigation will be coordinated to minimize runoff potential and to avoid over fertilization.

Integrated pest management is an evolving method for managing and monitoring of turf and pests. Currently, the most applicable elements of the integrated pest management program are described herein. Potential pest populations or infestations will be monitored and, if new occurrences are identified, they will be treated immediately. A phased implementation strategy of eradicating pest will be employed. Such a strategy will begin with the application of the least environmentally damaging pest control and then increasing intensity of methods until the correct measure is used. Spot treatment of pesticides will be utilized where applicable to avoid application of large amounts. Pest tolerant grasses will also be used onsite.

The storage of environmentally hazardous materials likely to be found onsite, including pesticides, gas, oil, and paint, will be in compliance with the SUSMP requirements. These requirements state that: (1) materials with the potential to contaminate storm water must be placed in and enclosure

such as a cabinet, shed or similar structure that prevents contact with runoff or spillage to the stormwater conveyance system or protected by secondary containment structures such as berms, dikes, or curbs; (2) the storage area must be paved and sufficiently impervious to contain leaks and spills; and (3) The storage area must have a roof or awning to minimize collection of stormwater within the secondary containment area.

A complete routine disposal program will include the collection of grass clippings, which will be dried and then composted or spread along the golf course rough or wooded areas. Solvents, degreasers, pesticides and the containers will be properly marked disposed of through a service that will properly recycle or dispose of the materials.

Standard Best Management Practices (BMPs)

Numerous common sources control BMPs identified in the California "Municipal" Handbook will be implemented as part of the water quality management plan. These are listed briefly below:

- *SCO Public Education/Participation* - This BMP includes disseminating informational materials for employees of the resort and possibly posting signs informing guests of the natural resources downstream and the possibility of negative impact associated with the use of the land.
- *SC10 Housekeeping Practices* - This entails practices such as cleaning up spills, proper disposal of certain substances and wise application of chemicals. This will be particularly important within the resort complex and the golf course maintenance areas.
- *SC20 Material Storage Control* - The will be a very important element in the golf course maintenance areas, where storage of fertilizers, pesticides and herbicides, as well as fuel, lubricants and batteries, need to be under cover and inaccessible to storm runoff. Spill containment will also be a significant factor.
- *SC30 Storm Drain System Signs* - Storm drains will be marked with "Drains to Ocean" signs.
- *SC32 Used Oil Recycling* - Will apply to maintenance and security vehicles
- *SC40 Vehicle Leak and Spill Control* - Will include golf carts and golf course maintenance equipment.
- *SC70 Street Cleaning* - Will include resort and golf course parking areas, streets, and access roads.
- *SC71 Catch Basin Cleaning* - This includes the maintenance of the inlet filtration devices and the catch basins.
- *SC72 Vegetation Controls* - Although this primarily refers to maintenance practice on natural areas, the general principal can apply as well to large golf course areas within the resort complex, in order to avoid practices that would contribute to pollution and to maximize the beneficial uses of the golf course swales and biofliters.
- *SC73 Storm Drain Flushing* - Although general storm drain gradients are sufficiently steep for self-cleansing, visual inspection may reveal a buildup of sediment and other pollutants at the energy dissipators at the ocean outlets, in which case flushing may be advisable.

3.4.1.2 Structural Controls

The SUSMP requires that the first flush (the runoff from 0.75" storm event) receive treatment prior to entering a storm drain system. The structural BMP controls discussed in the following sections were designed to meet the first flush treatment requirements of the SUSMP.

Use of Swales and Natural Drainages

Swales and natural drainages will be used throughout the project to promote biofiltration of runoff on the site. On the Resort Hotel Area, two swales will be used to transport and collect the majority of the water that passes through the site and originates onsite. These swales will also treat water that enters the project site from the north and northeast. The locations of the swales are indicated on Figure 5.

Runoff that enters the site from the north along Palos Verdes Drive South via the 30-inch culvert and two 24-inch culverts will be directed into a swale that runs in a southeast direction between the 1st and the 6th golf holes in the middle of the site. The Resort Hotel Villas and the two cul-de-sacs that access the villas that are proposed along Palos Verdes Drive South in the middle of the site will also drain to the swale. The swale will cross the 7th hole and then intersect another swale that runs in a north-south direction between the 8th and 9th holes. This second swale will convey the runoff that enters the site at the northeastern corner from a 30-inch culvert. After the confluence of these two swales, the runoff will continue through a swale towards the southern edge of the property at which point it will be directed to a 60-inch pipe and conveyed to Discharge Point 1. All of the Resort Hotel Area adjacent to these swales and upland of the swales will drain through them prior to discharge.

On Upper Point Vicente in the area which drains to Discharge Point 2, all the drainage will be conveyed overland either across the golf course or through swales in paths that mimic existing drainage patterns of within existing natural drainages. The offsite runoff that is currently discharged to the site from a 30-inch pipe at the northeastern portion of the site will continue to flow through a swale on the site and re-enter a pipe before it leaves the site. This runoff will be conveyed to the Resort Hotel Area where it will enter the swale between the 1st and 6th holes and eventually discharge to Point 1.

Golf course areas on Upper Point Vicente, which are not tributary to the main swales on the Resort Hotel Area (Hole 2, a portion of Hole 3, and the Practice Range) will also contain filtration swales designed to meet water quality criteria and convey flows from the golf course to the culverts under Palos Verdes Drive.

Inlet Filtration

Drop-in filtration devices will be used at all curb inlets within the internal parking lots. Existing examples of these filtration devices include the Drain Pac Storm Drain Inserts and Fossil Filters. At the time of implementation, one of these filtration devices or a device of comparable purpose will

be chosen based on feasibility, removal efficiency and availability. These types of devices are extremely efficient at removing oil and grease, debris, and suspended solids from treated waters. Some of these devices has also exhibited high efficiencies at removing heavy metals and other pollutants.

To assure the efficiency of these filtration devices, they will be monitored intermittently. The used of street sweeps on the parking lots and streets will help reduce the amounts of sediment and debris that flow through the devices. This will extend the effectiveness of the devices during a storm and will lower the frequency of required maintenance. Even so, the devices will be checked and cleaned, if necessary, once a month during the rainy season, following any precipitation and at the end of the dry season prior to the first precipitation event of the rainy season.

These units could potentially be used in other areas besides the parking lot inlets. The potential locations are at the downstream end of the three tributary pipes that feed the discharge point. Siting these units a downstream point will allow for the treatment of more runoff.

Dry Weather Diversion and Treatment

During the dry season, April 15 through October 15, nuisance flows discharging to Discharge Point II are proposed to be diverted to the nearest sewage line and sent to the local sewage plant for treatment. This discharge point receives the majority of the runoff that originates from the impermeable surfaces of the Resort Hotel Area. Implementation of this diversion is dependant on the acceptance of the City Sanitation Department and the excess capacity of the existing facilities.

3.4.1.3 Construction Erosion Controls

Construction controls are separated from the rest of the water quality management because the measures are temporary and specific to the type of construction. Construction of the Long Point Resort and Golf Course typically produce potential pollutants such as nutrients, heavy metals, pesticides and herbicides, toxic chemicals related to construction and cleaning, waste materials including wash water, paints, wood, paper, concrete, food containers, and sanitary wastes, fuel, and lubricants.

As part of its compliance the NPDES requirements, a Notice of Intent (NOI) will be prepared and submitted to the Los Angeles Regional Water Quality Control Board providing notification and intent to comply with the State of California general permit. Prior to construction, a Storm Water Pollution Prevention Plan (SWPPP) must be completed for the construction activities onsite. A copy of the SWPPP must be available and implemented at the construction site at all times. The SWPPP outlines the source control and/or treatment control BMPs that will avoid or mitigate runoff pollutants at the construction site to the "maximum extent practicable."

3.4.1.4 Water Quality Monitoring and Adaptive Management

A comprehensive monitoring program is perhaps the most important component of an effective water quality management plan. The monitoring will take place at several locations along internal drainage features and at discharge points from the proposed development. The monitoring will ensure that the treatment components of the plan remain effective in removing pollutants. If it is determined that some measures are not sufficient, then new elements will be added to the plan.

3.4.2 Stormwater Quality Impact Analysis

The development of the Hotel Resort Area and the Upper Point Vicente Area will result in new land uses and increased activity as discussed in Section 3.1. The changes associated with the Long Point development have the potential to affect water quality. Water quality issues of particular concern are stormwater and nuisance water runoff associated with the proposed golf course and increased vehicular traffic. Other water quality issues associated with the proposed development include reduction in percentage of permeable surfaces and nuisance flow *not* associated with the golf course.

Golf courses are associated with several pollutants including fertilizers, which contain the nutrients of both Phosphorous and Nitrogen and pesticides. When applied in excess and stored incorrectly, these pollutants can contaminate the stormwater and nuisance water runoff. The project includes a 9-hole golf course situated on both the Resort Hotel Area and the Upper Point Vicente Area.

Since the Resort Hotel Area and the Upper Point Vicente Area do not currently support much public activity, the proposed project is expected to increase vehicular activity onsite. The resort and golf course are expected to increase car travel to the site. Other vehicular activity onsite will include maintenance vehicles, security vehicles and delivery vehicles. This increase in vehicular traffic is of particular concern because automobiles are associated with several urban pollutants, most notably being oil and grease and heavy metals. In fact, in most non-industrial areas, automobiles are considered the primary contributors to pollutants in stormwater runoff.

Most development projects reduce the amount of permeable surfaces onsite. A reduction in permeable surfaces is considered to be a water quality impact because permeable surfaces allow for rain and runoff to infiltrate into the ground. Infiltration both reduces the amount of flow that is capable of washing off additional pollutants and filters water removing potential pollutants. The existing land uses onsite already contain large amounts of impermeable surfaces such as parking lots, buildings, and roads, most of which were associated with the old Marineland site. Therefore, the proposed development is not expected to significantly increase the amount if impermeable surfaces onsite and consequently potential impacts to water quality due to an increase in impervious surface is expected to be minimal.

Nuisance flow, which is defined as runoff that occurs during periods that are not usually associated with rainfall, are most commonly produced by from landscaping irrigation, leaking pipes, and water used to wash of surfaces tributary to the street and storm drain system. Since nuisance flows

usually originate in the street, they commonly contain many common pollutants found in streets such as oil and grease and sediment. Due to the increase in landscaped area associated with the resort area and the golf course it is expected that there will be a significant increase in the amount of nuisance flow from the project site. However, these nuisance flows are not expected to contain detectable amounts of pollutants unless they travel across impermeable surfaces. These areas are include roads and parking lots in the proposed project.

3.4.2.1 Evaluation of the Proposed Water Quality Management Plan

The Water Quality Management Plan dated July 14th, 2000 has been evaluated to determine if the plan meets Los Angeles County's SUSMP requirements. The key to the evaluation of the plan is the requirement to "reduce the discharge of pollutants form storm water conveyance systems to the maximum extent practicable." For the purposes of this evaluation,"maximum extent practicable" is defined as fulfilling the thirteen requirements listed in Section 1.2 and reiterated below:

1. Post Development peak storm discharge rates shall not exceed the estimated pre-development rate for developments where increased peak storm water discharge rate will result in increased potential for downstream erosion.
2. Conserve natural areas by using cluster development, limiting clearing and grading of native vegetation, maximize trees and other vegetation, promote natural vegetation, and preserve riparian area and wetlands.
3. Minimize stormwater pollutants of concern by incorporating BMPs or combinations of BMPs best suited to maximize the reduction of pollutant loadings in runoff to the Maximum Extent Practicable.
4. Protect slopes and channels to decrease the potential of slopes and channels from eroding and impacting stormwater runoff.
5. Provide storm drain system stenciling and signage.
6. Properly design outdoor material storage areas.
7. Properly design trash storage areas.
8. Provide proof of ongoing BMP maintenance.
9. Comply with SUSMP standards for design of structural or treatment control BMPs.
10. Properly design loading/unloading dock areas.
11. Properly design repair/maintenance bays.
12. Properly design vehicle/equipment wash areas.
13. Design parking areas to reduce impervious land coverage, infiltrate runoff, and treat runoff before it enters the storm drain system.

The Water Quality Management Plan for Long Point meets several of the requirements listed above however, some of the requirements were not fully addressed in the plan and therefore require additional mitigation which is fully described in Section 5.0. The following table explains how specific elements of the Water Quality Management plan meet the thirteen SUSMP requirements listed above.

Table No. 8 - Evaluation of the Water Quality Management Plan			
SUSMP Requirement Number	**Water Quality Management Plan Component**	**Level of Satisfaction of SUSMP Requirements**	**Additional Mitigation Required? (Y/N)**
1	Storm Drain Design, Minimization of Impermeable Surfaces	Fully Satisfied	N
2	Minimization of Impermeable Surfaces	Fully Satisfied	N
3	Swales, Inlet Filtration, Dry Weather Diversion	Partially Satisfied	Y
4	Storm Drain Outlet Design	Fully Satisfied	N
5	Standard BMP - SC70	Fully Satisfied	N
6	Standard BMP - SC20	Fully Satisfied	N
7	Not Addressed	Not Satisfied	Y
8	Water Quality Monitoring and Adaptive Management	Partially Satisfied	Y
9	Swales, Inlet Filtration	Partially Satisfied	Y
10	Not Addressed	Not Satisfied	Y
11	Not Addressed	Not Satisfied	Y
12	Not Addressed	Not Satisfied	Y
13	Minimization of Impermeable Surfaces, Inlet Infiltration	Fully Satisfied	N

As shown in the Table above, the SUSMP requirements were not met for 4 (7, 10, 11, and 12) requirements. Also, the Water Quality Management Plan only partially satisfies requirements 3, 8, and 9.

The requirements associated with design of trash storage areas, loading/unloading docks, repair/maintenance bays, and vehicle/equipment wash areas were not discussed in the Water Quality Management Plan. Trash storage area design is a concern on the Upper Point Vicente Area and the Resort Hotel Area. Proper design of loading and unloading docks within the Resort Hotel Area and the Golf Practice facility need to be addressed. The design of the maintenance bays and the vehicle wash areas for the golf course carts, maintenance vehicles, and security vehicles. It

appears that the only source used to determine applicable Standard BMP was the*California Storm Water Best Management Practice Handbook - Municipal.* These issues require additional mitigation in the form of Best Management Practices which are discussed in *California Storm Water Best Management Practice Handbook - Construction Activities*, *California Storm Water Best Management Practice Handbook - Industrial/Commercial,* and in Section 5.0 - Mitigation.

The requirements which were partially satisfied include 3, 8, and 9. Requirement 3 is not fully satisfied because the plan disregards treatment for a few areas of the golf course and does not fully address maintenance requirements associated with the swales. The eastern swale shown on Figure 6, does not meet the minimum Criteria listed in Appendix B - Section B.13 Vegetative Swale of the *Development Planning for Storm Water Management - A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP)* for minimum hydraulic residence time. Also, there are several areas of golf course that are not treated, these include the practice range in subarea W4B, hole 2 in subareas W5Cand W8D, a portion of hole 4 in subarea M1A, a large portion of hole 1 in subareas M4B and M9C, and a small portion of hole 7 in subarea M9C. These areas require additional treatment methods to meet the requirements of the SUSMP. The proposed additional mitigation is detailed in Section 5.0.

Requirement 8 was not adequately addressed in the Water Quality Management Plan. The Water Quality Monitoring and Adaptive Management component does not address the proposed course of action to prove that BMP Maintenance is being carried out and does not describe specifically what information will be included in the plan. Therefore, additional detail into the proposed content of the Water Quality Monitoring and Adaptive Management is required to mitigate this impact. Required mitigation is detailed in Section 5.0.

Those areas with treatment proposed in the Water Quality Management Plan meet requirement 9, however, since more treatment (in the areas described above) is required, requirement 9 is only partially satisfied pending the design of additional mitigation.

Required additional mitigation will reduce impacts, listed above, to stormwater quality to less than significant levels. Proposed additional mitigation (above what is provided in the Water Quality Management Plan) is detailed in Section 5.0

3.5 Cumulative Projects

The basis for cumulative analysis as presented in the Long Point Resort Program Environmental Impact Report. For the purposes of the drainage and water quality analysis, commutative impacts are considered for projects in the same watershed as the Long Point Project. Per the projects identified in the EIR, there are 4 projects in either the same watershed or adjacent watersheds. The expansion of the Point Vicente Interpretive Center is the only project that is in the same watershed as the Long Point project. The Point Vicente Interpretive Center is located immediately downstream of the western portion of the golf course. The planned expansion of the Interpretive Center would not significantly impact drainage or water quality. Therefore, the cumulative impacts ad mitigation for the projects would be limited to those associated with the Long Point project.

4.0 ALTERNATIVE EVALUATION

Besides the proposed project described in Section 3.0, four alternatives and a no project alternative are being considered as part of the Environmental Impact Report.

4.1 Alternative A

This alternative involves the inclusion of the 3.9 acre site on the Upper Point Vicente Area that was retained by the U.S. Coast Guard when the Federal government transferred ownership of the majority of the property to the City. Inclusion of the area would increase the area from 64.9 to 68.8 acres, an approximate increase of 6%. Due to its strategic location, inclusion of the area would allow a more cohesive land use plan for the entire Upper Point Vicente Area, resulting in a reduction impacts on native habitat, a net increase of native habitat within the 3.9 acres, enlargement of the City Hall Park, and a better golf experience. This alternative is expected have similar effects, when compared with the proposed project, on amount or quality of the runoff leaving the project site .

4.2 Alternative B

This alternative involves the omission of the Resort Villas in the Resort Hotel Area. The villas would be replaced with a golf hole, which would be relocated from the Upper Point Vicente Area. This alternative could increase the amount of habitat conservation in the Upper Point Vicente Area and decrease the amount of impermeable surface on the Resort Hotel Area. This alternative may produce slightly less stormwater runoff from the Resort Hotel Area, but would likely increase the amount of nuisance runoff from the site in comparison to the proposed project. Water quality concerns would involve a trade off between issues associated with increased imperviousness and issues associated with golf course maintenance. However, since the size of the golf course would not change and the Resort Villas would not be constructed, this alternative is expected to have similar water quality issues as the proposed project.

4.3 Alternative C

This alternative involves completely removing the golf course from the Upper Point Vicente Area. Under this alternative, the area would consist of passive recreational uses only. It is expected that this alternative would decrease the amount of runoff and increase the quality of runoff from the Upper Point Vicente Area in comparison to the proposed project. Since the golf course would be relocated to the Resort Hotel Area, it is assumed that some of the proposed impervious areas, such as the resort villas, resort casitas and parking lots would have to be replaced with golf course. This change would result in increases in pervious area on the Resort Hotel Area and therefore, less stormwater runoff than the proposed condition. Water quality concerns would involve a trade off between issues associated with increased imperviousness and issues associated with golf course maintenance.

4.4 Alternative D

This alternative involves the relocation of the Golf Practice Facility from the Upper Point Vicente to the Lower Point Vicente area adjacent to the existing Interpretive Center. The relocation of the practice facility would conserve, enhance and create native habitat in the Upper Point Vicente Area. This alternative would not significantly effect the amount or quality of runoff leaving the Upper Point Vicente Area. However, since there is currently no portion of the proposed project on Lower Point Vicente, this alternative would likely have some water quality impacts associated with a change in land use.

4.5 No Project Alternative

The no project alternative would involve no changes to the existing land uses and buildings currently found on the Long Point site. Since this alternative does not change the existing land use and does not include the addition of impervious areas, it is expected to maintain the current conditions. Because there is no proposed improvements with this alternative, it is expected that bluff erosion and channel incision will continue throughout the project site. The erosion will continue to cause increased sediment loads in the runoff and present a public safety hazard.

5.0 PROPOSED MITIGATION

Additional mitigation, other than that identified in Sections 3.4.1 and 3.2.1, is required to reduce impacts due to the development of the Long Point Specific Plan. The hydrology impact analysis of Section 3.2.4 may require additional mitigation. The stormwater quality impact analysis of Section 3.4.2 requires additional mitigation. Both types of mitigation are discussed in the following sections.

5.1 Storm Drain Mitigation

The City may require that the applicant utilize slant drains for discharge over the bluffs. If, the city determines that the slant drains are required, the design of the slant drains will be completed in accordance with the City of Rancho Palos Verdes' City Engineer's standards during the design phase of the project. Issues that will be addressed in the design phase include: outlet siting, geotechnical considerations, and wave action impacts on the structures.

5.2 Water Quality Mitigation

Additional mitigation is required for water quality, which can be broken into three sub-categories: additional Standard BMPs; additional treatment BMPs, and expansion of the proposed water quality monitoring and adaptive management plan. The additional mitigation for these sub-categories are detailed in the following sections.

5.2.1 Standard BMPs

The impact analysis determined that the current Water Quality Management Plan did not meet the SUSMP requirements for the design of several Standard BMPs. The Water Quality Management Plan must be revised to include the additional Standard BMPs listed below:

From the *California Storm Water Best Management Practice Handbook - Construction Activity*:

> *CA 20 Solid Waste Management* - This BMP describes the requirements to properly design and maintain trash storage areas. The primary design feature requires the storage of trash in covered areas.

From the *California Storm Water Best Management Practice Handbook - Industrial/Commercial*:

> *SC 3 Vehicle and Equipment Washing & Steam Cleaning* - This BMP provides regulations for the cleaning of equipment used onsite. The BMP requires the consideration of utilizing off-site commercial washing and steam cleaning business. If on-site washing is preferred, designated wash areas must be identified and designed to the standards listed in the handbook.

SC 4 Vehicle and Equipment Maintenance and Repair - This BMP details appropriate measures to keep oil and grease, heavy metals and toxic material from coming in contact with stormwater runoff.

SC 5 Outdoor Loading/Unloading of Materials - This BMP describes measures to prevent and reduce the discharge of pollutants to stormwater from outdoor loading and unloading of materials. The primary design features to reduce pollution are: covering the loading/unloading docks; preventing storm run on; and containing spills.

5.2.2 Treatment BMPs

Two areas identified in the impact analysis as needing additional mitigation are the proposed east swale and those golf course drainage areas not addressed in the Water Quality Management Plan.

The east swale does not meet the minimum criteria for optimal swale performance as detailed in Appendix B, Section B.13 of the SUSMP Manual. Specifically, the hydraulic residence time for the eastern swale is less than the 5 minute optimum criteria. Therefore, the swale either needs to be lengthened, using a large radius curved path. If it is not possible to lengthen the swale, the swale must be enlarged by increasing the flow depth and/or swale width. If none of these options are feasible, detention to attenuate flows should be incorporated as part of a treatment train.

For those areas of the golf course which have been identified as not receiving specific treatment before discharging into natural areas or storm drains, appropriate treatment must be incorporated into the project. Appropriate treatment is either vegetative swales, enhanced vegetated swales utilizing check dams and wide depressions, a series of small detention facilities designed similarly to a dry detention basin, or a combination of these treatment methods into a treatment train. It is essential that the Water Quality Management Plan address treatment for all areas of the golf course to assure that the runoff from the golf course is treated to the "maximum extent practicable."

In order for the vegetation swales to be effective in the removal of potential pollutants, the swales must be treated as water quality feature and must be maintained in a different manner than the turf of the golf courses. Specifically, pesticides, herbicide, and fertilizers, which maybe used on the golf course turf must <u>not</u> be used in the vegetation swales.

The all swales or basins, will be design to treat the First Flush Treatment per the SUSMP criteria of designing mitigation for to treat the volume of runoff from the 0.75" of rainfall. This treatment along with other the other components of the water quality management plan will fulfill the requirements of the SUSMP.

5.2.3 Water Quality Monitoring and Adaptive Management Plan

The Water Quality Management Plan does not address BMP maintenance or detail how the water quality monitoring will be completed and how the results will affect the Adaptive Management Plan.

Additional mitigation required includes a comprehensive Water Quality Monitoring and Adaptive Management Plan which addresses the following issues:

1. BMP Maintenance - Maintenance for the treatment BMPs (filtration units, swales, detention basins) will be performed at specific intervals depending on the specific BMP. At a minimum the BMPs will be maintained at the beginning of the rainy season (October 15), at least once during the rainy season, and following the rainy season (April 15). Maintenance for swales will consist of mowing, irrigation maintenance, and sediment removal. Mowing should take place on an as-needed basis to maintain optimal grass height. Filtration units must been maintained and inspected once per month, after each storm event, and at the end of the dry season. Detention basins must be inspected based on the minimum standards above and sediment will be removed on an as-needed basis pending the results of monthly inspections during the rainy season.
2. Proof of BMP Maintenance and Inspection - The plan will identify who is responsible for maintenance and inspection. The plan will also set forth a method for logging, tracking, and reporting BMP maintenance and inspection to the appropriate City officials.
3. Water Quality Monitoring - The plan will identify who will preform and be responsible for the monitoring of the treatment BMPs. The monitoring will take place for at least 5 years post construction. Monitoring will be completed for a minimum of 5 storms per year and twice during the dry weather months. Monitoring will include gathering data on flow measurement, and constituent levels for both pre- and post-treatment. This information will be logged, tracked, and reported to the appropriate City officials.
4. Adaptive Management Plan - Using the BMP inspection, maintenance, and monitoring data collected on a yearly basis, an adaptive management plan will be issued on an annual basis for a 5-year period once construction is completed. The adaptive management plan will not only report the findings of inspection, maintenance, and monitoring, it will utilize this information to determine any necessary changes in the current Water Quality Management Plan. The report will also specifically discuss the effectiveness of the Golf Course Management Portion of the Water Quality Management Plan. The plan will be submitted to the City for their review and approval.

6.0 CONCLUSION

The development of Long Point Specific Plan EIR project will have less than significant impacts to Hydrology and Water Quality following the implementation of all mitigation described in Section 5.0.

Table No. 9 - Project Impact Evaluation

Description of Impact Would the project:	Without Mitigation Impact	With Mitigation Impact
1. Violate any water quality standards or waste discharge requirements?	Potentially Significant Impact	Less Than Significant Impact
2. 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 level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted?	Less Than Significant Impact	Less Than Significant Impact
3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	Potentially Significant Unless Mitigated	Less Than Significant Impact
4. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	Potentially Significant Unless Mitigated	Less Than Significant Impact
5. 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?	Potentially Significant Unless Mitigated	Less Than Significant Impact
6. Otherwise substantially degrade water quality?	Potentially Significant Unless Mitigated	Less Than Significant Impact
7. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or flood Insurance Rate Map or other flood hazard delineation map?	No Impact	No Impact

Table No. 9 - Project Impact Evaluation		
Description of Impact Would the project:	**Without Mitigation Impact**	**With Mitigation Impact**
8. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	No Impact	No Impact
9. Exposed 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?	No Impact	No Impact
10. Inundation by seiche, tsunami, or mudflow?	Less Than Significant Impact	Less Than Significant Impact

The following discussion briefly explains the reasoning behind the impact evaluation in Table 7.

1. The project has the potential to significantly violate water quality standards because it not only contains a golf course, but it also increases the activity levels on the Long Point Site. Without mitigation, a development similar to the Long Point project would be expected to increase pollutant loadings, including hydrocarbons, fertilizers, and pesticides. The mitigation described in Sections 3.4.1, 3.2.1, and 5.0 includes a comprehensive Water Quality Management Plan, including both Structural and Non-Structural BMPs, which complies with the Standard Urban Stormwater Mitigation Plan (SUSMP) as required by the Los Angeles Regional Water Quality Control Board. This mitigation will reduce the potential impacts to a less than significant impact level.

2. The project proposes to maintain significant amounts of natural or golf course. There are no wells located in the area adjacent to the project. Therefore, no specific mitigation is proposed for this impact because its impact level is considered to be less than significant.

3. The proposed project would significantly alter the drainage patterns on the Resort Area, which could be considered potentially significant to erosion potential unless mitigated. The project includes mitigation (proper bluff drainage and impact basin installation) which will likely improve bluff stability and curb bluff erosion.

4. The proposed project does substantially alter the drainage patterns on-site and slightly increases the amount of runoff leaving the site. However, because the downstream receiving water is the ocean, an increase in runoff is negligible and would not result in increased downstream flooding on- or off-site.

5. The project does not create runoff that would exceed the capacity of the existing facilities or planned facilities, however, it does have the potential to produce additional sources of polluted runoff as described in 1, above.

6. The project has the potential to significantly impact water quality unless it is mitigated. See discussion in 1, above.

7. There is no existing mapped flood hazard on-site. Therefore, there is no proposed impact.

8. There is no existing mapped flood hazard on-site. Therefore, construction of the project would not place structures in a 100-year flood hazard area.

9. The proposed project includes a new storm drain system to convey flows to the ocean, therefore, no structures are expected to be affected by flooding.

10. The project is not located in an area generally affected by seiche or tsunami and because the project is surrounded by developed land uses, mudflows are not expected to have a significant impact on the project site.

7.0 REFERENCES

Camp Dresser & McKee, et al., 1993. California Storm Water Best Management Practice Handbooks - Construction Activity. March 1993.

Camp Dresser & McKee, et al., 1993. California Storm Water Best Management Practice Handbooks - Industrial/Commercial. March 1993.

Camp Dresser & McKee, et al., 1993. California Storm Water Best Management Practice Handbooks - Municipal. March 1993.

FORMA, 2000. Long Point Coastal Development/Conditional Use Permit. June, 2000

Los Angeles County Department of Public Works, 2000. Development Planning for Storm Water Management - A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP). May, 2000.

PBS&J, 1999. Runoff Management Plan/Water Quality Management Plan. September, 1999.

PBS&J, 2000. Runoff Management Plan/Water Quality Management Plan. July 14, 2000.

RATIONAL METHOD T_C CALCULATION

APPENDIX A: EXISTING CONDTION

WEST MODEL

TIME OF CONCENTRATION calculated by RLB 04/10/98

LONG POINT RESORT HYDROLOGY
EXISTING CONDITIONS 25 YEAR
SUBAREA W1A

Subarea No. A 1

TIME OF CONCENTRATION = 5. MINUTES
****

Rainfall : Zone = K
Frequency = 25 Years

Subarea Area = 4. Acres

Outlet Q = 21. cfs

Travel Time:

Reach No.	Reach Time
Land	3.7
1- 1	1.8
Total	5.5

TIME OF CONCENTRATION calculated by RLB 04/10/98
Vers.1.0

LONG POINT RESORT HYDROLOGY
EXISTING CONDITIONS 25 YEAR
SUBAREA W1A

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	5.	5	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Mtn	0	0- 0	2	.000	.320	3.7	500.0	340.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	546.0	500.0	.230	.060	2	.000

LONG POINT RESORT HYDROLOGY
EXISTING CONDITIONS 25 YEAR
SUBAREA W1A

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Mtn	.00	.0	.00	.00	500.0	.1980	.4	7.2
Outlet								4.1	20.8

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File W1A.INP
Output Data File W1A.OUT
Runoff Coefficient Data File RUNCOEF.DAT

TIME OF CONCENTRATION calculated by RLB 04/10/98

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA W2A

Subarea No. A 2

TIME OF CONCENTRATION = 4. MINUTES
****

Rainfall : Zone = K
Frequency = 25 Years

Subarea Area = 3. Acres

Outlet Q = 18. cfs

Travel Time:

Reach No.	Reach Time
Land	3.6
1- 1	.0
Total	3.6

TIME OF CONCENTRATION calculated by RLB 04/10/98
Vers.1.0

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA W2A

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	5.	5	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Mtn	0	0- 0	2	.000	*****	3.0	305.0	250.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	355.0	305.0	.250	.060	2	.000

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA W2A

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Area (ac.) Slope	at top	Q (cfs) at top
1- 1	Nat.Mtn	.00	.0	.00	.00	4.0	5.2708	.3	5.9
Outlet								3.3	17.6

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File W2A.INP
Output Data File W2A.OUT
Runoff Coefficient Data File RUNCOEF.DAT

TIME OF CONCENTRATION calculated by RLB 04/10/98

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA 6C

Subarea No. C 6

TIME OF CONCENTRATION = 5. MINUTES
****

Rainfall : Zone = K
Frequency = 25 Years

Subarea Area = 16. Acres

Outlet Q = 83. cfs

Travel Time:

Reach No.	Reach Time
Land	4.9
1- 1	.0
Total	4.9

TIME OF CONCENTRATION calculated by RLB 04/10/98
Vers.1.0

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA 6C

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	6.	5	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Val	0	0- 0	2	.200	*****	14.1	190.0	18.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	203.0	190.0	.065	.050	2	.200

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA 6C

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Val	.00	.0	.00	.00	16.0	4.1208	1.4	27.5
Outlet								15.5	82.6

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File W6C.INP
Output Data File W6C.OUT
Runoff Coefficient Data File RUNCOEF.DAT

TIME OF CONCENTRATION calculated by RLB 04/10/98

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA W8E

Subarea No. E 8

TIME OF CONCENTRATION = 10. MINUTES
****

Rainfall : Zone = K
Frequency = 25 Years

Subarea Area = 36. Acres

Outlet Q = 120. cfs

Travel Time:

Reach No.	Reach Time
Land	6.0
1- 1	4.3
Total	10.2

14:20: 5 TIME OF CONCENTRATION calculated by RLB 04/10/98
Vers.1.0

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA W8E

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	6.	10	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Mtn	0	0- 0	2	.200	.111	32.9	355.0	177.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	373.0	355.0	.090	.060	2	.200

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA W8E

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Mtn	.00	.0	.00	.00	1600.0	.1079	3.3	40.5
Outlet								36.2	120.3

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File W8E.INP
Output Data File W8E.OUT
Runoff Coefficient Data File RUNCOEF.DAT

TIME OF CONCENTRATION calculated by RLB 04/10/98

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA W9F

Subarea No. F 9

TIME OF CONCENTRATION = 9. MINUTES
****

Rainfall : Zone = K
Frequency = 25 Years

Subarea Area = 11. Acres

Outlet Q = 40. cfs

Travel Time:

Reach No.	Reach Time
Land	5.7
1- 1	3.7
Total	9.4

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA W9F

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	6.	9	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Mtn	0	0- 0	2	.200	.164	10.3	360.0	180.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	373.0	360.0	.065	.050	2	.200

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA W9F

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Z Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Mtn	.00	.0	.00	.00	1100.0	.1418	1.0	13.6
Outlet								11.3	40.0

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File W9F.INP
Output Data File W9F.OUT
Runoff Coefficient Data File RUNCOEF.DAT

MIDDLE MODEL

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 9/19/**        RBF CONSULTING                                          page  1
19:14:14      TIME OF CONCENTRATION calculated by RHE  09/19/00
Vers.1.0
              LONG POINT RESORT
              EXISTING CONDITIONS 25-YEAR
              SUBAREA M1A

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          º                     Subarea No.  A  1                           º
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          º                                                                 º
          º              Rainfall :     Zone = K                            º
          º                        Frequency = 25 Years                     º
          º                                                                 º
          ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
          º                                                                 º
          º                 Subarea Area =  13. Acres                       º
          º                                                                 º
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          º                                                                 º
          º                    Outlet Q =  43. cfs                          º
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                                Travel Time:

                                Reach   Reach
                                 No.    Time
                                -----   -----
                                 Land    4.1
                                 1- 1    6.4
                                       ------
                                Total   10.4
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 9/19/**        RBF CONSULTING                                          page  2
19:14:14      TIME OF CONCENTRATION calculated by RHE  09/19/00
Vers.1.0
              LONG POINT RESORT
              EXISTING CONDITIONS 25-YEAR
              SUBAREA M1A

          Input Data:

          Rainfall Frequency   Time of Concentration (min)    Max.Conv
            Zone     (yrs.)        Assumed  Calculated          Code
              K        25            10.        10                0

Component Area Data:

Reach Convey. Strt Junct Soil Prop. Map  Area  Elev. (ft.) Ext. Q Fixed Fix
 No.   Type    No.  No.   No. Imp. Slope (ac)  Top  Bottom  (cfs) Size  S X
 1- 1 Nat.Mtn   0   0- 0   2  .000  .083 12.0  645.0  520.0    .0   .00 0 0

Code Definitions:
*****************
Maximum Conveyance Code: 0=no limits
                         1=street flow maximum at property line
                         2=pipe maximum size at 8 feet
                         3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
```

1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	690.0	645.0	.225	.050	2	.000

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M1A

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Mtn	.00	.0	.00	.00	1500.0	.0833	1.2	14.7
Outlet								13.2	43.2

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File M1A.INP
Output Data File M1A.OUT
Runoff Coefficient Data File RUNCOEF.DAT

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9/19/**        RBF CONSULTING                                          page  1
19:29:27      TIME OF CONCENTRATION calculated by RHE  09/19/00
Vers.1.0
              LONG POINT RESORT
              EXISTING CONDITIONS 25-YEAR
              SUBAREA M2A

         ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
         º                                                                 º
         º                     Subarea No.  A  2                           º
         º                                                                 º
         ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
         º                                                                 º
         º           TIME OF CONCENTRATION = 10. MINUTES                   º
         º           **********************************                    º
         ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
         º                                                                 º
         º             Rainfall :     Zone = K                             º
         º                       Frequency = 25 Years                      º
         º                                                                 º
         ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
         º                                                                 º
         º                Subarea Area =   3. Acres                        º
         º                                                                 º
         ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
         º                                                                 º
         º                   Outlet Q =   8. cfs                           º
         º                                                                 º
         ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼


                              Travel Time:

                              Reach   Reach
                               No.    Time
                              -----   -----
                               Land    7.5
                               1- 1    1.6
                               1- 2     .9
                                      ------
                              Total    9.9
```

```
9/19/**        RBF CONSULTING                                          page  2
19:29:27      TIME OF CONCENTRATION calculated by RHE  09/19/00
Vers.1.0
              LONG POINT RESORT
              EXISTING CONDITIONS 25-YEAR
              SUBAREA M2A

         Input Data:

         Rainfall Frequency   Time of Concentration (min)    Max.Conv
           Zone     (yrs.)        Assumed  Calculated          Code
             K        25            10.        10               0

Component Area Data:

Reach Convey. Strt Junct Soil Prop. Map  Area  Elev. (ft.) Ext. Q Fixed Fix
 No.   Type    No.  No.   No. Imp. Slope (ac)  Top  Bottom  (cfs) Size  S X
 1- 1 Channel   0   0- 0   2  .420  .003  3.2  449.0  448.0    .0   .00 0 0
 1- 2  Pipe     0   0- 0   2  .420  .010   .1  448.0  445.0    .0   .00 0 0

Code Definitions:
*****************
Maximum Conveyance Code: 0=no limits
                         1=street flow maximum at property line
                         2=pipe maximum size at 8 feet
```

3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
130.0	450.0	449.0	.008	.040	2	.420

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M2A

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Channel	.62	2.0	.00	.00	300.0	.0033	.3	4.0
1- 2	Channel	.69	2.0	.00	.00	300.0	.0100	3.2	7.9
Outlet								3.3	8.2

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	.170	.330	.000	.250	1.000	12.	40.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File M2A.INP
Output Data File M2A.OUT
Runoff Coefficient Data File RUNCOEF.DAT

TIME OF CONCENTRATION calculated by RLB 04/10/98

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M4A

Subarea No. A4

TIME OF CONCENTRATION = 9. MINUTES
****

Rainfall : Zone = K
Frequency = 25 Years

Subarea Area = 39. Acres

Outlet Q = 139. cfs

Travel Time:

Reach No.	Reach Time
Land	6.2
1- 1	3.0
Total	9.2

15:19:45 TIME OF CONCENTRATION calculated by RLB 04/10/98
Vers.1.0

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M4A

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	10.	9	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Mtn	0	0- 0	2	.200	.146	35.4	360.0	170.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	370.0	360.0	.050	.050	2	.200

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M4A

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Mtn	.00	.0	.00	.00	1300.0	.1323	3.5	46.7
Outlet								38.9	138.9

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File E2A.INP
Output Data File E2A.OUT
Runoff Coefficient Data File RUNCOEF.DAT

```
9/19/**        RBF CONSULTING                                          page  1
19:18:17      TIME OF CONCENTRATION calculated by RHE  09/19/00
Vers.1.0
              LONG POINT RESORT
              EXISTING CONDITIONS 25-YEAR
              SUBAREA M5B

          ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
          º                                                                  º
          º                    Subarea No.  B  5                             º
          º                                                                  º
          ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
          º                                                                  º
          º           TIME OF CONCENTRATION = 10. MINUTES                    º
          º           ***********************************                    º
          ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
          º                                                                  º
          º             Rainfall :     Zone = K                              º
          º                       Frequency = 25 Years                       º
          º                                                                  º
          ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
          º                                                                  º
          º                Subarea Area =   8. Acres                         º
          º                                                                  º
          ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
          º                                                                  º
          º                   Outlet Q =  26. cfs                            º
          º                                                                  º
          ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼


                              Travel Time:

                              Reach   Reach
                               No.    Time
                              -----   -----
                               Land    4.1
                               1- 1    5.9
                                     ------
                              Total    9.9
```

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9/19/**        RBF CONSULTING                                          page  2
19:18:17      TIME OF CONCENTRATION calculated by RHE  09/19/00
Vers.1.0
              LONG POINT RESORT
              EXISTING CONDITIONS 25-YEAR
              SUBAREA M5B

          Input Data:

          Rainfall Frequency   Time of Concentration (min)    Max.Conv
            Zone     (yrs.)        Assumed  Calculated          Code
              K        25            10.        10                0

Component Area Data:

Reach Convey. Strt Junct Soil Prop. Map  Area  Elev. (ft.) Ext. Q Fixed Fix
 No.   Type    No.  No.   No. Imp. Slope (ac)  Top  Bottom  (cfs) Size  S X
 1- 1 Nat.Mtn   0   0- 0   2  .000  .083  7.0  635.0  540.0    .0   .00 0 0

Code Definitions:
*****************
Maximum Conveyance Code: 0=no limits
                         1=street flow maximum at property line
                         2=pipe maximum size at 8 feet
                         3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
```

1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	680.0	635.0	.225	.050	2	.000

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M5B

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Mtn	.00	.0	.00	.00	1150.0	.0826	.7	8.6
Outlet								7.7	25.8

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File M5B.INP
Output Data File M5B.OUT
Runoff Coefficient Data File RUNCOEF.DAT

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M6B

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ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
º                                                                  º
º                      Subarea No.  B  6                           º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º            TIME OF CONCENTRATION =  9. MINUTES                   º
º            ***********************************                   º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º              Rainfall :     Zone = K                             º
º                        Frequency = 25 Years                      º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º                 Subarea Area =  18. Acres                        º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º                    Outlet Q =  48. cfs                           º
º                                                                  º
ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼
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Travel Time:

Reach No.	Reach Time
Land	6.8
1- 1	1.4
1- 2	.3
Total	8.6

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M6B

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	9.	9	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	X
1- 1	Channel	0	0- 0	2	.420	.079	5.0	584.0	505.0	.0	.00	0	0
1- 2	Pipe	0	0- 0	2	.420	.256	12.8	505.0	390.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet

3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
120.0	585.0	584.0	.008	.040	2	.420

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M6B

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Channel	.37	1.5	.00	.00	1000.0	.0790	.5	6.6
1- 2	Channel	.40	1.5	.00	.00	450.0	.2556	5.0	13.3
Outlet								17.8	48.3

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	.170	.330	.000	.250	1.000	12.	40.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File M6B.INP
Output Data File M6B.OUT
Runoff Coefficient Data File RUNCOEF.DAT

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M7C

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ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
º                                                                  º
º                      Subarea No.  C  7                           º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º             TIME OF CONCENTRATION =  6. MINUTES                  º
º             ***********************************                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º               Rainfall :     Zone = K                            º
º                         Frequency = 25 Years                     º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º                  Subarea Area =  26. Acres                       º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º                     Outlet Q = 120. cfs                          º
º                                                                  º
ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼
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Travel Time:

Reach No.	Reach Time
Land	3.7
1- 1	2.4
Total	6.1

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M7C

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	6.	6	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	X
1- 1	Nat.Mtn	0	0- 0	2	.000	.087	23.4	660.0	590.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size

1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	700.0	660.0	.200	.050	2	.000

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M7C

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Mtn	.00	.0	.00	.00	800.0	.0875	2.3	40.2
Outlet								25.7	120.2

Street Cross-Section Data:

Section No.	Depth (feet) 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File M7C.INP
Output Data File M7C.OUT
Runoff Coefficient Data File RUNCOEF.DAT

```
9/20/**        RBF CONSULTING                                          page  1
8:41:50      TIME OF CONCENTRATION calculated by RHE  09/20/00
Vers.1.0
             LONG POINT RESORT
             EXISTING CONDITIONS 25-YEAR
             SUBAREA M8C

         ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
         º                                                              º
         º                    Subarea No.  C  8                         º
         º                                                              º
         ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
         º                                                              º
         º           TIME OF CONCENTRATION =  9. MINUTES                 º
         º           **********************************                  º
         ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
         º                                                              º
         º             Rainfall :     Zone = K                           º
         º                       Frequency = 25 Years                    º
         º                                                              º
         ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
         º                                                              º
         º                Subarea Area =  18. Acres                      º
         º                                                              º
         ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
         º                                                              º
         º                   Outlet Q =  48. cfs                         º
         º                                                              º
         ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼


                              Travel Time:

                              Reach   Reach
                               No.    Time
                              -----   -----
                               Land    6.8
                               1- 1    1.1
                               1- 2    1.0
                                      ------
                              Total    9.0
```

```
9/20/**        RBF CONSULTING                                          page  2
8:41:50      TIME OF CONCENTRATION calculated by RHE  09/20/00
Vers.1.0
             LONG POINT RESORT
             EXISTING CONDITIONS 25-YEAR
             SUBAREA M8C

         Input Data:

         Rainfall Frequency   Time of Concentration (min)    Max.Conv
           Zone     (yrs.)        Assumed  Calculated          Code
             K        25            9.         9                0

Component Area Data:

Reach Convey. Strt Junct Soil Prop. Map  Area  Elev. (ft.) Ext. Q Fixed Fix
 No.   Type    No.  No.   No. Imp. Slope (ac)  Top  Bottom  (cfs) Size  S X
 1- 1 Channel   0   0- 0   2  .420  .080  5.0  599.0  535.0    .0   .00 0 0
 1- 2  Pipe     0   0- 0   2  .420  .105 13.0  535.0  430.0    .0   .00 0 0

Code Definitions:
*****************
Maximum Conveyance Code: 0=no limits
                         1=street flow maximum at property line
                         2=pipe maximum size at 8 feet
```

3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
120.0	600.0	599.0	.008	.040	2	.420

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M8C

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Channel	.37	1.5	.00	.00	800.0	.0800	.5	6.6
1- 2	Channel	.55	1.5	.00	.00	1000.0	.1050	5.0	13.3
Outlet								18.0	47.9

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	.170	.330	.000	.250	1.000	12.	40.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File M8C.INP
Output Data File M8C.OUT
Runoff Coefficient Data File RUNCOEF.DAT

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M9C

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ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
º                                                                  º
º                      Subarea No.  C  9                           º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º            TIME OF CONCENTRATION =  7. MINUTES                   º
º            ***********************************                   º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º              Rainfall :     Zone = K                             º
º                        Frequency = 25 Years                      º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º                 Subarea Area =  46. Acres                        º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º                    Outlet Q = 200. cfs                           º
º                                                                  º
ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼
```

Travel Time:

Reach No.	Reach Time
Land	4.0
1- 1	2.6
Total	6.6

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M9C

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	7.	7	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	X
1- 1	Nat.Mtn	0	0- 0	2	.220	.129	41.8	375.0	220.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size

1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	410.0	375.0	.175	.050	2	.220

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M9C

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Mtn	.00	.0	.00	.00	1200.0	.1204	4.2	64.7
Outlet								46.0	199.9

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File M9C.INP
Output Data File M9C.OUT
Runoff Coefficient Data File RUNCOEF.DAT

TIME OF CONCENTRATION calculated by RLB 04/10/98

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M11B

Subarea No. B11

TIME OF CONCENTRATION = 6. MINUTES
****

Rainfall : Zone = K
Frequency = 25 Years

Subarea Area = 3. Acres

Outlet Q = 15. cfs

Travel Time:

Reach No.	Reach Time
Land	.1
1- 1	6.1
Total	6.2

15:44:41 TIME OF CONCENTRATION calculated by RLB 04/10/98
Vers.1.0

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M11B

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	5.	6	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	1/2 St.	1	0- 0	2	.950	.032	3.0	239.9	200.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
1.0	240.0	239.9	.100	.020	2	.950

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M11B

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	1/2 St.	.31	80.0	.00	.00	1249.0	.0319	.3	5.2
Outlet								3.3	15.2

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	.170	.330	.167	.250	.667	12.	80.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File E3B.INP
Output Data File E3B.OUT
Runoff Coefficient Data File RUNCOEF.DAT

TIME OF CONCENTRATION calculated by RLB 04/10/98

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M14A

Subarea No. A14

TIME OF CONCENTRATION = 8. MINUTES
****

Rainfall : Zone = K
Frequency = 25 Years

Subarea Area = 4. Acres

Outlet Q = 15. cfs

Travel Time:

Reach No.	Reach Time
Land	5.3
1- 1	3.1
Total	8.4

15:20:32 TIME OF CONCENTRATION calculated by RLB 04/10/98
Vers.1.0

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M.14A

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	5.	8	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Mtn	0	0- 0	2	.200	.190	3.6	148.0	15.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	170.0	148.0	.110	.060	2	.200

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M14A

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Mtn	.00	.0	.00	.00	700.0	.1550	.4	5.1
Outlet								4.0	15.0

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.
2	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File E6A.INP
Output Data File E6A.OUT
Runoff Coefficient Data File RUNCOEF.DAT

TIME OF CONCENTRATION calculated by RLB 04/10/98

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M15D

Subarea No. D 15

TIME OF CONCENTRATION = 7. MINUTES
****

Rainfall : Zone = K
Frequency = 25 Years

Subarea Area = 46. Acres

Outlet Q = 201. cfs

Travel Time:

Reach No.	Reach Time
Land	4.5
1- 1	2.1
Total	6.5

15:20:58 TIME OF CONCENTRATION calculated by RLB 04/10/98
Vers.1.0

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M15 D

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	8.	7	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Val	0	0- 0	2	.350	.066	41.8	190.0	103.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	205.0	190.0	.075	.040	2	.350

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M15D

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Val	.00	.0	.00	.00	1320.0	.0659	4.2	64.8
Outlet								46.0	200.7

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File E7C.INP
Output Data File E7C.OUT
Runoff Coefficient Data File RUNCOEF.DAT

TIME OF CONCENTRATION calculated by RLB 04/10/98

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M18D

Subarea No. D 18

TIME OF CONCENTRATION = 8. MINUTES
****

Rainfall : Zone = K
Frequency = 25 Years

Subarea Area = 29. Acres

Outlet Q = 116. cfs

Travel Time:

Reach No.	Reach Time
Land	6.4
1- 1	1.2
Total	7.7

15:30: 8 TIME OF CONCENTRATION calculated by RLB 04/10/98
Vers.1.0

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M18D

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	9.	8	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Val	0	0- 0	2	.450	.101	26.7	95.0	9.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	103.0	95.0	.040	.050	2	.450

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA M18D

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Val	.00	.0	.00	.00	850.0	.1008	2.7	38.0
Outlet								29.4	116.3

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.
2	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File E10C.INP
Output Data File E10C.OUT
Runoff Coefficient Data File RUNCOEF.DAT

EAST MODEL

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E1A

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ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
º                                                                  º
º                      Subarea No.  A  1                           º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º            TIME OF CONCENTRATION = 11. MINUTES                   º
º            **********************************                    º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º              Rainfall :     Zone = K                             º
º                        Frequency = 25 Years                      º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º                 Subarea Area =  25. Acres                        º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º                    Outlet Q =  59. cfs                           º
º                                                                  º
ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼
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Travel Time:

Reach No.	Reach Time
Land	8.8
1- 1	1.5
1- 2	.6
Total	10.8

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E1A

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	11.	11	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	X
1- 1	Channel	0	0- 0	2	.420	.087	25.0	899.0	760.0	.0	.00	0	0
1- 2	Pipe	0	0- 0	2	.420	.064	.3	760.0	715.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet

3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
150.0	900.0	899.0	.007	.040	2	.420

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E1A

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Channel	.80	2.0	.00	.00	1600.0	.0869	2.5	29.2
1- 2	Channel	1.20	2.5	.00	.00	700.0	.0643	25.0	58.4
Outlet								25.3	59.2

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	.170	.330	.000	.250	1.000	12.	40.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File E1A.INP
Output Data File E1A.OUT
Runoff Coefficient Data File RUNCOEF.DAT

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E2B

```
ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
º                                                                  º
º                      Subarea No.  B  2                           º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º            TIME OF CONCENTRATION = 17. MINUTES                   º
º            ***********************************                   º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º              Rainfall :     Zone = K                             º
º                        Frequency = 25 Years                      º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º                 Subarea Area =  29. Acres                        º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º                    Outlet Q =  52. cfs                           º
º                                                                  º
ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼
```

Travel Time:

Reach No.	Reach Time
Land	12.5
1- 1	2.2
1- 2	2.7
Total	17.4

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E2B

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	17.	17	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	X
1- 1	Channel	0	0- 0	2	.420	.020	2.0	749.0	735.0	.0	.00	0	0
1- 2	Pipe	0	0- 0	2	.420	.020	26.5	735.0	715.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet

3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	750.0	749.0	.005	.040	2	.420

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E2B

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Channel	.35	1.0	.00	.00	700.0	.0200	.2	1.8
1- 2	Channel	.40	1.5	.00	.00	1000.0	.0200	2.0	3.7
Outlet								28.5	51.7

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	.170	.330	.000	.250	1.000	12.	40.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File E2B.INP
Output Data File E2B.OUT
Runoff Coefficient Data File RUNCOEF.DAT

```
 9/19/**        RBF CONSULTING                                          page  1
16:38:55      TIME OF CONCENTRATION calculated by RHE  09/19/00
Vers.1.0
              LONG POINT RESORT
              EXISTING CONDITIONS 25-YEAR
              SUBAREA E4A

         ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
         º                                                                 º
         º                    Subarea No.  A  4                            º
         º                                                                 º
         ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
         º                                                                 º
         º           TIME OF CONCENTRATION =  7. MINUTES                   º
         º           **********************************                    º
         ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
         º                                                                 º
         º             Rainfall :     Zone = K                             º
         º                       Frequency = 25 Years                      º
         º                                                                 º
         ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
         º                                                                 º
         º                Subarea Area =   8. Acres                        º
         º                                                                 º
         ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
         º                                                                 º
         º                   Outlet Q =  35. cfs                           º
         º                                                                 º
         ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼


                              Travel Time:

                              Reach   Reach
                               No.    Time
                              -----   -----
                               Land    3.0
                               1- 1    3.9
                                     ------
                              Total    6.9
```

```
 9/19/**        RBF CONSULTING                                          page  2
16:38:55      TIME OF CONCENTRATION calculated by RHE  09/19/00
Vers.1.0
              LONG POINT RESORT
              EXISTING CONDITIONS 25-YEAR
              SUBAREA E4A

         Input Data:

         Rainfall Frequency   Time of Concentration (min)    Max.Conv
           Zone     (yrs.)        Assumed  Calculated          Code
             K        25            7.         7                0

Component Area Data:

Reach Convey. Strt Junct Soil Prop. Map  Area  Elev. (ft.) Ext. Q Fixed Fix
 No.   Type    No.  No.   No. Imp. Slope (ac)  Top  Bottom  (cfs) Size  S X
 1- 1 Nat.Mtn   0   0- 0   2  .000  .164  7.5  430.0  250.0    .0   .00 0 0

Code Definitions:
*****************
Maximum Conveyance Code: 0=no limits
                         1=street flow maximum at property line
                         2=pipe maximum size at 8 feet
                         3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
```

1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	525.0	430.0	.475	.050	2	.000

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E4A

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Mtn	.00	.0	.00	.00	1100.0	.1418	.8	11.6
Outlet								8.3	35.2

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File E4A.INP
Output Data File E4A.OUT
Runoff Coefficient Data File RUNCOEF.DAT

```
9/19/**        RBF CONSULTING                                          page  1
16:46:51      TIME OF CONCENTRATION calculated by RHE  09/19/00
Vers.1.0
              LONG POINT RESORT
              EXISTING CONDITIONS 25-YEAR
              SUBAREA E5C

          ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
          º                                                                 º
          º                     Subarea No.  C  5                           º
          º                                                                 º
          ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
          º                                                                 º
          º            TIME OF CONCENTRATION =  5. MINUTES                  º
          º            ***********************************                  º
          ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
          º                                                                 º
          º              Rainfall :     Zone = K                            º
          º                        Frequency = 25 Years                     º
          º                                                                 º
          ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
          º                                                                 º
          º                 Subarea Area =   5. Acres                       º
          º                                                                 º
          ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
          º                                                                 º
          º                    Outlet Q =  20. cfs                          º
          º                                                                 º
          ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼


                                Travel Time:

                                Reach   Reach
                                 No.    Time
                                -----   -----
                                 Land    1.4
                                 1- 1    2.9
                                 1- 2     .2
                                        ------
                                Total    4.6
```

```
9/19/**        RBF CONSULTING                                          page  2
16:46:51      TIME OF CONCENTRATION calculated by RHE  09/19/00
Vers.1.0
              LONG POINT RESORT
              EXISTING CONDITIONS 25-YEAR
              SUBAREA E5C

          Input Data:

          Rainfall Frequency   Time of Concentration (min)    Max.Conv
            Zone     (yrs.)        Assumed  Calculated          Code
              K        25            5.         5                0

Component Area Data:

Reach Convey. Strt Junct Soil Prop. Map  Area  Elev. (ft.) Ext. Q Fixed Fix
 No.   Type    No.  No.   No. Imp. Slope (ac)  Top  Bottom  (cfs) Size  S X
 1- 1 Channel   0   0- 0   2  .900  .065  5.0  842.5  700.0    .0   .00 0 0
 1- 2  Pipe     0   0- 0   2  .900  .100   .1  700.0  675.0    .0   .00 0 0

Code Definitions:
*****************
Maximum Conveyance Code: 0=no limits
                         1=street flow maximum at property line
                         2=pipe maximum size at 8 feet
```

3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
40.0	843.0	842.5	.013	.014	2	.900

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E5C

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Channel	.52	1.5	.00	.00	2200.0	.0648	.5	9.8
1- 2	Channel	.75	1.5	.00	.00	250.0	.1000	5.0	19.5
Outlet								5.1	19.9

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File E5C.INP
Output Data File E5C.OUT
Runoff Coefficient Data File RUNCOEF.DAT

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E6C

```
É¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹»
º                                                                    º
º                    Subarea No. C   6                               º
º                                                                    º
Ì¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹
º                                                                    º
º           TIME OF CONCENTRATION =  6. MINUTES                      º
º           **********************************                       º
Ì¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹
º                                                                    º
º             Rainfall :     Zone = K                                º
º                       Frequency = 25 Years                         º
º                                                                    º
Ì¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹
º                                                                    º
º                 Subarea Area =   9. Acres                          º
º                                                                    º
Ì¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹
º                                                                    º
º                    Outlet Q =  31. cfs                             º
º                                                                    º
È¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¹¼
```

Travel Time:

Reach No.	Reach Time
Land	4.2
1- 1	1.3
1- 2	.6
Total	6.2

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E6C

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	6.	6	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	X
1- 1	Nat.Val	0	0- 0	2	.000	.144	9.0	715.0	600.0	.0	.00	0	0
1- 2	Pipe	0	0- 0	2	.000	.118	.1	600.0	500.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet

3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	740.0	715.0	.125	.050	2	.000

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E6C

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Val	.00	.0	.00	.00	800.0	.1306	.9	15.5
1- 2	Pipe	2.00	.0	.00	.00	850.0	.1176	9.0	30.9
Outlet								9.1	31.3

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File E6C.INP
Output Data File E6C.OUT
Runoff Coefficient Data File RUNCOEF.DAT

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E7C

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ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
º                                                                  º
º                      Subarea No.  C  7                           º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º            TIME OF CONCENTRATION = 13. MINUTES                   º
º            ***********************************                   º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º              Rainfall :     Zone = K                             º
º                        Frequency = 25 Years                      º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º                 Subarea Area =   5. Acres                        º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º                    Outlet Q =  10. cfs                           º
º                                                                  º
ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼
```

Travel Time:

Reach No.	Reach Time
Land	11.8
1- 1	.6
1- 2	.4
Total	12.7

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E7C

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	13.	13	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	X
1- 1	Channel	0	0- 0	2	.420	.085	4.7	599.0	565.0	.0	.00	0	0
1- 2	Pipe	0	0- 0	2	.420	.162	.1	565.0	500.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet

3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	600.0	599.0	.005	.040	2	.420

``

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E7C

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Channel	.43	1.0	.00	.00	400.0	.0850	.5	5.0
1- 2	Channel	.39	1.5	.00	.00	400.0	.1625	4.7	10.0
Outlet								4.8	10.2

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	.170	.330	.000	.250	1.000	12.	40.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File E7C.INP
Output Data File E7C.OUT
Runoff Coefficient Data File RUNCOEF.DAT

```
9/19/**        RBF CONSULTING                                          page  1
17:37: 7      TIME OF CONCENTRATION calculated by RHE  09/19/00
Vers.1.0
              LONG POINT RESORT
              EXISTING CONDITIONS 25-YEAR
              SUBAREA E8D

          ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
          º                                                              º
          º                    Subarea No.  D  8                         º
          º                                                              º
          ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
          º                                                              º
          º           TIME OF CONCENTRATION =  4. MINUTES  ≤ 5 MIN      º   USE 5 MIN.
          º           **********************************                 º
          ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
          º                                                              º
          º             Rainfall :     Zone = K                          º
          º                       Frequency = 25 Years                   º
          º                                                              º
          ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
          º                                                              º
          º                Subarea Area =   4. Acres                     º
          º                                                              º
          ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
          º                                                              º
          º                   Outlet Q =  14. cfs                        º
          º                                                              º
          ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼


                              Travel Time:

                              Reach   Reach
                               No.    Time
                              -----   -----
                               Land    1.4
                               1- 1    2.5
                               1- 2     .4
                                      ------
                              Total    4.3
```

```
9/19/**        RBF CONSULTING                                          page  2
17:37: 7      TIME OF CONCENTRATION calculated by RHE  09/19/00
Vers.1.0
              LONG POINT RESORT
              EXISTING CONDITIONS 25-YEAR
              SUBAREA E8D

          Input Data:

          Rainfall Frequency   Time of Concentration (min)    Max.Conv
            Zone     (yrs.)        Assumed  Calculated          Code
              K        25            5.         5                0

Component Area Data:

Reach Convey. Strt Junct Soil Prop. Map  Area  Elev. (ft.) Ext. Q Fixed Fix
 No.   Type    No.  No.   No. Imp. Slope (ac)  Top  Bottom  (cfs) Size  S X
 1- 1 Channel   0   0- 0   2  .900  .080  3.6  704.5  560.0    .0   .00 0 0
 1- 2  Pipe     0   0- 0   2  .900  .230   .1  565.0  450.0    .0   .00 0 0

Code Definitions:
*****************
Maximum Conveyance Code: 0=no limits
                         1=street flow maximum at property line
                         2=pipe maximum size at 8 feet
```

3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
40.0	705.0	704.5	.013	.014	2	.900

``

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E8D

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Channel	.39	1.5	.00	.00	1800.0	.0803	.4	7.0
1- 2	Channel	.44	1.5	.00	.00	500.0	.2300	3.6	14.1
Outlet								3.7	14.5

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File E8D.INP
Output Data File E8D.OUT
Runoff Coefficient Data File RUNCOEF.DAT

```
9/19/**        RBF CONSULTING                                          page  1
16:58:42      TIME OF CONCENTRATION calculated by RHE  09/19/00
Vers.1.0
              LONG POINT RESORT
              EXISTING CONDITIONS 25-YEAR
              SUBAREA E10C

         ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
         º                                                              º
         º                    Subarea No.  C 10                         º
         º                                                              º
         ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
         º                                                              º
         º           TIME OF CONCENTRATION =  7. MINUTES                 º
         º           ***********************************                 º
         ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
         º                                                              º
         º             Rainfall :     Zone = K                          º
         º                       Frequency = 25 Years                   º
         º                                                              º
         ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
         º                                                              º
         º                Subarea Area =  15. Acres                     º
         º                                                              º
         ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
         º                                                              º
         º                   Outlet Q =  62. cfs                        º
         º                                                              º
         ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼


                              Travel Time:

                              Reach   Reach
                               No.    Time
                              -----   -----
                               Land    3.6
                               1- 1    3.9
                                     ------
                              Total    7.5
```

```
9/19/**        RBF CONSULTING                                          page  2
16:58:42      TIME OF CONCENTRATION calculated by RHE  09/19/00
Vers.1.0
              LONG POINT RESORT
              EXISTING CONDITIONS 25-YEAR
              SUBAREA E10C

         Input Data:

         Rainfall Frequency   Time of Concentration (min)    Max.Conv
           Zone     (yrs.)        Assumed  Calculated          Code
             K        25            7.         7                0

Component Area Data:

Reach Convey. Strt Junct Soil Prop. Map  Area  Elev. (ft.) Ext. Q Fixed Fix
 No.   Type    No.  No.   No. Imp. Slope (ac)  Top  Bottom  (cfs) Size  S X
 1- 1 Nat.Mtn   0   0- 0   2  .000  .167 13.7  475.0  250.0    .0   .00 0 0

Code Definitions:
*****************
Maximum Conveyance Code: 0=no limits
                         1=street flow maximum at property line
                         2=pipe maximum size at 8 feet
                         3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
```

1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	525.0	475.0	.250	.050	2	.000

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E10C

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Mtn	.00	.0	.00	.00	1350.0	.1433	1.4	21.2
Outlet								15.1	61.8

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File E10C.INP
Output Data File E10C.OUT
Runoff Coefficient Data File RUNCOEF.DAT

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E12A

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ÉÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ»
º                                                                  º
º                      Subarea No.  E 12                           º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º            TIME OF CONCENTRATION =  6. MINUTES                   º
º            ***********************************                   º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º              Rainfall :     Zone = K                             º
º                        Frequency = 25 Years                      º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º                 Subarea Area =  49. Acres                        º
º                                                                  º
ÌÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¹
º                                                                  º
º                    Outlet Q = 169. cfs                           º
º                                                                  º
ÈÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍÍ¼
```

Travel Time:

Reach No.	Reach Time
Land	4.4
1- 1	.7
1- 2	.8
Total	6.0

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E12A

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	6.	6	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	X
1- 1	Channel	0	0- 0	2	.420	.068	24.0	247.4	193.0	.0	.00	0	0
1- 2	Pipe	0	0- 0	2	.420	.068	25.0	193.0	125.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet

3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	261.0	247.4	.068	.040	2	.420

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E12A

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Channel	.92	2.5	.00	.00	800.0	.0680	2.4	41.2
1- 2	Channel	1.27	3.0	.00	.00	1000.0	.0680	24.0	82.5
Outlet								49.0	169.0

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	.170	.330	.000	.250	1.000	12.	40.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File E12A.INP
Output Data File E12A.OUT
Runoff Coefficient Data File RUNCOEF.DAT

TIME OF CONCENTRATION calculated by RLB 04/10/98

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E13A

Subarea No. A 13

TIME OF CONCENTRATION = 11. MINUTES
****

Rainfall : Zone = K
Frequency = 25 Years

Subarea Area = 26. Acres

Outlet Q = 80. cfs

Travel Time:

Reach No.	Reach Time
Land	6.7
1- 1	4.7
Total	11.5

15:21:38 TIME OF CONCENTRATION calculated by RLB 04/10/98
Vers.1.0

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E13A

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	10.	11	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Mtn	0	0- 0	2	.200	.111	23.5	192.0	20.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	205.0	192.0	.065	.060	2	.200

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E13A

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Mtn	.00	.0	.00	.00	1550.0	.1077	2.4	27.2
Outlet								25.9	80.4

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File E11E.INP
Output Data File E11E.OUT
Runoff Coefficient Data File RUNCOEF.DAT

TIME OF CONCENTRATION calculated by RLB 04/10/98
Vers.1.0

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E14E

Subarea No. E 14

TIME OF CONCENTRATION = 6. MINUTES
****

Rainfall : Zone = K
Frequency = 25 Years

Subarea Area = 5. Acres

Outlet Q = 25. cfs

Travel Time:

Reach No.	Reach Time
Land	3.4
1- 1	2.4
Total	5.8

15:22:22 TIME OF CONCENTRATION calculated by RLB 04/10/98
Vers.1.0

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E14E

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	5.	6	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Val	0	0- 0	2	.980	.043	4.8	117.0	87.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	125.0	117.0	.040	.020	2	.980

LONG POINT RESORT
EXISTING CONDITIONS 25-YEAR
SUBAREA E14E

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Val	.00	.0	.00	.00	700.0	.0429	.5	8.2
Outlet								5.3	25.2

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File E12F.INP
Output Data File E12F.OUT
Runoff Coefficient Data File RUNCOEF.DAT

MODIFIED RATIONAL METHOD

APPENDIX B: EXISTING CONDTION

WEST MODEL

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

MODIFIED RATIONAL METHOD HYDROLOGY

LONG POINT RESORT - EX. HYDROLOGY FOR WEST SIDE 25-YR STORM STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	1A	4.	16.	4.	16.	4	80.	0.03000	2.00	0.00	0.	2	5	K25	0.00
34194	2A	2.	8.	6.	24.	1	500.	0.18000	0.00	0.00	0.	2	5	K25	0.90
34194	3A	3.	12.	9.	31.	4	500.	0.05000	2.00	0.00	0.	2	5	K25	0.00
34194	4A	5.	20.	14.	46.	0	0.	0.00000	0.00	0.00	0.	2	5	K25	0.10
34194	5B	14.	55.	14.	55.	0	0.	0.00000	0.00	0.00	0.	2	5	K25	0.10
34194	6C	8.	28.	8.	28.	0	0.	0.00000	0.00	0.00	0.	2	6	K25	0.10
34194	7D	33.	83.	33.	83.	0	0.	0.00000	0.00	0.00	0.	2	10	K25	0.20
34194	8E	10.	27.	10.	27.	0	0.	0.00000	0.00	0.00	0.	2	9	K25	0.20

‡

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY
HYDROGRAPH FOR DOWNSTREAM END OF LINE A

HYDROGRAPH AT 34194 4A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	1.	200	1.	300	1.	400	1.
500	1.	600	1.	700	2.	800	2.	900	2.
1000	3.	1050	5.	1100	6.	1110	7.	1120	7.
1130	9.	1131	9.	1132	9.	1133	9.	1134	10.
1135	10.	1136	10.	1137	10.	1138	11.	1139	11.
1140	11.	1141	12.	1142	12.	1143	12.	1144	12.
1145	13.	1146	13.	1147	13.	1148	14.	1149	17.
1150	22.	1151	28.	1152	36.	1153	44.	1154	46.
1155	44.	1156	39.	1157	32.	1158	24.	1159	19.
1160	15.	1161	13.	1162	11.	1163	9.	1164	9.
1165	8.	1166	8.	1167	7.	1168	7.	1169	7.
1170	7.	1171	7.	1172	6.	1173	6.	1174	6.
1175	6.	1176	6.	1177	6.	1178	5.	1179	5.
1180	5.	1181	5.	1182	5.	1183	5.	1184	5.
1185	5.	1186	5.	1187	4.	1188	4.	1189	4.
1190	4.	1191	4.	1192	4.	1193	4.	1194	4.
1195	4.	1196	4.	1197	4.	1198	3.	1199	3.
1200	3.	1201	3.	1202	3.	1203	3.	1204	3.
1205	3.	1206	3.	1207	3.	1208	3.	1209	3.
1210	3.	1211	3.	1212	3.	1213	3.	1214	3.
1215	3.	1216	3.	1217	3.	1218	3.	1219	3.
1220	3.	1221	3.	1222	3.	1223	3.	1224	3.
1225	3.	1226	3.	1227	3.	1228	3.	1229	3.
1230	3.	1231	3.	1232	2.	1233	2.	1234	2.
1235	2.	1236	2.	1237	2.	1238	2.	1239	2.
1240	2.	1241	2.	1242	2.	1243	2.	1244	2.
1245	2.	1246	2.	1247	2.	1248	2.	1249	2.
1250	2.	1251	2.	1252	2.	1253	2.	1254	2.
1255	2.	1256	2.	1257	2.	1258	2.	1259	2.
1260	2.	1261	2.	1262	2.	1263	2.	1264	2.
1265	2.	1266	2.	1267	2.	1268	2.	1269	2.
1270	2.	1271	2.	1272	2.	1273	2.	1274	2.
1275	2.	1276	2.	1277	2.	1278	2.	1279	2.
1280	2.	1281	2.	1282	2.	1283	2.	1284	2.
1285	2.	1286	2.	1287	2.	1288	2.	1289	2.
1290	2.	1291	2.	1292	2.	1293	2.	1294	2.
1295	2.	1296	2.	1297	2.	1298	2.	1299	2.
1300	2.	1310	1.	1320	1.	1330	1.	1340	1.
1350	1.	1360	1.	1370	1.	1380	1.	1390	1.
1400	1.	1420	1.	1440	1.	1460	1.	1500	1.

Total Runoff = 4.509 Acre-Ft.
Peak Q = 46 CFS
Time to Peak Q = 1154 Minutes

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

MODIFIED RATIONAL METHOD HYDROLOGY

HYDROGRAPH FOR DOWNSTREAM END OF LINE B

HYDROGRAPH AT 34194 5B STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	0.	200	0.	300	0.	400	0.
500	1.	600	1.	700	1.	800	2.	900	2.
1000	3.	1050	4.	1100	6.	1110	7.	1120	7.
1130	9.	1131	9.	1132	9.	1133	10.	1134	10.
1135	10.	1136	10.	1137	11.	1138	11.	1139	11.
1140	12.	1141	12.	1142	12.	1143	12.	1144	13.
1145	13.	1146	13.	1147	14.	1148	14.	1149	23.
1150	31.	1151	39.	1152	47.	1153	55.	1154	47.
1155	38.	1156	29.	1157	20.	1158	11.	1159	10.
1160	9.	1161	9.	1162	8.	1163	8.	1164	7.
1165	6.	1166	6.	1167	6.	1168	6.	1169	6.
1170	6.	1171	6.	1172	6.	1173	6.	1174	5.
1175	5.	1176	5.	1177	5.	1178	5.	1179	5.
1180	5.	1181	5.	1182	5.	1183	4.	1184	4.
1185	4.	1186	4.	1187	4.	1188	4.	1189	4.
1190	4.	1191	4.	1192	4.	1193	3.	1194	3.
1195	3.	1196	3.	1197	3.	1198	3.	1199	3.
1200	3.	1201	3.	1202	3.	1203	3.	1204	3.
1205	3.	1206	3.	1207	3.	1208	3.	1209	3.
1210	3.	1211	3.	1212	3.	1213	3.	1214	3.
1215	2.	1216	2.	1217	2.	1218	2.	1219	2.
1220	2.	1221	2.	1222	2.	1223	2.	1224	2.
1225	2.	1226	2.	1227	2.	1228	2.	1229	2.
1230	2.	1231	2.	1232	2.	1233	2.	1234	2.
1235	2.	1236	2.	1237	2.	1238	2.	1239	2.
1240	2.	1241	2.	1242	2.	1243	2.	1244	2.
1245	2.	1246	2.	1247	2.	1248	2.	1249	2.
1250	2.	1251	2.	1252	2.	1253	2.	1254	2.
1255	2.	1256	2.	1257	2.	1258	2.	1259	2.
1260	2.	1261	2.	1262	2.	1263	2.	1264	2.
1265	1.	1266	1.	1267	1.	1268	1.	1269	1.
1270	1.	1271	1.	1272	1.	1273	1.	1274	1.
1275	1.	1276	1.	1277	1.	1278	1.	1279	1.
1280	1.	1281	1.	1282	1.	1283	1.	1284	1.
1285	1.	1286	1.	1287	1.	1288	1.	1289	1.
1290	1.	1291	1.	1292	1.	1293	1.	1294	1.
1295	1.	1296	1.	1297	1.	1298	1.	1299	1.
1300	1.	1310	1.	1320	1.	1330	1.	1340	1.
1350	0.	1360	0.	1370	0.	1380	0.	1390	0.
1400	0.	1420	0.	1440	0.	1460	0.	1500	0.

Total Runoff = 3.412 Acre-Ft.
Peak Q = 55 CFS
Time to Peak Q = 1153 Minutes

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY
HYDROGRAPH FOR DOWNSTREAM END OF LINE C

HYDROGRAPH AT 34194 6C STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	0.	200	0.	300	0.	400	0.
500	0.	600	1.	700	1.	800	1.	900	1.
1000	2.	1050	3.	1100	3.	1110	4.	1120	4.
1130	5.	1131	5.	1132	5.	1133	5.	1134	6.
1135	6.	1136	6.	1137	6.	1138	6.	1139	6.
1140	7.	1141	7.	1142	7.	1143	7.	1144	7.
1145	7.	1146	8.	1147	8.	1148	8.	1149	12.
1150	16.	1151	20.	1152	24.	1153	28.	1154	28.
1155	23.	1156	19.	1157	15.	1158	10.	1159	6.
1160	5.	1161	5.	1162	5.	1163	4.	1164	4.
1165	4.	1166	4.	1167	4.	1168	4.	1169	4.
1170	4.	1171	4.	1172	3.	1173	3.	1174	3.
1175	3.	1176	3.	1177	3.	1178	3.	1179	3.
1180	3.	1181	3.	1182	3.	1183	3.	1184	2.
1185	2.	1186	2.	1187	2.	1188	2.	1189	2.
1190	2.	1191	2.	1192	2.	1193	2.	1194	2.
1195	2.	1196	2.	1197	2.	1198	2.	1199	2.
1200	2.	1201	2.	1202	2.	1203	2.	1204	2.
1205	2.	1206	2.	1207	2.	1208	2.	1209	2.
1210	2.	1211	2.	1212	2.	1213	2.	1214	2.
1215	1.	1216	1.	1217	1.	1218	1.	1219	1.
1220	1.	1221	1.	1222	1.	1223	1.	1224	1.
1225	1.	1226	1.	1227	1.	1228	1.	1229	1.
1230	1.	1231	1.	1232	1.	1233	1.	1234	1.
1235	1.	1236	1.	1237	1.	1238	1.	1239	1.
1240	1.	1241	1.	1242	1.	1243	1.	1244	1.
1245	1.	1246	1.	1247	1.	1248	1.	1249	1.
1250	1.	1251	1.	1252	1.	1253	1.	1254	1.
1255	1.	1256	1.	1257	1.	1258	1.	1259	1.
1260	1.	1261	1.	1262	1.	1263	1.	1264	1.
1265	1.	1266	1.	1267	1.	1268	1.	1269	1.
1270	1.	1271	1.	1272	1.	1273	1.	1274	1.
1275	1.	1276	1.	1277	1.	1278	1.	1279	1.
1280	1.	1281	1.	1282	1.	1283	1.	1284	1.
1285	1.	1286	1.	1287	1.	1288	1.	1289	1.
1290	1.	1291	1.	1292	1.	1293	1.	1294	1.
1295	1.	1296	1.	1297	1.	1298	1.	1299	1.
1300	1.	1310	0.	1320	0.	1330	0.	1340	0.
1350	0.	1360	0.	1370	0.	1380	0.	1390	0.
1400	0.	1420	0.	1440	0.	1460	0.	1500	0.

Total Runoff = 2.004 Acre-Ft.
Peak Q = 28 CFS
Time to Peak Q = 1153 Minutes

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

MODIFIED RATIONAL METHOD HYDROLOGY

HYDROGRAPH FOR DOWNSTREAM END OF LINE D

HYDROGRAPH AT 34194 7D STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	1.	200	1.	300	1.	400	1.
500	2.	600	3.	700	4.	800	5.	900	5.
1000	8.	1050	11.	1100	15.	1110	16.	1120	17.
1130	21.	1131	22.	1132	22.	1133	22.	1134	23.
1135	23.	1136	24.	1137	25.	1138	25.	1139	26.
1140	27.	1141	27.	1142	28.	1143	29.	1144	29.
1145	30.	1146	31.	1147	32.	1148	32.	1149	42.
1150	53.	1151	62.	1152	72.	1153	82.	1154	83.
1155	83.	1156	81.	1157	80.	1158	78.	1159	67.
1160	57.	1161	45.	1162	34.	1163	23.	1164	20.
1165	19.	1166	19.	1167	18.	1168	17.	1169	17.
1170	16.	1171	16.	1172	15.	1173	15.	1174	15.
1175	14.	1176	14.	1177	14.	1178	13.	1179	13.
1180	13.	1181	12.	1182	12.	1183	12.	1184	12.
1185	11.	1186	11.	1187	11.	1188	11.	1189	10.
1190	10.	1191	10.	1192	10.	1193	9.	1194	9.
1195	9.	1196	9.	1197	9.	1198	8.	1199	8.
1200	8.	1201	8.	1202	8.	1203	8.	1204	8.
1205	8.	1206	8.	1207	8.	1208	8.	1209	8.
1210	8.	1211	8.	1212	8.	1213	7.	1214	7.
1215	7.	1216	7.	1217	7.	1218	7.	1219	6.
1220	6.	1221	6.	1222	6.	1223	6.	1224	6.
1225	6.	1226	6.	1227	6.	1228	6.	1229	6.
1230	6.	1231	6.	1232	6.	1233	6.	1234	6.
1235	6.	1236	5.	1237	5.	1238	5.	1239	5.
1240	5.	1241	5.	1242	5.	1243	5.	1244	5.
1245	5.	1246	5.	1247	5.	1248	5.	1249	5.
1250	5.	1251	5.	1252	5.	1253	5.	1254	5.
1255	5.	1256	5.	1257	5.	1258	5.	1259	5.
1260	5.	1261	5.	1262	5.	1263	5.	1264	5.
1265	4.	1266	4.	1267	4.	1268	4.	1269	4.
1270	4.	1271	4.	1272	4.	1273	4.	1274	4.
1275	4.	1276	4.	1277	4.	1278	4.	1279	4.
1280	4.	1281	4.	1282	4.	1283	4.	1284	4.
1285	4.	1286	4.	1287	4.	1288	4.	1289	4.
1290	4.	1291	4.	1292	4.	1293	4.	1294	4.
1295	4.	1296	4.	1297	4.	1298	4.	1299	4.
1300	4.	1310	2.	1320	2.	1330	2.	1340	2.
1350	1.	1360	1.	1370	1.	1380	1.	1390	1.
1400	1.	1420	1.	1440	1.	1460	0.	1500	0.

Total Runoff = 9.594 Acre-Ft.
Peak Q = 83 CFS
Time to Peak Q = 1154 Minutes

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY
HYDROGRAPH FOR DOWNSTREAM END OF LINE E

HYDROGRAPH AT 34194 8E STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	0.	200	0.	300	0.	400	0.
500	1.	600	1.	700	1.	800	1.	900	1.
1000	3.	1050	3.	1100	4.	1110	5.	1120	5.
1130	6.	1131	7.	1132	7.	1133	7.	1134	7.
1135	7.	1136	7.	1137	8.	1138	8.	1139	8.
1140	8.	1141	8.	1142	9.	1143	9.	1144	9.
1145	9.	1146	9.	1147	10.	1148	10.	1149	13.
1150	17.	1151	20.	1152	23.	1153	27.	1154	27.
1155	27.	1156	26.	1157	26.	1158	22.	1159	18.
1160	15.	1161	11.	1162	7.	1163	6.	1164	6.
1165	6.	1166	6.	1167	5.	1168	5.	1169	5.
1170	5.	1171	5.	1172	5.	1173	4.	1174	4.
1175	4.	1176	4.	1177	4.	1178	4.	1179	4.
1180	4.	1181	4.	1182	4.	1183	4.	1184	3.
1185	3.	1186	3.	1187	3.	1188	3.	1189	3.
1190	3.	1191	3.	1192	3.	1193	3.	1194	3.
1195	3.	1196	3.	1197	3.	1198	2.	1199	2.
1200	2.	1201	2.	1202	2.	1203	2.	1204	2.
1205	2.	1206	2.	1207	2.	1208	2.	1209	2.
1210	2.	1211	2.	1212	2.	1213	2.	1214	2.
1215	2.	1216	2.	1217	2.	1218	2.	1219	2.
1220	2.	1221	2.	1222	2.	1223	2.	1224	2.
1225	2.	1226	2.	1227	2.	1228	2.	1229	2.
1230	2.	1231	2.	1232	2.	1233	2.	1234	2.
1235	2.	1236	2.	1237	2.	1238	2.	1239	1.
1240	1.	1241	1.	1242	1.	1243	1.	1244	1.
1245	1.	1246	1.	1247	1.	1248	1.	1249	1.
1250	1.	1251	1.	1252	1.	1253	1.	1254	1.
1255	1.	1256	1.	1257	1.	1258	1.	1259	1.
1260	1.	1261	1.	1262	1.	1263	1.	1264	1.
1265	1.	1266	1.	1267	1.	1268	1.	1269	1.
1270	1.	1271	1.	1272	1.	1273	1.	1274	1.
1275	1.	1276	1.	1277	1.	1278	1.	1279	1.
1280	1.	1281	1.	1282	1.	1283	1.	1284	1.
1285	1.	1286	1.	1287	1.	1288	1.	1289	1.
1290	1.	1291	1.	1292	1.	1293	1.	1294	1.
1295	1.	1296	1.	1297	1.	1298	1.	1299	1.
1300	1.	1310	1.	1320	1.	1330	1.	1340	1.
1350	0.	1360	0.	1370	0.	1380	0.	1390	0.
1400	0.	1420	0.	1440	0.	1460	0.	1500	0.

Total Runoff = 2.593 Acre-Ft.
Peak Q = 27 CFS
Time to Peak Q = 1153 Minutes

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

MODIFIED RATIONAL METHOD HYDROLOGY

LONG POINT RESORT - EX. HYDROLOGY FOR WEST SIDE 50-YR STORM STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	1A	4.	17.	4.	17.	4	80.	0.03000	2.00	0.00	0.	2	5	K50	0.00
34194	2A	2.	9.	6.	25.	1	500.	0.18000	0.00	0.00	0.	2	5	K50	0.90
34194	3A	3.	13.	9.	36.	4	500.	0.05000	2.00	0.00	0.	2	5	K50	0.00
34194	4A	5.	21.	14.	53.	0	0.	0.00000	0.00	0.00	0.	2	5	K50	0.10
34194	5B	14.	59.	14.	59.	0	0.	0.00000	0.00	0.00	0.	2	5	K50	0.10
34194	6C	8.	30.	8.	30.	0	0.	0.00000	0.00	0.00	0.	2	6	K50	0.10
34194	7D	33.	95.	33.	95.	0	0.	0.00000	0.00	0.00	0.	2	10	K50	0.20
34194	8E	10.	30.	10.	30.	0	0.	0.00000	0.00	0.00	0.	2	9	K50	0.20

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LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY
HYDROGRAPH FOR DOWNSTREAM END OF LINE A

HYDROGRAPH AT 34194 4A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	1.	200	1.	300	1.	400	1.
500	1.	600	2.	700	2.	800	3.	900	4.
1000	5.	1050	5.	1100	6.	1110	7.	1120	8.
1130	9.	1131	9.	1132	9.	1133	9.	1134	9.
1135	9.	1136	10.	1137	11.	1138	11.	1139	12.
1140	13.	1141	14.	1142	15.	1143	16.	1144	17.
1145	18.	1146	18.	1147	19.	1148	20.	1149	21.
1150	22.	1151	28.	1152	36.	1153	45.	1154	51.
1155	53.	1156	49.	1157	40.	1158	29.	1159	23.
1160	18.	1161	14.	1162	12.	1163	10.	1164	9.
1165	8.	1166	8.	1167	7.	1168	7.	1169	7.
1170	7.	1171	7.	1172	6.	1173	6.	1174	6.
1175	6.	1176	6.	1177	6.	1178	6.	1179	6.
1180	6.	1181	6.	1182	6.	1183	6.	1184	6.
1185	6.	1186	6.	1187	6.	1188	6.	1189	6.
1190	6.	1191	6.	1192	6.	1193	5.	1194	5.
1195	5.	1196	5.	1197	5.	1198	5.	1199	5.
1200	5.	1201	5.	1202	5.	1203	5.	1204	5.
1205	5.	1206	5.	1207	5.	1208	5.	1209	5.
1210	5.	1211	5.	1212	5.	1213	4.	1214	4.
1215	4.	1216	4.	1217	4.	1218	4.	1219	4.
1220	4.	1221	4.	1222	4.	1223	4.	1224	4.
1225	4.	1226	4.	1227	4.	1228	4.	1229	4.
1230	4.	1231	4.	1232	3.	1233	3.	1234	3.
1235	3.	1236	3.	1237	3.	1238	3.	1239	3.
1240	3.	1241	3.	1242	3.	1243	3.	1244	3.
1245	3.	1246	3.	1247	3.	1248	3.	1249	3.
1250	3.	1251	3.	1252	3.	1253	3.	1254	3.
1255	3.	1256	3.	1257	3.	1258	3.	1259	3.
1260	3.	1261	3.	1262	3.	1263	3.	1264	3.
1265	3.	1266	3.	1267	3.	1268	3.	1269	3.
1270	3.	1271	3.	1272	3.	1273	3.	1274	3.
1275	3.	1276	3.	1277	3.	1278	3.	1279	3.
1280	3.	1281	3.	1282	3.	1283	3.	1284	3.
1285	3.	1286	3.	1287	3.	1288	3.	1289	3.
1290	3.	1291	3.	1292	3.	1293	3.	1294	3.
1295	3.	1296	3.	1297	3.	1298	3.	1299	3.
1300	3.	1310	2.	1320	2.	1330	2.	1340	2.
1350	1.	1360	1.	1370	1.	1380	1.	1390	1.
1400	1.	1420	1.	1440	1.	1460	1.	1500	1.

Total Runoff = 5.664 Acre-Ft.
Peak Q = 53 CFS
Time to Peak Q = 1155 Minutes

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY
HYDROGRAPH FOR DOWNSTREAM END OF LINE B

HYDROGRAPH AT 34194 5B STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	0.	200	0.	300	0.	400	1.
500	1.	600	2.	700	2.	800	3.	900	3.
1000	5.	1050	5.	1100	6.	1110	7.	1120	8.
1130	9.	1131	9.	1132	9.	1133	9.	1134	9.
1135	9.	1136	10.	1137	12.	1138	13.	1139	14.
1140	15.	1141	16.	1142	16.	1143	17.	1144	18.
1145	19.	1146	19.	1147	20.	1148	20.	1149	22.
1150	25.	1151	36.	1152	49.	1153	59.	1154	58.
1155	53.	1156	40.	1157	25.	1158	13.	1159	11.
1160	10.	1161	9.	1162	9.	1163	8.	1164	7.
1165	6.	1166	6.	1167	6.	1168	6.	1169	6.
1170	6.	1171	6.	1172	6.	1173	6.	1174	6.
1175	6.	1176	6.	1177	6.	1178	6.	1179	6.
1180	6.	1181	6.	1182	6.	1183	6.	1184	6.
1185	6.	1186	6.	1187	6.	1188	6.	1189	6.
1190	6.	1191	5.	1192	5.	1193	5.	1194	5.
1195	5.	1196	5.	1197	5.	1198	5.	1199	5.
1200	5.	1201	5.	1202	5.	1203	5.	1204	5.
1205	5.	1206	5.	1207	5.	1208	5.	1209	5.
1210	5.	1211	4.	1212	4.	1213	4.	1214	4.
1215	3.	1216	3.	1217	3.	1218	3.	1219	3.
1220	3.	1221	3.	1222	3.	1223	3.	1224	3.
1225	3.	1226	3.	1227	3.	1228	3.	1229	3.
1230	3.	1231	3.	1232	3.	1233	3.	1234	3.
1235	3.	1236	3.	1237	3.	1238	3.	1239	3.
1240	3.	1241	3.	1242	3.	1243	3.	1244	3.
1245	3.	1246	3.	1247	3.	1248	3.	1249	3.
1250	3.	1251	3.	1252	3.	1253	3.	1254	3.
1255	3.	1256	3.	1257	3.	1258	3.	1259	3.
1260	3.	1261	3.	1262	3.	1263	3.	1264	3.
1265	2.	1266	2.	1267	2.	1268	2.	1269	2.
1270	2.	1271	2.	1272	2.	1273	2.	1274	2.
1275	2.	1276	2.	1277	2.	1278	2.	1279	2.
1280	2.	1281	2.	1282	2.	1283	2.	1284	2.
1285	2.	1286	2.	1287	2.	1288	2.	1289	2.
1290	2.	1291	2.	1292	2.	1293	2.	1294	2.
1295	2.	1296	2.	1297	2.	1298	2.	1299	2.
1300	2.	1310	1.	1320	1.	1330	1.	1340	1.
1350	1.	1360	1.	1370	1.	1380	1.	1390	1.
1400	1.	1420	0.	1440	0.	1460	0.	1500	0.

Total Runoff = 4.822 Acre-Ft.
Peak Q = 59 CFS
Time to Peak Q = 1153 Minutes

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY
HYDROGRAPH FOR DOWNSTREAM END OF LINE C

HYDROGRAPH AT 34194 6C STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	0.	200	0.	300	0.	400	0.
500	1.	600	1.	700	1.	800	2.	900	2.
1000	3.	1050	3.	1100	3.	1110	4.	1120	5.
1130	5.	1131	5.	1132	5.	1133	5.	1134	5.
1135	5.	1136	6.	1137	6.	1138	7.	1139	7.
1140	8.	1141	9.	1142	9.	1143	10.	1144	10.
1145	10.	1146	11.	1147	11.	1148	11.	1149	12.
1150	14.	1151	19.	1152	25.	1153	30.	1154	30.
1155	29.	1156	26.	1157	20.	1158	13.	1159	7.
1160	6.	1161	5.	1162	5.	1163	5.	1164	4.
1165	4.	1166	4.	1167	4.	1168	4.	1169	4.
1170	4.	1171	4.	1172	3.	1173	3.	1174	3.
1175	3.	1176	3.	1177	3.	1178	3.	1179	3.
1180	3.	1181	3.	1182	3.	1183	3.	1184	3.
1185	3.	1186	3.	1187	3.	1188	3.	1189	3.
1190	3.	1191	3.	1192	3.	1193	3.	1194	3.
1195	3.	1196	3.	1197	3.	1198	3.	1199	3.
1200	3.	1201	3.	1202	3.	1203	3.	1204	3.
1205	3.	1206	3.	1207	3.	1208	3.	1209	3.
1210	3.	1211	2.	1212	2.	1213	2.	1214	2.
1215	2.	1216	2.	1217	2.	1218	2.	1219	2.
1220	2.	1221	2.	1222	2.	1223	2.	1224	2.
1225	2.	1226	2.	1227	2.	1228	2.	1229	2.
1230	2.	1231	2.	1232	2.	1233	2.	1234	2.
1235	2.	1236	2.	1237	2.	1238	2.	1239	2.
1240	2.	1241	2.	1242	2.	1243	2.	1244	2.
1245	2.	1246	2.	1247	2.	1248	2.	1249	2.
1250	2.	1251	2.	1252	2.	1253	2.	1254	2.
1255	2.	1256	2.	1257	2.	1258	2.	1259	2.
1260	2.	1261	2.	1262	2.	1263	1.	1264	1.
1265	1.	1266	1.	1267	1.	1268	1.	1269	1.
1270	1.	1271	1.	1272	1.	1273	1.	1274	1.
1275	1.	1276	1.	1277	1.	1278	1.	1279	1.
1280	1.	1281	1.	1282	1.	1283	1.	1284	1.
1285	1.	1286	1.	1287	1.	1288	1.	1289	1.
1290	1.	1291	1.	1292	1.	1293	1.	1294	1.
1295	1.	1296	1.	1297	1.	1298	1.	1299	1.
1300	1.	1310	1.	1320	1.	1330	1.	1340	1.
1350	0.	1360	0.	1370	0.	1380	0.	1390	0.
1400	0.	1420	0.	1440	0.	1460	0.	1500	0.

Total Runoff = 2.760 Acre-Ft.
Peak Q = 30 CFS
Time to Peak Q = 1153 Minutes

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY
HYDROGRAPH FOR DOWNSTREAM END OF LINE D

HYDROGRAPH AT 34194 7D STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	1.	200	1.	300	2.	400	2.
500	3.	600	5.	700	6.	800	7.	900	9.
1000	12.	1050	12.	1100	15.	1110	17.	1120	20.
1130	21.	1131	22.	1132	22.	1133	22.	1134	22.
1135	22.	1136	24.	1137	25.	1138	27.	1139	28.
1140	29.	1141	32.	1142	34.	1143	36.	1144	38.
1145	40.	1146	42.	1147	43.	1148	45.	1149	48.
1150	53.	1151	66.	1152	82.	1153	94.	1154	95.
1155	93.	1156	91.	1157	88.	1158	85.	1159	81.
1160	75.	1161	59.	1162	40.	1163	25.	1164	22.
1165	20.	1166	19.	1167	19.	1168	18.	1169	17.
1170	16.	1171	16.	1172	15.	1173	15.	1174	15.
1175	15.	1176	15.	1177	14.	1178	14.	1179	14.
1180	14.	1181	14.	1182	14.	1183	14.	1184	14.
1185	14.	1186	14.	1187	14.	1188	14.	1189	14.
1190	14.	1191	14.	1192	13.	1193	13.	1194	13.
1195	13.	1196	12.	1197	12.	1198	12.	1199	12.
1200	11.	1201	11.	1202	11.	1203	11.	1204	11.
1205	11.	1206	11.	1207	11.	1208	11.	1209	11.
1210	11.	1211	11.	1212	11.	1213	11.	1214	10.
1215	10.	1216	10.	1217	10.	1218	9.	1219	9.
1220	9.	1221	9.	1222	9.	1223	9.	1224	9.
1225	9.	1226	9.	1227	9.	1228	9.	1229	9.
1230	9.	1231	9.	1232	8.	1233	8.	1234	8.
1235	8.	1236	8.	1237	8.	1238	7.	1239	7.
1240	7.	1241	7.	1242	7.	1243	7.	1244	7.
1245	7.	1246	7.	1247	7.	1248	7.	1249	7.
1250	7.	1251	7.	1252	7.	1253	7.	1254	7.
1255	7.	1256	7.	1257	7.	1258	7.	1259	7.
1260	7.	1261	7.	1262	7.	1263	7.	1264	7.
1265	7.	1266	7.	1267	7.	1268	6.	1269	6.
1270	6.	1271	6.	1272	6.	1273	6.	1274	6.
1275	6.	1276	6.	1277	6.	1278	6.	1279	6.
1280	6.	1281	6.	1282	6.	1283	6.	1284	6.
1285	6.	1286	6.	1287	6.	1288	6.	1289	6.
1290	6.	1291	6.	1292	6.	1293	6.	1294	6.
1295	6.	1296	6.	1297	6.	1298	6.	1299	6.
1300	6.	1310	4.	1320	4.	1330	4.	1340	4.
1350	2.	1360	2.	1370	2.	1380	2.	1390	2.
1400	2.	1420	1.	1440	1.	1460	0.	1500	0.

Total Runoff = 12.849 Acre-Ft.
Peak Q = 95 CFS
Time to Peak Q = 1154 Minutes

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY
HYDROGRAPH FOR DOWNSTREAM END OF LINE E

HYDROGRAPH AT 34194 8E STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	0.	200	0.	300	0.	400	1.
500	1.	600	1.	700	2.	800	2.	900	3.
1000	4.	1050	4.	1100	5.	1110	5.	1120	6.
1130	6.	1131	7.	1132	7.	1133	7.	1134	7.
1135	7.	1136	7.	1137	8.	1138	8.	1139	9.
1140	9.	1141	10.	1142	11.	1143	11.	1144	12.
1145	12.	1146	13.	1147	13.	1148	14.	1149	15.
1150	16.	1151	21.	1152	26.	1153	30.	1154	30.
1155	30.	1156	29.	1157	28.	1158	27.	1159	24.
1160	19.	1161	13.	1162	8.	1163	7.	1164	6.
1165	6.	1166	6.	1167	5.	1168	5.	1169	5.
1170	5.	1171	5.	1172	5.	1173	5.	1174	5.
1175	4.	1176	4.	1177	4.	1178	4.	1179	4.
1180	4.	1181	4.	1182	4.	1183	4.	1184	4.
1185	4.	1186	4.	1187	4.	1188	4.	1189	4.
1190	4.	1191	4.	1192	4.	1193	4.	1194	4.
1195	4.	1196	4.	1197	4.	1198	4.	1199	3.
1200	3.	1201	3.	1202	3.	1203	3.	1204	3.
1205	3.	1206	3.	1207	3.	1208	3.	1209	3.
1210	3.	1211	3.	1212	3.	1213	3.	1214	3.
1215	3.	1216	3.	1217	3.	1218	3.	1219	3.
1220	3.	1221	3.	1222	3.	1223	3.	1224	3.
1225	3.	1226	3.	1227	3.	1228	3.	1229	3.
1230	3.	1231	3.	1232	3.	1233	2.	1234	2.
1235	2.	1236	2.	1237	2.	1238	2.	1239	2.
1240	2.	1241	2.	1242	2.	1243	2.	1244	2.
1245	2.	1246	2.	1247	2.	1248	2.	1249	2.
1250	2.	1251	2.	1252	2.	1253	2.	1254	2.
1255	2.	1256	2.	1257	2.	1258	2.	1259	2.
1260	2.	1261	2.	1262	2.	1263	2.	1264	2.
1265	2.	1266	2.	1267	2.	1268	2.	1269	2.
1270	2.	1271	2.	1272	2.	1273	2.	1274	2.
1275	2.	1276	2.	1277	2.	1278	2.	1279	2.
1280	2.	1281	2.	1282	2.	1283	2.	1284	2.
1285	2.	1286	2.	1287	2.	1288	2.	1289	2.
1290	2.	1291	2.	1292	2.	1293	2.	1294	2.
1295	2.	1296	2.	1297	2.	1298	2.	1299	2.
1300	2.	1310	1.	1320	1.	1330	1.	1340	1.
1350	1.	1360	1.	1370	1.	1380	1.	1390	1.
1400	1.	1420	0.	1440	0.	1460	0.	1500	0.

Total Runoff = 3.848 Acre-Ft.
Peak Q = 30 CFS
Time to Peak Q = 1153 Minutes

MIDDLE MODEL

MODIFIED RATIONAL METHOD HYDROLOGY

LONG POINT RESORT - MIDDLE WATERSHED HYDROLOGY 25-YR STORM STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	1A	12.	29.	12.	29.	4	200.	0.05000	2.50	0.00	0.	2	10	K25	0.00
34194	2A	3.	8.	15.	37.	4	350.	0.15714	2.50	0.00	0.	2	10	K25	0.42
34194	3A	6.	23.	21.	58.	1	1500.	0.13333	0.00	0.00	0.	2	5	K25	0.00
34194	4A	35.	94.	56.	138.	0	0.	0.00000	0.00	0.00	0.	2	9	K25	0.20
34194	5B	7.	17.	7.	17.	4	700.	0.21429	2.00	0.00	0.	2	10	K25	0.00
34194	6B	18.	50.	25.	67.	1	1300.	0.13846	0.00	0.00	0.	2	9	K25	0.42
34194	7C	23.	79.	23.	79.	4	1200.	0.13333	2.00	0.00	0.	2	6	K25	0.00
34194	8C	18.	50.	41.	126.	1	1200.	0.12900	0.00	0.00	0.	2	9	K25	0.42
34194	9C	42.	133.	83.	229.	0	0.	0.00000	0.00	0.00	0.	2	7	K25	0.22

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*                                    CONFLUENCE Q'S                                                    *
* 34194   10B  TB 1159 QB      63. QBC     223. QC     160.   34194   10C  TC 1155 QC     229. QCB     279. QB      50.  *
*                          34194   10BC TBC 1155 QBC     279. QB      50. QC     229.                                  *
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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	10BC	83.	229.	108.	279.	3	300.	0.03160	0.00	0.00	0.	2	0	K25	0.00
34194	11B	3.	11.	111.	286.	4	950.	0.03160	4.25	0.00	0.	2	6	K25	0.90
34194	12B	2.	9.	113.	284.	0	0.	0.00000	0.00	0.00	0.	2	5	K25	0.95

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*                                    CONFLUENCE Q'S                                                    *
* 34194   13A  TA 1157 QA     138. QAB     422. QB     284.   34194   13B  TB 1157 QB     284. QBA     422. QA     138.  *
*                          34194   13AB TAB 1157 QAB     422. QA     138. QB     284.                                  *
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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	13AB	113.	284.	169.	422.	3	850.	0.15880	3.00	0.00	0.	2	0	K25	0.00
34194	14D	16.	50.	16.	50.	1	600.	0.10000	0.00	0.00	0.	2	7	K25	0.00
34194	15A	4.	12.	173.	424.	0	0.	0.00000	0.00	0.00	0.	2	8	K25	0.20
34194	16AD	16.	48.	189.	465.	0	0.	0.00000	0.00	0.00	0.	2	0	K25	0.00
34194	17E	42.	135.	42.	135.	0	0.	0.00000	0.00	0.00	0.	2	7	K25	0.35
34194	18F	5.	19.	5.	19.	0	0.	0.00000	0.00	0.00	0.	2	6	K25	0.95

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*                                    CONFLUENCE Q'S                                                    *
* 34194   19E  TE 1154 QE     135. QEF     154. QF      19.   34194   19F  TF 1154 QF      19. QFE     154. QE     135.  *
*                          34194   19EF TEF 1154 QEF     154. QE     135. QF      19.                                   *
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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	19EF	5.	19.	47.	154.	2	1050.	0.08950	0.00	0.00	0.	2	0	K25	0.00
34194	20E	27.	81.	74.	230.	0	0.	0.00000	0.00	0.00	0.	2	8	K25	0.45

‡

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY
HYDROGRAPH FOR DOWNSTREAM END OF LINE A

HYDROGRAPH AT 34194 16A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	4.	200	5.	300	6.	400	8.
500	12.	600	16.	700	21.	800	27.	900	28.
1000	46.	1050	62.	1100	81.	1110	88.	1120	94.
1130	110.	1131	112.	1132	114.	1133	117.	1134	119.
1135	122.	1136	124.	1137	127.	1138	131.	1139	134.
1140	138.	1141	141.	1142	145.	1143	149.	1144	153.
1145	157.	1146	160.	1147	164.	1148	169.	1149	178.
1150	196.	1151	225.	1152	263.	1153	311.	1154	362.
1155	407.	1156	443.	1157	464.	1158	465.	1159	444.
1160	409.	1161	365.	1162	318.	1163	276.	1164	244.
1165	218.	1166	194.	1167	173.	1168	155.	1169	140.
1170	128.	1171	118.	1172	112.	1173	106.	1174	101.
1175	97.	1176	93.	1177	90.	1178	87.	1179	84.
1180	82.	1181	80.	1182	79.	1183	77.	1184	75.
1185	73.	1186	72.	1187	70.	1188	68.	1189	67.
1190	65.	1191	64.	1192	63.	1193	62.	1194	60.
1195	59.	1196	58.	1197	56.	1198	55.	1199	54.
1200	52.	1201	51.	1202	51.	1203	50.	1204	49.
1205	49.	1206	48.	1207	47.	1208	47.	1209	47.
1210	46.	1211	46.	1212	46.	1213	45.	1214	45.
1215	44.	1216	44.	1217	43.	1218	42.	1219	42.
1220	41.	1221	40.	1222	40.	1223	39.	1224	39.
1225	38.	1226	38.	1227	38.	1228	37.	1229	37.
1230	37.	1231	36.	1232	36.	1233	36.	1234	35.
1235	35.	1236	34.	1237	34.	1238	33.	1239	33.
1240	32.	1241	32.	1242	31.	1243	31.	1244	31.
1245	30.	1246	30.	1247	30.	1248	29.	1249	29.
1250	29.	1251	29.	1252	28.	1253	28.	1254	28.
1255	28.	1256	28.	1257	28.	1258	28.	1259	28.
1260	28.	1261	28.	1262	28.	1263	28.	1264	28.
1265	27.	1266	27.	1267	27.	1268	26.	1269	26.
1270	26.	1271	25.	1272	25.	1273	25.	1274	25.
1275	25.	1276	24.	1277	24.	1278	24.	1279	24.
1280	24.	1281	24.	1282	23.	1283	23.	1284	23.
1285	23.	1286	23.	1287	23.	1288	23.	1289	23.
1290	23.	1291	23.	1292	23.	1293	23.	1294	23.
1295	23.	1296	23.	1297	23.	1298	23.	1299	23.
1300	23.	1310	20.	1320	16.	1330	15.	1340	14.
1350	11.	1360	9.	1370	8.	1380	7.	1390	7.
1400	7.	1420	6.	1440	5.	1460	4.	1500	4.

Total Runoff = 55.298 Acre-Ft.
Peak Q = 465 CFS
Time to Peak Q = 1158 Minutes

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY
HYDROGRAPH FOR DOWNSTREAM END OF LINE E

HYDROGRAPH AT 34194 20E STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	2.	200	3.	300	4.	400	5.
500	7.	600	9.	700	11.	800	13.	900	14.
1000	22.	1050	28.	1100	36.	1110	40.	1120	42.
1130	50.	1131	51.	1132	53.	1133	54.	1134	55.
1135	56.	1136	57.	1137	59.	1138	61.	1139	63.
1140	64.	1141	66.	1142	67.	1143	69.	1144	70.
1145	72.	1146	73.	1147	75.	1148	77.	1149	89.
1150	108.	1151	136.	1152	168.	1153	201.	1154	221.
1155	230.	1156	227.	1157	203.	1158	172.	1159	141.
1160	110.	1161	80.	1162	64.	1163	56.	1164	52.
1165	49.	1166	46.	1167	44.	1168	42.	1169	41.
1170	40.	1171	39.	1172	39.	1173	38.	1174	37.
1175	36.	1176	35.	1177	34.	1178	33.	1179	32.
1180	32.	1181	32.	1182	31.	1183	31.	1184	30.
1185	29.	1186	28.	1187	28.	1188	27.	1189	27.
1190	26.	1191	26.	1192	26.	1193	25.	1194	24.
1195	24.	1196	23.	1197	22.	1198	22.	1199	21.
1200	21.	1201	21.	1202	21.	1203	21.	1204	21.
1205	21.	1206	21.	1207	21.	1208	21.	1209	21.
1210	21.	1211	21.	1212	20.	1213	20.	1214	20.
1215	19.	1216	19.	1217	18.	1218	18.	1219	17.
1220	17.	1221	17.	1222	17.	1223	17.	1224	17.
1225	17.	1226	17.	1227	17.	1228	17.	1229	17.
1230	17.	1231	17.	1232	17.	1233	16.	1234	16.
1235	16.	1236	15.	1237	15.	1238	14.	1239	14.
1240	14.	1241	14.	1242	14.	1243	14.	1244	14.
1245	14.	1246	14.	1247	14.	1248	14.	1249	14.
1250	14.	1251	14.	1252	14.	1253	14.	1254	14.
1255	14.	1256	14.	1257	14.	1258	14.	1259	14.
1260	14.	1261	14.	1262	13.	1263	13.	1264	13.
1265	13.	1266	13.	1267	12.	1268	12.	1269	12.
1270	12.	1271	12.	1272	12.	1273	12.	1274	12.
1275	12.	1276	12.	1277	12.	1278	12.	1279	12.
1280	12.	1281	12.	1282	12.	1283	12.	1284	12.
1285	12.	1286	12.	1287	12.	1288	12.	1289	12.
1290	12.	1291	12.	1292	12.	1293	12.	1294	12.
1295	12.	1296	12.	1297	12.	1298	12.	1299	12.
1300	12.	1310	9.	1320	8.	1330	8.	1340	8.
1350	5.	1360	4.	1370	4.	1380	4.	1390	4.
1400	4.	1420	3.	1440	2.	1460	1.	1500	1.

Total Runoff = 25.977 Acre-Ft.
Peak Q = 230 CFS
Time to Peak Q = 1155 Minutes

MODIFIED RATIONAL METHOD HYDROLOGY

LONG POINT RESORT - MIDDLE WATERSHED HYDROLOGY 50-YR STORM STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	1A	12.	34.	12.	34.	4	200.	0.05000	2.50	0.00	0.	2	10	K50	0.00
34194	2A	3.	9.	15.	42.	4	350.	0.15714	2.50	0.00	0.	2	10	K50	0.42
34194	3A	6.	25.	21.	67.	1	1500.	0.13333	0.00	0.00	0.	2	5	K50	0.00
34194	4A	35.	107.	56.	154.	0	0.	0.00000	0.00	0.00	0.	2	9	K50	0.20
34194	5B	7.	20.	7.	20.	4	700.	0.21429	2.00	0.00	0.	2	10	K50	0.00
34194	6B	18.	56.	25.	76.	1	1300.	0.13846	0.00	0.00	0.	2	9	K50	0.42
34194	7C	23.	86.	23.	86.	4	1200.	0.13333	2.00	0.00	0.	2	6	K50	0.00
34194	8C	18.	56.	41.	140.	1	1200.	0.12900	0.00	0.00	0.	2	9	K50	0.42
34194	9C	42.	147.	83.	258.	0	0.	0.00000	0.00	0.00	0.	2	7	K50	0.22

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*                                                CONFLUENCE Q'S                                                 *
* 34194   10B  TB 1158 QB      71. QBC     299. QC     228.   34194   10C  TC 1156 QC     258. QCB     322. QB      65.  *
*                              34194   10BC TBC 1157 QBC     324. QB      69. QC     254.                                *
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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	10BC	83.	258.	108.	324.	4	300.	0.03160	4.50	0.00	0.	2	0	K50	0.00
34194	11B	3.	12.	111.	332.	4	950.	0.03160	4.50	0.00	0.	2	6	K50	0.90
34194	12B	2.	9.	113.	329.	0	0.	0.00000	0.00	0.00	0.	2	5	K50	0.95

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
* 34194   13A  TA 1157 QA     154. QAB     480. QB     326.   34194   13B  TB 1158 QB     329. QBA     480. QA     151.  *
*                              34194   13AB TAB 1158 QAB     480. QA     151. QB     329.                                *
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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	13AB	113.	329.	169.	480.	3	850.	0.15880	3.00	0.00	0.	2	0	K50	0.00
34194	14D	16.	55.	16.	55.	1	600.	0.10000	0.00	0.00	0.	2	7	K50	0.00
34194	15A	4.	13.	173.	488.	0	0.	0.00000	0.00	0.00	0.	2	8	K50	0.20
34194	16AD	16.	53.	189.	538.	0	0.	0.00000	0.00	0.00	0.	2	0	K50	0.00
34194	17E	42.	149.	42.	149.	0	0.	0.00000	0.00	0.00	0.	2	7	K50	0.35
34194	18F	5.	20.	5.	20.	0	0.	0.00000	0.00	0.00	0.	2	6	K50	0.95

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*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
* 34194   19E  TE 1154 QE     149. QEF     169. QF      20.   34194   19F  TF 1153 QF      20. QFE     169. QE     149.  *
*                              34194   19EF TEF 1153 QEF     169. QE     149. QF      20.                                 *
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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	19EF	5.	20.	47.	169.	2	1050.	0.08950	0.00	0.00	0.	2	0	K50	0.00
34194	20E	27.	90.	74.	253.	0	0.	0.00000	0.00	0.00	0.	2	8	K50	0.45

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY
HYDROGRAPH FOR DOWNSTREAM END OF LINE A

HYDROGRAPH AT 34194 16A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	4.	200	6.	300	9.	400	14.
500	19.	600	27.	700	35.	800	40.	900	50.
1000	66.	1050	69.	1100	83.	1110	91.	1120	105.
1130	119.	1131	119.	1132	120.	1133	121.	1134	122.
1135	123.	1136	125.	1137	128.	1138	132.	1139	137.
1140	143.	1141	150.	1142	159.	1143	169.	1144	181.
1145	192.	1146	202.	1147	212.	1148	224.	1149	236.
1150	249.	1151	270.	1152	308.	1153	363.	1154	421.
1155	470.	1156	505.	1157	528.	1158	538.	1159	525.
1160	485.	1161	423.	1162	359.	1163	308.	1164	270.
1165	239.	1166	211.	1167	185.	1168	163.	1169	145.
1170	131.	1171	121.	1172	113.	1173	107.	1174	102.
1175	98.	1176	95.	1177	92.	1178	90.	1179	88.
1180	86.	1181	85.	1182	84.	1183	83.	1184	82.
1185	82.	1186	81.	1187	81.	1188	81.	1189	80.
1190	80.	1191	80.	1192	80.	1193	79.	1194	78.
1195	77.	1196	76.	1197	75.	1198	74.	1199	72.
1200	71.	1201	70.	1202	69.	1203	69.	1204	68.
1205	67.	1206	67.	1207	66.	1208	66.	1209	66.
1210	66.	1211	65.	1212	65.	1213	64.	1214	64.
1215	63.	1216	62.	1217	61.	1218	59.	1219	58.
1220	57.	1221	56.	1222	55.	1223	54.	1224	54.
1225	53.	1226	53.	1227	52.	1228	52.	1229	51.
1230	51.	1231	51.	1232	50.	1233	50.	1234	49.
1235	49.	1236	48.	1237	48.	1238	47.	1239	46.
1240	45.	1241	45.	1242	44.	1243	44.	1244	43.
1245	43.	1246	43.	1247	42.	1248	42.	1249	42.
1250	41.	1251	41.	1252	41.	1253	41.	1254	41.
1255	41.	1256	41.	1257	41.	1258	41.	1259	41.
1260	41.	1261	41.	1262	41.	1263	41.	1264	40.
1265	40.	1266	40.	1267	40.	1268	39.	1269	39.
1270	38.	1271	38.	1272	38.	1273	38.	1274	38.
1275	37.	1276	37.	1277	37.	1278	37.	1279	37.
1280	37.	1281	37.	1282	36.	1283	36.	1284	36.
1285	36.	1286	36.	1287	36.	1288	36.	1289	36.
1290	36.	1291	36.	1292	36.	1293	36.	1294	36.
1295	36.	1296	36.	1297	36.	1298	36.	1299	36.
1300	36.	1310	30.	1320	25.	1330	23.	1340	22.
1350	18.	1360	13.	1370	12.	1380	11.	1390	11.
1400	11.	1420	8.	1440	5.	1460	4.	1500	4.

Total Runoff = 73.890 Acre-Ft.
Peak Q = 538 CFS
Time to Peak Q = 1158 Minutes

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY
HYDROGRAPH FOR DOWNSTREAM END OF LINE D

HYDROGRAPH AT 34194 20E STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	2.	200	4.	300	5.	400	8.
500	10.	600	14.	700	16.	800	19.	900	23.
1000	30.	1050	30.	1100	37.	1110	41.	1120	48.
1130	52.	1131	52.	1132	53.	1133	53.	1134	53.
1135	54.	1136	56.	1137	58.	1138	62.	1139	66.
1140	70.	1141	75.	1142	81.	1143	87.	1144	92.
1145	95.	1146	99.	1147	103.	1148	108.	1149	112.
1150	119.	1151	139.	1152	173.	1153	215.	1154	242.
1155	253.	1156	250.	1157	239.	1158	219.	1159	181.
1160	134.	1161	92.	1162	71.	1163	61.	1164	55.
1165	51.	1166	48.	1167	45.	1168	42.	1169	40.
1170	40.	1171	39.	1172	39.	1173	38.	1174	38.
1175	37.	1176	37.	1177	36.	1178	36.	1179	35.
1180	35.	1181	35.	1182	35.	1183	35.	1184	35.
1185	35.	1186	35.	1187	35.	1188	35.	1189	35.
1190	35.	1191	35.	1192	34.	1193	34.	1194	33.
1195	32.	1196	31.	1197	31.	1198	30.	1199	29.
1200	29.	1201	29.	1202	29.	1203	29.	1204	29.
1205	29.	1206	29.	1207	29.	1208	29.	1209	29.
1210	29.	1211	29.	1212	28.	1213	28.	1214	27.
1215	26.	1216	25.	1217	25.	1218	24.	1219	23.
1220	23.	1221	23.	1222	23.	1223	23.	1224	23.
1225	23.	1226	23.	1227	23.	1228	23.	1229	23.
1230	23.	1231	23.	1232	22.	1233	22.	1234	22.
1235	21.	1236	21.	1237	20.	1238	20.	1239	19.
1240	19.	1241	19.	1242	19.	1243	19.	1244	19.
1245	19.	1246	19.	1247	19.	1248	19.	1249	19.
1250	19.	1251	19.	1252	19.	1253	19.	1254	19.
1255	19.	1256	19.	1257	19.	1258	19.	1259	19.
1260	19.	1261	19.	1262	19.	1263	19.	1264	18.
1265	18.	1266	18.	1267	18.	1268	17.	1269	17.
1270	17.	1271	17.	1272	17.	1273	17.	1274	17.
1275	17.	1276	17.	1277	17.	1278	17.	1279	17.
1280	17.	1281	17.	1282	17.	1283	17.	1284	17.
1285	17.	1286	17.	1287	17.	1288	17.	1289	17.
1290	17.	1291	17.	1292	17.	1293	17.	1294	17.
1295	17.	1296	17.	1297	17.	1298	17.	1299	17.
1300	17.	1310	13.	1320	11.	1330	11.	1340	11.
1350	7.	1360	6.	1370	6.	1380	6.	1390	6.
1400	6.	1420	3.	1440	3.	1460	1.	1500	1.

Total Runoff = 33.713 Acre-Ft.
Peak Q = 253 CFS
Time to Peak Q = 1155 Minutes

EAST MODEL

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY

LONG POINT RESORT - EAST SIDE HYDROLOGY 25-YR STORM STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	1A	25.	61.	25.	61.	0	0.	0.00000	0.00	0.00	0.	2	11	K25	0.42
34194	2B	29.	56.	29.	56.	0	0.	0.00000	0.00	0.00	0.	2	17	K25	0.42

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* CONFLUENCE Q'S *

* 34194 3A TA 1154 QA 61. QAB 117. QB 56. 34194 3B TB 1154 QB 56. QBA 117. QA 61. *

* 34194 3AB TAB 1154 QAB 117. QA 61. QB 56. *

****

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	3AB	29.	56.	54.	117.	4	2000.	0.15833	4.00	0.00	0.	2	0	K25	0.00
34194	4A	8.	25.	62.	140.	0	0.	0.00000	0.00	0.00	0.	2	7	K25	0.00
34194	5C	5.	21.	5.	21.	1	600.	0.12500	0.00	0.00	0.	2	5	K25	0.90
34194	6C	9.	31.	14.	47.	0	0.	0.00000	0.00	0.00	0.	2	6	K25	0.00
34194	7C	5.	11.	19.	58.	0	0.	0.00000	0.00	0.00	0.	2	13	K25	0.42
34194	8D	4.	17.	4.	17.	0	0.	0.00000	0.00	0.00	0.	2	5	K25	0.90

****

* CONFLUENCE Q'S *

* 34194 9C TC 1154 QC 58. QCD 73. QD 15. 34194 9D TD 1153 QD 17. QDC 72. QC 55. *

* 34194 9CD TCD 1154 QCD 73. QC 58. QD 15. *

****

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	9CD	4.	17.	23.	73.	1	1400.	0.17857	0.00	0.00	0.	2	0	K25	0.00
34194	10C	14.	43.	37.	99.	0	0.	0.00000	0.00	0.00	0.	2	7	K25	0.00

****

* CONFLUENCE Q'S *

* 34194 11A TA 1155 QA 140. QAC 238. QC 98. 34194 11C TC 1156 QC 99. QCA 236. QA 137. *

* 34194 11AC TAC 1155 QAC 238. QA 140. QC 98. *

****

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	11AC	37.	99.	99.	238.	4	1900.	0.06579	4.50	0.00	0.	2	0	K25	0.00
34194	12A	49.	176.	148.	361.	2	400.	0.05000	0.00	0.00	0.	2	6	K25	0.42
34194	13A	24.	57.	172.	416.	0	0.	0.00000	0.00	0.00	0.	2	11	K25	0.20
34194	14E	5.	19.	5.	19.	3	700.	0.11400	0.00	0.00	0.	2	6	K25	0.98

****

* CONFLUENCE Q'S *

* 34194 15A TA 1155 QA 416. QAE 434. QE 18. 34194 15E TE 1155 QE 18. QEA 434. QA 416. *

* 34194 15AE TAE 1155 QAE 434. QA 416. QE 18. *

****

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	15AE	5.	18.	177.	434.	0	0.	0.00000	0.00	0.00	0.	2	0	K25	0.00

MODIFIED RATIONAL METHOD HYDROLOGY

LONG POINT RESORT - EAST SIDE HYDROLOGY 50-YR STORM STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	1A	25.	70.	25.	70.	0	0.	0.00000	0.00	0.00	0.	2	11	K50	0.42
34194	2B	29.	66.	29.	66.	0	0.	0.00000	0.00	0.00	0.	2	17	K50	0.42

```
*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
* 34194    3A  TA 1154 QA      70. QAB     136. QB      66.   34194    3B  TB 1154 QB      66. QBA     136. QA      70.  *
*                            34194    3AB TAB 1154 QAB     136. QA      70. QB      66.                                 *
*****************************************************************************************************************
```

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	3AB	29.	66.	54.	136.	4	2000.	0.15833	4.00	0.00	0.	2	0	K50	0.00
34194	4A	8.	27.	62.	161.	0	0.	0.00000	0.00	0.00	0.	2	7	K50	0.00
34194	5C	5.	23.	5.	23.	1	600.	0.12500	0.00	0.00	0.	2	5	K50	0.90
34194	6C	9.	34.	14.	52.	0	0.	0.00000	0.00	0.00	0.	2	6	K50	0.00
34194	7C	5.	13.	19.	65.	0	0.	0.00000	0.00	0.00	0.	2	13	K50	0.42
34194	8D	4.	18.	4.	18.	0	0.	0.00000	0.00	0.00	0.	2	5	K50	0.90

```
*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
* 34194    9C  TC 1155 QC      65. QCD      81. QD      16.   34194    9D  TD 1153 QD      18. QDC      77. QC      59.  *
*                            34194    9CD TCD 1155 QCD      81. QC      65. QD      16.                                 *
*****************************************************************************************************************
```

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	9CD	4.	18.	23.	81.	1	1400.	0.17857	0.00	0.00	0.	2	0	K50	0.00
34194	10C	14.	48.	37.	114.	0	0.	0.00000	0.00	0.00	0.	2	7	K50	0.00

```
*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
* 34194    11A  TA 1155 QA     161. QAC     268. QC     107.   34194    11C  TC 1157 QC     114. QCA     271. QA     156.  *
*                            34194    11AC TAC 1156 QAC     274. QA     160. QC     113.                                 *
*****************************************************************************************************************
```

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	11AC	37.	114.	99.	274.	4	1900.	0.06579	4.50	0.00	0.	2	0	K50	0.00
34194	12A	49.	191.	148.	424.	2	400.	0.05000	0.00	0.00	0.	2	6	K50	0.42
34194	13A	24.	66.	172.	484.	0	0.	0.00000	0.00	0.00	0.	2	11	K50	0.20
34194	14E	5.	20.	5.	20.	3	700.	0.11400	0.00	0.00	0.	2	6	K50	0.98

```
*****************************************************************************************************************
*                                                CONFLUENCE Q'S                                                 *
* 34194    15A  TA 1156 QA     484. QAE     504. QE      20.   34194    15E  TE 1156 QE      20. QEA     504. QA     484.  *
*                            34194    15AE TAE 1156 QAE     504. QA     484. QE      20.                                 *
*****************************************************************************************************************
```

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	15AE	5.	20.	177.	504.	0	0.	0.00000	0.00	0.00	0.	2	0	K50	0.00

‡

RATIONAL METHOD T_C CALCULATION

APPENDIX C: PROPOSED CONDITION

LONG POINT RESORT
PROPOSED CONDITIONS 25-YEAR
SUBAREA UH

Subarea No. UH 25

TIME OF CONCENTRATION = 5. MINUTES
****

Rainfall : Zone = K
Frequency = 25 Years

Subarea Area = 11. Acres

Outlet Q = 58. cfs

Travel Time:

Reach No.	Reach Time
Land	3.7
1- 1	1.4
Total	5.0

LONG POINT RESORT
PROPOSED CONDITIONS 25-YEAR
SUBAREA UH

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	5.	5	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Val	0	0- 0	2	.000	.169	10.0	326.2	170.6	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	360.0	326.2	.169	.050	2	.000

LONG POINT RESORT
PROPOSED CONDITIONS 25-YEAR
SUBAREA UH

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Val	.00	.0	.00	.00	921.0	.1445	1.0	19.5
Outlet								11.0	58.5

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File UH.INP
Output Data File UH.OUT
Runoff Coefficient Data File RUNCOEF.DAT

LONG POINT RESORT
PROPOSED CONDITIONS 25-YEAR
SUBAREA UE

Subarea No. UE 25

TIME OF CONCENTRATION = 6. MINUTES
****

Rainfall : Zone = K
Frequency = 25 Years

Subarea Area = 20. Acres

Outlet Q = 93. cfs

Travel Time:

Reach No.	Reach Time
Land	4.3
1- 1	1.7
Total	5.9

LONG POINT RESORT
PROPOSED CONDITIONS 25-YEAR
SUBAREA UE

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	6.	6	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Val	0	0- 0	2	.100	.122	18.0	335.6	194.7	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	360.0	335.6	.122	.050	2	.100

LONG POINT RESORT
PROPOSED CONDITIONS 25-YEAR
SUBAREA UE

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Val	.00	.0	.00	.00	1155.0	.1154	1.8	30.9
Outlet								19.8	93.3

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File UE.INP
Output Data File UE.OUT
Runoff Coefficient Data File RUNCOEF.DAT

LONG POINT RESORT
PROPOSED CONDITIONS 25-YEAR
SUBAREA RK

Subarea No. RK 25

TIME OF CONCENTRATION = 4. MINUTES
****

Rainfall : Zone = K
Frequency = 25 Years

Subarea Area = 9. Acres

Outlet Q = 47. cfs

Travel Time:

Reach No.	Reach Time
Land	2.6
1- 1	1.0
Total	3.6

LONG POINT RESORT
PROPOSED CONDITIONS 25-YEAR
SUBAREA RK

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	5.	5	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Channel	0	0- 0	2	.900	.034	8.0	138.3	115.1	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
50.0	140.0	138.3	.034	.050	2	.900

LONG POINT RESORT
PROPOSED CONDITIONS 25-YEAR
SUBAREA RK

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Channel	.71	2.0	.00	.00	682.0	.0340	.8	15.6
Outlet								8.8	46.9

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File RK.INP
Output Data File RK.OUT
Runoff Coefficient Data File RUNCOEF.DAT

LONG POINT RESORT
PROPOSED CONDITIONS 25-YEAR
SUBAREA RS

Subarea No. RS 25

TIME OF CONCENTRATION = 8. MINUTES
****

Rainfall : Zone = K
Frequency = 25 Years

Subarea Area = 12. Acres

Outlet Q = 48. cfs

Travel Time:

Reach No.	Reach Time
Land	5.5
1- 1	2.0
Total	7.5

LONG POINT RESORT
PROPOSED CONDITIONS 25-YEAR
SUBAREA RS

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	8.	8	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Val	0	0- 0	2	.100	.066	11.0	166.8	109.6	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	180.0	166.8	.066	.050	2	.100

LONG POINT RESORT
PROPOSED CONDITIONS 25-YEAR
SUBAREA RS

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Val	.00	.0	.00	.00	867.0	.0660	1.1	15.6
Outlet								12.1	48.1

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File RS.INP
Output Data File RS.OUT
Runoff Coefficient Data File RUNCOEF.DAT

LONG POINT RESORT
PROPOSED CONDITIONS 25-YEAR
SUBAREA RT

Subarea No. RT 25

TIME OF CONCENTRATION = 13. MINUTES
****

Rainfall : Zone = K
Frequency = 25 Years

Subarea Area = 10. Acres

Outlet Q = 28. cfs

Travel Time:

Reach No.	Reach Time
Land	8.5
1- 1	4.6
Total	13.1

LONG POINT RESORT
PROPOSED CONDITIONS 25-YEAR
SUBAREA RT

Input Data:

Rainfall Zone	Frequency (yrs.)	Time of Concentration (min) Assumed	Calculated	Max.Conv Code
K	25	13.	13	0

Component Area Data:

Reach No.	Convey. Type	Strt No.	Junct No.	Soil No.	Prop. Imp.	Map Slope	Area (ac)	Elev. (ft.) Top	Bottom	Ext. Q (cfs)	Fixed Size	Fix S	Fix X
1- 1	Nat.Val	0	0- 0	2	.100	.024	9.0	135.2	110.0	.0	.00	0	0

Code Definitions:
****
Maximum Conveyance Code: 0=no limits
1=street flow maximum at property line
2=pipe maximum size at 8 feet
3=both 1 and 2 apply
Fix=fixed value code: S=size : 0=fixed size is a minimum drain size
1=fixed size is the exact drain size
X=ext.Q: 0=External Q varies with frequency.
1=External Q is constant with frequency change.
Strt No.: Street Cross-Section No. - See Street-Cross-Section Data list.
Junct No.: Reach No. junctioning with top of this reach.

Lot or Overland Flow Data:

Length (ft.)	Elevation (ft) Top	Bottom	Slope	Manning's N	Soil No.	Proportion Impervious
200.0	140.0	135.2	.024	.050	2	.100

LONG POINT RESORT
PROPOSED CONDITIONS 25-YEAR
SUBAREA RT

Reach Data:

Reach No.	Conveyance (ft) Type	Depth	Width	Z Hor	Vert	Length (ft)	Effect. Slope	Area (ac.) at top	Q (cfs) at top
1- 1	Nat.Val	.00	.0	.00	.00	1051.0	.0240	.9	9.4
Outlet								9.9	28.2

Street Cross-Section Data:

Section No.	Depth (feet) No.: 1	2	3	4	Curb Height	Horiz. Distance Curb-Prop. Line	Width (ft.)
1	1.000	1.000	1.000	1.000	1.000	1.	1.

Depth No. 1 = Gutter.
Depth No. 2 = Gutter to Crown.
Depth No. 3 = Crown to Curb.
Depth No. 4 = Curb to Property Line.

Input Data File RT.INP
Output Data File RT.OUT
Runoff Coefficient Data File RUNCOEF.DAT

MODIFIED RATIONAL METHOD

APPENDIX D: PROPOSED CONDITION

WEST MODEL

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

MODIFIED RATIONAL METHOD HYDROLOGY

LONG POINT RESORT - WEST SIDE PROJECT COND. HYDROLOGY 25-YR STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	1A	4.	16.	4.	16.	4	80.	0.03000	2.00	0.00	0.	2	5	K25	0.00
34194	2A	2.	8.	6.	24.	1	575.	0.17400	0.00	0.00	0.	2	5	K25	0.90
34194	3A	3.	12.	9.	30.	0	0.	0.00000	0.00	0.00	0.	2	5	K25	0.00
34194	4B	17.	59.	17.	59.	0	0.	0.00000	0.00	0.00	0.	2	6	K25	0.10
34194	5C	8.	28.	8.	28.	0	0.	0.00000	0.00	0.00	0.	2	6	K25	0.10
34194	6D	4.	17.	4.	17.	0	0.	0.00000	0.00	0.00	0.	2	5	K25	0.90
34194	7D	2.	8.	6.	25.	2	1000.	0.12220	0.00	0.00	0.	2	5	K25	0.90
34194	8D	18.	63.	24.	84.	0	0.	0.00000	0.00	0.00	0.	2	6	K25	0.10

HYDROGRAPH FOR DOWNSTREAM END OF LINE A

HYDROGRAPH AT 34194 3A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	1.	200	1.	300	1.	400	1.
500	1.	600	1.	700	1.	800	1.	900	1.
1000	2.	1050	3.	1100	4.	1110	4.	1120	5.
1130	6.	1131	6.	1132	6.	1133	6.	1134	6.
1135	6.	1136	7.	1137	7.	1138	7.	1139	7.
1140	7.	1141	8.	1142	8.	1143	8.	1144	8.
1145	8.	1146	8.	1147	9.	1148	9.	1149	11.
1150	13.	1151	17.	1152	22.	1153	28.	1154	30.
1155	30.	1156	26.	1157	21.	1158	16.	1159	13.
1160	10.	1161	8.	1162	7.	1163	6.	1164	6.
1165	5.	1166	5.	1167	5.	1168	5.	1169	5.
1170	4.	1171	4.	1172	4.	1173	4.	1174	4.
1175	4.	1176	4.	1177	4.	1178	4.	1179	4.
1180	3.	1181	3.	1182	3.	1183	3.	1184	3.
1185	3.	1186	3.	1187	3.	1188	3.	1189	3.
1190	3.	1191	3.	1192	3.	1193	3.	1194	3.
1195	2.	1196	2.	1197	2.	1198	2.	1199	2.
1200	2.	1201	2.	1202	2.	1203	2.	1204	2.
1205	2.	1206	2.	1207	2.	1208	2.	1209	2.
1210	2.	1211	2.	1212	2.	1213	2.	1214	2.
1215	2.	1216	2.	1217	2.	1218	2.	1219	2.
1220	2.	1221	2.	1222	2.	1223	2.	1224	2.
1225	2.	1226	2.	1227	2.	1228	2.	1229	2.
1230	2.	1231	2.	1232	2.	1233	2.	1234	2.
1235	2.	1236	2.	1237	1.	1238	1.	1239	1.
1240	1.	1241	1.	1242	1.	1243	1.	1244	1.
1245	1.	1246	1.	1247	1.	1248	1.	1249	1.
1250	1.	1251	1.	1252	1.	1253	1.	1254	1.
1255	1.	1256	1.	1257	1.	1258	1.	1259	1.
1260	1.	1261	1.	1262	1.	1263	1.	1264	1.
1265	1.	1266	1.	1267	1.	1268	1.	1269	1.
1270	1.	1271	1.	1272	1.	1273	1.	1274	1.
1275	1.	1276	1.	1277	1.	1278	1.	1279	1.
1280	1.	1281	1.	1282	1.	1283	1.	1284	1.
1285	1.	1286	1.	1287	1.	1288	1.	1289	1.
1290	1.	1291	1.	1292	1.	1293	1.	1294	1.
1295	1.	1296	1.	1297	1.	1298	1.	1299	1.
1300	1.	1310	1.	1320	1.	1330	1.	1340	1.
1350	1.	1360	1.	1370	1.	1380	1.	1390	1.
1400	1.	1420	1.	1440	1.	1460	1.	1500	1.

Total Runoff = 3.162 Acre-Ft.
Peak Q = 30 CFS
Time to Peak Q = 1154 Minutes

HYDROGRAPH FOR DOWNSTREAM END OF LINE B

HYDROGRAPH AT 34194 4B STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	0.	200	0.	300	0.	400	0.
500	1.	600	1.	700	2.	800	2.	900	2.
1000	4.	1050	5.	1100	7.	1110	8.	1120	8.
1130	11.	1131	11.	1132	11.	1133	12.	1134	12.
1135	12.	1136	13.	1137	13.	1138	13.	1139	14.
1140	14.	1141	14.	1142	15.	1143	15.	1144	15.
1145	15.	1146	16.	1147	17.	1148	17.	1149	25.
1150	34.	1151	42.	1152	51.	1153	59.	1154	59.
1155	50.	1156	41.	1157	31.	1158	22.	1159	13.
1160	12.	1161	11.	1162	10.	1163	10.	1164	9.
1165	8.	1166	8.	1167	8.	1168	8.	1169	8.
1170	8.	1171	8.	1172	7.	1173	7.	1174	7.
1175	6.	1176	6.	1177	6.	1178	6.	1179	6.
1180	6.	1181	6.	1182	6.	1183	5.	1184	5.
1185	5.	1186	5.	1187	5.	1188	5.	1189	5.
1190	5.	1191	5.	1192	4.	1193	4.	1194	4.
1195	4.	1196	4.	1197	4.	1198	4.	1199	4.
1200	4.	1201	4.	1202	4.	1203	4.	1204	4.
1205	4.	1206	4.	1207	4.	1208	4.	1209	4.
1210	4.	1211	4.	1212	3.	1213	3.	1214	3.
1215	3.	1216	3.	1217	3.	1218	3.	1219	3.
1220	3.	1221	3.	1222	3.	1223	3.	1224	3.
1225	3.	1226	3.	1227	3.	1228	3.	1229	3.
1230	3.	1231	3.	1232	3.	1233	3.	1234	2.
1235	2.	1236	2.	1237	2.	1238	2.	1239	2.
1240	2.	1241	2.	1242	2.	1243	2.	1244	2.
1245	2.	1246	2.	1247	2.	1248	2.	1249	2.
1250	2.	1251	2.	1252	2.	1253	2.	1254	2.
1255	2.	1256	2.	1257	2.	1258	2.	1259	2.
1260	2.	1261	2.	1262	2.	1263	2.	1264	2.
1265	2.	1266	2.	1267	2.	1268	2.	1269	2.
1270	2.	1271	2.	1272	2.	1273	2.	1274	2.
1275	2.	1276	2.	1277	2.	1278	2.	1279	2.
1280	2.	1281	2.	1282	2.	1283	2.	1284	2.
1285	2.	1286	2.	1287	2.	1288	2.	1289	2.
1290	2.	1291	2.	1292	2.	1293	2.	1294	2.
1295	2.	1296	2.	1297	2.	1298	2.	1299	2.
1300	2.	1310	1.	1320	1.	1330	1.	1340	1.
1350	0.	1360	0.	1370	0.	1380	0.	1390	0.
1400	0.	1420	0.	1440	0.	1460	0.	1500	0.

Total Runoff = 4.143 Acre-Ft.
Peak Q = 59 CFS
Time to Peak Q = 1153 Minutes

HYDROGRAPH FOR DOWNSTREAM END OF LINE C

HYDROGRAPH AT 34194 5C STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	0.	200	0.	300	0.	400	0.
500	0.	600	1.	700	1.	800	1.	900	1.
1000	2.	1050	3.	1100	3.	1110	4.	1120	4.
1130	5.	1131	5.	1132	5.	1133	5.	1134	6.
1135	6.	1136	6.	1137	6.	1138	6.	1139	6.
1140	7.	1141	7.	1142	7.	1143	7.	1144	7.
1145	7.	1146	8.	1147	8.	1148	8.	1149	12.
1150	16.	1151	20.	1152	24.	1153	28.	1154	28.
1155	23.	1156	19.	1157	15.	1158	10.	1159	6.
1160	5.	1161	5.	1162	5.	1163	4.	1164	4.
1165	4.	1166	4.	1167	4.	1168	4.	1169	4.
1170	4.	1171	4.	1172	3.	1173	3.	1174	3.
1175	3.	1176	3.	1177	3.	1178	3.	1179	3.
1180	3.	1181	3.	1182	3.	1183	3.	1184	2.
1185	2.	1186	2.	1187	2.	1188	2.	1189	2.
1190	2.	1191	2.	1192	2.	1193	2.	1194	2.
1195	2.	1196	2.	1197	2.	1198	2.	1199	2.
1200	2.	1201	2.	1202	2.	1203	2.	1204	2.
1205	2.	1206	2.	1207	2.	1208	2.	1209	2.
1210	2.	1211	2.	1212	2.	1213	2.	1214	2.
1215	1.	1216	1.	1217	1.	1218	1.	1219	1.
1220	1.	1221	1.	1222	1.	1223	1.	1224	1.
1225	1.	1226	1.	1227	1.	1228	1.	1229	1.
1230	1.	1231	1.	1232	1.	1233	1.	1234	1.
1235	1.	1236	1.	1237	1.	1238	1.	1239	1.
1240	1.	1241	1.	1242	1.	1243	1.	1244	1.
1245	1.	1246	1.	1247	1.	1248	1.	1249	1.
1250	1.	1251	1.	1252	1.	1253	1.	1254	1.
1255	1.	1256	1.	1257	1.	1258	1.	1259	1.
1260	1.	1261	1.	1262	1.	1263	1.	1264	1.
1265	1.	1266	1.	1267	1.	1268	1.	1269	1.
1270	1.	1271	1.	1272	1.	1273	1.	1274	1.
1275	1.	1276	1.	1277	1.	1278	1.	1279	1.
1280	1.	1281	1.	1282	1.	1283	1.	1284	1.
1285	1.	1286	1.	1287	1.	1288	1.	1289	1.
1290	1.	1291	1.	1292	1.	1293	1.	1294	1.
1295	1.	1296	1.	1297	1.	1298	1.	1299	1.
1300	1.	1310	0.	1320	0.	1330	0.	1340	0.
1350	0.	1360	0.	1370	0.	1380	0.	1390	0.
1400	0.	1420	0.	1440	0.	1460	0.	1500	0.

Total Runoff = 2.004 Acre-Ft.
Peak Q = 28 CFS
Time to Peak Q = 1153 Minutes

HYDROGRAPH FOR DOWNSTREAM END OF LINE D

HYDROGRAPH AT 34194 8D STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	1.	200	1.	300	1.	400	1.
500	2.	600	2.	700	3.	800	4.	900	4.

1000	6.	1050	9.	1100	11.	1110	12.	1120	13.
1130	16.	1131	16.	1132	17.	1133	17.	1134	18.
1135	18.	1136	19.	1137	19.	1138	20.	1139	20.
1140	21.	1141	21.	1142	22.	1143	22.	1144	23.
1145	23.	1146	24.	1147	24.	1148	25.	1149	34.
1150	44.	1151	55.	1152	67.	1153	80.	1154	84.
1155	76.	1156	64.	1157	52.	1158	39.	1159	26.
1160	21.	1161	19.	1162	17.	1163	16.	1164	15.
1165	14.	1166	13.	1167	13.	1168	12.	1169	12.
1170	12.	1171	12.	1172	12.	1173	11.	1174	11.
1175	10.	1176	10.	1177	10.	1178	10.	1179	10.
1180	10.	1181	9.	1182	9.	1183	9.	1184	9.
1185	8.	1186	8.	1187	8.	1188	8.	1189	8.
1190	8.	1191	8.	1192	7.	1193	7.	1194	7.
1195	7.	1196	6.	1197	6.	1198	6.	1199	6.
1200	6.	1201	6.	1202	6.	1203	6.	1204	6.
1205	6.	1206	6.	1207	6.	1208	6.	1209	6.
1210	6.	1211	6.	1212	6.	1213	6.	1214	6.
1215	5.	1216	5.	1217	5.	1218	5.	1219	5.
1220	5.	1221	5.	1222	5.	1223	5.	1224	5.
1225	5.	1226	5.	1227	5.	1228	5.	1229	5.
1230	5.	1231	5.	1232	5.	1233	5.	1234	4.
1235	4.	1236	4.	1237	4.	1238	4.	1239	4.
1240	4.	1241	4.	1242	4.	1243	4.	1244	4.
1245	4.	1246	4.	1247	4.	1248	4.	1249	4.
1250	4.	1251	4.	1252	4.	1253	4.	1254	4.
1255	4.	1256	4.	1257	4.	1258	4.	1259	4.
1260	4.	1261	4.	1262	4.	1263	4.	1264	4.
1265	3.	1266	3.	1267	3.	1268	3.	1269	3.
1270	3.	1271	3.	1272	3.	1273	3.	1274	3.
1275	3.	1276	3.	1277	3.	1278	3.	1279	3.
1280	3.	1281	3.	1282	3.	1283	3.	1284	3.
1285	3.	1286	3.	1287	3.	1288	3.	1289	3.
1290	3.	1291	3.	1292	3.	1293	3.	1294	3.
1295	3.	1296	3.	1297	3.	1298	3.	1299	3.
1300	3.	1310	2.	1320	2.	1330	2.	1340	2.
1350	1.	1360	1.	1370	1.	1380	1.	1390	1.
1400	1.	1420	1.	1440	1.	1460	0.	1500	0.

Total Runoff = 7.559 Acre-Ft.
Peak Q = 84 CFS
Time to Peak Q = 1154 Minutes

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

MODIFIED RATIONAL METHOD HYDROLOGY

LONG POINT RESORT - WEST SIDE PROJECT COND. HYDROLOGY 50-YR STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	1A	4.	17.	4.	17.	4	80.	0.03000	2.00	0.00	0.	2	5	K50	0.00
34194	2A	2.	9.	6.	25.	1	575.	0.17400	0.00	0.00	0.	2	5	K50	0.90
34194	3A	3.	13.	9.	35.	0	0.	0.00000	0.00	0.00	0.	2	5	K50	0.00
34194	4B	17.	64.	17.	64.	0	0.	0.00000	0.00	0.00	0.	2	6	K50	0.10
34194	5C	8.	30.	8.	30.	0	0.	0.00000	0.00	0.00	0.	2	6	K50	0.10
34194	6D	4.	18.	4.	18.	0	0.	0.00000	0.00	0.00	0.	2	5	K50	0.90
34194	7D	2.	9.	6.	27.	2	1000.	0.12220	0.00	0.00	0.	2	5	K50	0.90
34194	8D	18.	68.	24.	90.	0	0.	0.00000	0.00	0.00	0.	2	6	K50	0.10

HYDROGRAPH FOR DOWNSTREAM END OF LINE A

HYDROGRAPH AT 34194 3A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	1.	200	1.	300	1.	400	1.
500	1.	600	1.	700	2.	800	2.	900	2.
1000	3.	1050	3.	1100	4.	1110	4.	1120	5.
1130	6.	1131	6.	1132	6.	1133	6.	1134	6.
1135	6.	1136	6.	1137	7.	1138	7.	1139	8.
1140	8.	1141	9.	1142	10.	1143	10.	1144	11.
1145	11.	1146	12.	1147	12.	1148	13.	1149	13.
1150	14.	1151	17.	1152	22.	1153	28.	1154	33.
1155	35.	1156	33.	1157	27.	1158	21.	1159	16.
1160	12.	1161	9.	1162	8.	1163	7.	1164	6.
1165	6.	1166	5.	1167	5.	1168	5.	1169	5.
1170	4.	1171	4.	1172	4.	1173	4.	1174	4.
1175	4.	1176	4.	1177	4.	1178	4.	1179	4.
1180	4.	1181	4.	1182	4.	1183	4.	1184	4.
1185	4.	1186	4.	1187	4.	1188	4.	1189	4.
1190	4.	1191	4.	1192	4.	1193	4.	1194	4.
1195	3.	1196	3.	1197	3.	1198	3.	1199	3.
1200	3.	1201	3.	1202	3.	1203	3.	1204	3.
1205	3.	1206	3.	1207	3.	1208	3.	1209	3.
1210	3.	1211	3.	1212	3.	1213	3.	1214	3.
1215	3.	1216	3.	1217	3.	1218	3.	1219	2.
1220	2.	1221	2.	1222	2.	1223	2.	1224	2.
1225	2.	1226	2.	1227	2.	1228	2.	1229	2.
1230	2.	1231	2.	1232	2.	1233	2.	1234	2.
1235	2.	1236	2.	1237	2.	1238	2.	1239	2.
1240	2.	1241	2.	1242	2.	1243	2.	1244	2.
1245	2.	1246	2.	1247	2.	1248	2.	1249	2.
1250	2.	1251	2.	1252	2.	1253	2.	1254	2.
1255	2.	1256	2.	1257	2.	1258	2.	1259	2.
1260	2.	1261	2.	1262	2.	1263	2.	1264	2.
1265	2.	1266	2.	1267	2.	1268	2.	1269	2.
1270	2.	1271	2.	1272	2.	1273	2.	1274	2.
1275	2.	1276	2.	1277	2.	1278	2.	1279	2.
1280	2.	1281	2.	1282	2.	1283	2.	1284	2.
1285	2.	1286	2.	1287	2.	1288	2.	1289	2.
1290	2.	1291	2.	1292	2.	1293	2.	1294	2.
1295	2.	1296	2.	1297	2.	1298	2.	1299	2.
1300	2.	1310	1.	1320	1.	1330	1.	1340	1.
1350	1.	1360	1.	1370	1.	1380	1.	1390	1.
1400	1.	1420	1.	1440	1.	1460	1.	1500	1.

Total Runoff = 3.910 Acre-Ft.
Peak Q = 35 CFS
Time to Peak Q = 1155 Minutes

HYDROGRAPH FOR DOWNSTREAM END OF LINE B

HYDROGRAPH AT 34194 4B STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	0.	200	0.	300	1.	400	1.
500	2.	600	2.	700	3.	800	3.	900	4.
1000	6.	1050	6.	1100	7.	1110	8.	1120	10.
1130	11.	1131	11.	1132	11.	1133	11.	1134	11.
1135	11.	1136	13.	1137	14.	1138	15.	1139	16.
1140	17.	1141	19.	1142	19.	1143	20.	1144	21.
1145	22.	1146	23.	1147	24.	1148	24.	1149	26.
1150	29.	1151	41.	1152	54.	1153	64.	1154	64.
1155	61.	1156	56.	1157	43.	1158	27.	1159	15.
1160	13.	1161	12.	1162	11.	1163	10.	1164	9.
1165	9.	1166	8.	1167	8.	1168	8.	1169	8.
1170	8.	1171	8.	1172	7.	1173	7.	1174	7.
1175	7.	1176	7.	1177	7.	1178	7.	1179	7.
1180	7.	1181	7.	1182	7.	1183	7.	1184	7.
1185	7.	1186	7.	1187	7.	1188	7.	1189	7.
1190	7.	1191	7.	1192	6.	1193	6.	1194	6.
1195	6.	1196	5.	1197	5.	1198	5.	1199	5.
1200	5.	1201	5.	1202	5.	1203	5.	1204	5.
1205	5.	1206	5.	1207	5.	1208	5.	1209	5.
1210	5.	1211	5.	1212	5.	1213	5.	1214	5.
1215	4.	1216	4.	1217	4.	1218	4.	1219	4.
1220	4.	1221	4.	1222	4.	1223	4.	1224	4.
1225	4.	1226	4.	1227	4.	1228	4.	1229	4.
1230	4.	1231	4.	1232	4.	1233	4.	1234	4.
1235	3.	1236	3.	1237	3.	1238	3.	1239	3.
1240	3.	1241	3.	1242	3.	1243	3.	1244	3.
1245	3.	1246	3.	1247	3.	1248	3.	1249	3.
1250	3.	1251	3.	1252	3.	1253	3.	1254	3.
1255	3.	1256	3.	1257	3.	1258	3.	1259	3.
1260	3.	1261	3.	1262	3.	1263	3.	1264	3.
1265	3.	1266	3.	1267	3.	1268	3.	1269	3.
1270	3.	1271	3.	1272	3.	1273	3.	1274	3.
1275	3.	1276	3.	1277	3.	1278	3.	1279	3.
1280	3.	1281	3.	1282	3.	1283	3.	1284	3.
1285	3.	1286	3.	1287	3.	1288	3.	1289	3.
1290	3.	1291	3.	1292	3.	1293	3.	1294	3.
1295	3.	1296	3.	1297	3.	1298	3.	1299	3.
1300	3.	1310	2.	1320	2.	1330	2.	1340	2.
1350	1.	1360	1.	1370	1.	1380	1.	1390	1.
1400	1.	1420	0.	1440	0.	1460	0.	1500	0.

Total Runoff = 6.047 Acre-Ft.
Peak Q = 64 CFS
Time to Peak Q = 1153 Minutes

HYDROGRAPH FOR DOWNSTREAM END OF LINE C

HYDROGRAPH AT 34194 5C STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	0.	200	0.	300	0.	400	0.
500	1.	600	1.	700	1.	800	2.	900	2.
1000	3.	1050	3.	1100	3.	1110	4.	1120	5.
1130	5.	1131	5.	1132	5.	1133	5.	1134	5.
1135	5.	1136	6.	1137	6.	1138	7.	1139	7.
1140	8.	1141	9.	1142	9.	1143	10.	1144	10.
1145	10.	1146	11.	1147	11.	1148	11.	1149	12.
1150	14.	1151	19.	1152	25.	1153	30.	1154	30.
1155	29.	1156	26.	1157	20.	1158	13.	1159	7.
1160	6.	1161	5.	1162	5.	1163	5.	1164	4.
1165	4.	1166	4.	1167	4.	1168	4.	1169	4.
1170	4.	1171	4.	1172	3.	1173	3.	1174	3.
1175	3.	1176	3.	1177	3.	1178	3.	1179	3.
1180	3.	1181	3.	1182	3.	1183	3.	1184	3.
1185	3.	1186	3.	1187	3.	1188	3.	1189	3.
1190	3.	1191	3.	1192	3.	1193	3.	1194	3.
1195	3.	1196	3.	1197	3.	1198	3.	1199	3.
1200	3.	1201	3.	1202	3.	1203	3.	1204	3.
1205	3.	1206	3.	1207	3.	1208	3.	1209	3.
1210	3.	1211	2.	1212	2.	1213	2.	1214	2.
1215	2.	1216	2.	1217	2.	1218	2.	1219	2.
1220	2.	1221	2.	1222	2.	1223	2.	1224	2.
1225	2.	1226	2.	1227	2.	1228	2.	1229	2.
1230	2.	1231	2.	1232	2.	1233	2.	1234	2.
1235	2.	1236	2.	1237	2.	1238	2.	1239	2.
1240	2.	1241	2.	1242	2.	1243	2.	1244	2.
1245	2.	1246	2.	1247	2.	1248	2.	1249	2.
1250	2.	1251	2.	1252	2.	1253	2.	1254	2.
1255	2.	1256	2.	1257	2.	1258	2.	1259	2.
1260	2.	1261	2.	1262	2.	1263	1.	1264	1.
1265	1.	1266	1.	1267	1.	1268	1.	1269	1.
1270	1.	1271	1.	1272	1.	1273	1.	1274	1.
1275	1.	1276	1.	1277	1.	1278	1.	1279	1.
1280	1.	1281	1.	1282	1.	1283	1.	1284	1.
1285	1.	1286	1.	1287	1.	1288	1.	1289	1.
1290	1.	1291	1.	1292	1.	1293	1.	1294	1.
1295	1.	1296	1.	1297	1.	1298	1.	1299	1.
1300	1.	1310	1.	1320	1.	1330	1.	1340	1.
1350	0.	1360	0.	1370	0.	1380	0.	1390	0.
1400	0.	1420	0.	1440	0.	1460	0.	1500	0.

Total Runoff = 2.760 Acre-Ft.
Peak Q = 30 CFS
Time to Peak Q = 1153 Minutes

HYDROGRAPH FOR DOWNSTREAM END OF LINE D

HYDROGRAPH AT 34194 8D STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	1.	200	1.	300	1.	400	2.
500	3.	600	4.	700	5.	800	6.	900	7.

1000	9.	1050	9.	1100	11.	1110	13.	1120	15.
1130	16.	1131	16.	1132	16.	1133	17.	1134	17.
1135	17.	1136	18.	1137	20.	1138	21.	1139	23.
1140	24.	1141	27.	1142	28.	1143	29.	1144	30.
1145	32.	1146	33.	1147	34.	1148	35.	1149	37.
1150	41.	1151	54.	1152	70.	1153	85.	1154	89.
1155	90.	1156	85.	1157	68.	1158	48.	1159	30.
1160	24.	1161	21.	1162	18.	1163	17.	1164	15.
1165	14.	1166	13.	1167	13.	1168	12.	1169	12.
1170	12.	1171	12.	1172	12.	1173	12.	1174	11.
1175	11.	1176	11.	1177	11.	1178	11.	1179	11.
1180	11.	1181	11.	1182	11.	1183	11.	1184	11.
1185	11.	1186	11.	1187	11.	1188	11.	1189	11.
1190	11.	1191	10.	1192	10.	1193	10.	1194	10.
1195	9.	1196	9.	1197	9.	1198	9.	1199	9.
1200	9.	1201	9.	1202	9.	1203	9.	1204	9.
1205	9.	1206	9.	1207	9.	1208	9.	1209	9.
1210	9.	1211	9.	1212	8.	1213	8.	1214	8.
1215	7.	1216	7.	1217	7.	1218	7.	1219	7.
1220	7.	1221	7.	1222	7.	1223	7.	1224	7.
1225	7.	1226	7.	1227	7.	1228	7.	1229	7.
1230	7.	1231	7.	1232	7.	1233	6.	1234	6.
1235	6.	1236	6.	1237	6.	1238	6.	1239	6.
1240	6.	1241	6.	1242	6.	1243	6.	1244	6.
1245	6.	1246	6.	1247	6.	1248	6.	1249	6.
1250	6.	1251	6.	1252	6.	1253	6.	1254	6.
1255	6.	1256	6.	1257	6.	1258	6.	1259	6.
1260	6.	1261	6.	1262	5.	1263	5.	1264	5.
1265	5.	1266	5.	1267	5.	1268	5.	1269	5.
1270	5.	1271	5.	1272	5.	1273	5.	1274	5.
1275	5.	1276	5.	1277	5.	1278	5.	1279	5.
1280	5.	1281	5.	1282	5.	1283	5.	1284	5.
1285	5.	1286	5.	1287	5.	1288	5.	1289	5.
1290	5.	1291	5.	1292	5.	1293	5.	1294	5.
1295	5.	1296	5.	1297	5.	1298	5.	1299	5.
1300	5.	1310	3.	1320	3.	1330	3.	1340	3.
1350	2.	1360	2.	1370	2.	1380	2.	1390	2.
1400	2.	1420	1.	1440	1.	1460	0.	1500	0.

Total Runoff = 10.159 Acre-Ft.
Peak Q = 90 CFS
Time to Peak Q = 1155 Minutes

MIDDLE MODEL

MODIFIED RATIONAL METHOD HYDROLOGY

LONG POINT RESORT - PROJECT COND. MIDDLE HYDROLOGY 25-YR STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	1A	8.	31.	8.	31.	4	170.	0.08200	1.50	0.00	0.	2	5	K25	0.04
34194	2A	2.	8.	10.	38.	4	250.	0.07800	1.50	0.00	0.	2	5	K25	0.90
34194	3A	1.	4.	11.	42.	4	150.	0.06400	2.00	0.00	0.	2	5	K25	0.90
34194	4B	1.	4.	1.	4.	4	250.	0.06400	1.50	0.00	0.	2	5	K25	0.10

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* CONFLUENCE Q'S *

* 34194 5A TA 1154 QA 41. QAB 45. QB 4. 34194 5B TB 1154 QB 4. QBA 45. QA 41. *

* 34194 5AB TAB 1154 QAB 45. QA 41. QB 4. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	5AB	1.	4.	12.	45.	4	200.	0.06400	2.50	0.00	0.	2	0	K25	0.00
34194	6A	1.	4.	13.	48.	4	750.	0.03000	2.50	0.00	0.	2	5	K25	0.00
34194	7A	6.	24.	19.	63.	4	350.	0.06000	2.50	0.00	0.	2	5	K25	0.42
34194	8A	4.	17.	23.	76.	0	0.	0.00000	0.00	0.00	0.	2	5	K25	0.90
34194	9C	7.	17.	7.	17.	4	400.	0.03600	2.00	0.00	0.	2	10	K25	0.10
34194	10C	1.	4.	8.	21.	4	800.	0.03600	2.50	0.00	0.	2	5	K25	1.00
34194	11C	6.	26.	14.	41.	4	100.	0.06000	2.50	0.00	0.	2	5	K25	1.00
34194	12D	2.	9.	2.	9.	4	400.	0.06000	1.50	0.00	0.	2	5	K25	1.00

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* CONFLUENCE Q'S *

* 34194 13C TC 1154 QC 41. QCD 49. QD 8. 34194 13D TD 1154 QD 8. QDC 49. QC 41. *

* 34194 13CD TCD 1154 QCD 49. QC 41. QD 8. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	13CD	2.	8.	16.	49.	4	400.	0.06000	3.00	0.00	0.	2	0	K25	0.00

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* CONFLUENCE Q'S *

* 34194 14A TA 1154 QA 76. QAC 125. QC 48. 34194 14C TC 1154 QC 48. QCA 125. QA 76. *

* 34194 14AC TAC 1154 QAC 125. QA 76. QC 48. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	14AC	16.	48.	39.	125.	4	800.	0.08700	4.00	0.00	0.	2	0	K25	0.00
34194	15A	2.	8.	41.	128.	0	0.	0.00000	0.00	0.00	0.	2	5	K25	0.00
34194	16E	2.	8.	2.	8.	4	270.	0.07400	1.50	0.00	0.	2	5	K25	0.90

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* CONFLUENCE Q'S *

* 34194 17A TA 1155 QA 128. QAE 135. QE 7. 34194 17E TE 1153 QE 8. QEA 116. QA 108. *

* 34194 17AE TAE 1155 QAE 135. QA 128. QE 7. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	17AE	2.	8.	43.	135.	0	0.	0.00000	0.00	0.00	0.	2	0	K25	0.00
34194	18F	8.	34.	8.	34.	4	300.	0.02800	1.50	0.00	0.	2	5	K25	0.90

LONG POINT RESORT - PROJECT COND. MIDDLE HYDROLOGY 25-YR STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	19F	3.	12.	11.	44.	4	110.	0.02800	1.50	0.00	0.	2	5	K25	0.42

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* CONFLUENCE Q'S *

* 34194 20A TA 1155 QA 135. QAF 170. QF 35. 34194 20F TF 1153 QF 44. QFA 160. QA 116. *

* 34194 20AF TAF 1154 QAF 174. QA 132. QF 42. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	20AF	11.	44.	54.	174.	4	20.	0.02800	5.00	0.00	0.	2	0	K25	0.00

1 9-21-2000 SITE LICENSEE: ROBERT BEIN, WILLIAM FROST

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY
HYDROGRAPH FOR DOWNSTREAM END OF LINE A (DISCHARGE PT. 2)

HYDROGRAPH AT 34194 20A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	4.	200	4.	300	5.	400	5.
500	6.	600	7.	700	9.	800	11.	900	11.
1000	17.	1050	22.	1100	28.	1110	30.	1120	32.
1130	37.	1131	38.	1132	39.	1133	40.	1134	41.
1135	43.	1136	44.	1137	45.	1138	46.	1139	47.
1140	48.	1141	49.	1142	51.	1143	52.	1144	53.
1145	54.	1146	55.	1147	56.	1148	58.	1149	65.
1150	81.	1151	104.	1152	132.	1153	160.	1154	174.
1155	170.	1156	157.	1157	136.	1158	111.	1159	88.
1160	73.	1161	64.	1162	57.	1163	51.	1164	46.
1165	42.	1166	38.	1167	35.	1168	34.	1169	32.
1170	32.	1171	31.	1172	30.	1173	29.	1174	29.
1175	28.	1176	27.	1177	26.	1178	26.	1179	25.
1180	25.	1181	25.	1182	24.	1183	24.	1184	23.
1185	23.	1186	22.	1187	22.	1188	21.	1189	21.
1190	21.	1191	21.	1192	20.	1193	20.	1194	19.
1195	19.	1196	18.	1197	18.	1198	17.	1199	17.
1200	17.	1201	17.	1202	17.	1203	17.	1204	17.
1205	17.	1206	17.	1207	17.	1208	17.	1209	17.
1210	17.	1211	17.	1212	16.	1213	16.	1214	16.
1215	15.	1216	15.	1217	15.	1218	14.	1219	14.
1220	14.	1221	14.	1222	14.	1223	14.	1224	14.
1225	14.	1226	14.	1227	14.	1228	14.	1229	14.
1230	14.	1231	14.	1232	13.	1233	13.	1234	13.
1235	13.	1236	12.	1237	12.	1238	12.	1239	12.
1240	12.	1241	11.	1242	11.	1243	11.	1244	11.
1245	11.	1246	11.	1247	11.	1248	11.	1249	11.
1250	11.	1251	11.	1252	11.	1253	11.	1254	11.
1255	11.	1256	11.	1257	11.	1258	11.	1259	11.
1260	11.	1261	11.	1262	11.	1263	11.	1264	11.
1265	11.	1266	10.	1267	10.	1268	10.	1269	10.
1270	10.	1271	10.	1272	10.	1273	10.	1274	10.
1275	10.	1276	10.	1277	10.	1278	10.	1279	10.
1280	10.	1281	10.	1282	10.	1283	10.	1284	10.
1285	10.	1286	10.	1287	10.	1288	10.	1289	10.
1290	10.	1291	10.	1292	10.	1293	10.	1294	10.
1295	10.	1296	10.	1297	10.	1298	10.	1299	10.
1300	10.	1310	8.	1320	7.	1330	7.	1340	7.
1350	5.	1360	5.	1370	5.	1380	5.	1390	5.
1400	5.	1420	4.	1440	4.	1460	4.	1500	4.

Total Runoff = 21.902 Acre-Ft.
Peak Q = 174 CFS
Time to Peak Q = 1154 Minutes

MODIFIED RATIONAL METHOD HYDROLOGY

LONG POINT RESORT - PROJECT COND. MIDDLE HYDROLOGY 50-YR STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	1A	8.	34.	8.	34.	4	170.	0.08200	1.50	0.00	0.	2	5	K50	0.04
34194	2A	2.	9.	10.	42.	4	250.	0.07800	1.50	0.00	0.	2	5	K50	0.90
34194	3A	1.	5.	11.	46.	4	150.	0.06400	2.00	0.00	0.	2	5	K50	0.90
34194	4B	1.	4.	1.	4.	4	250.	0.06400	1.50	0.00	0.	2	5	K50	0.10

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* CONFLUENCE Q'S *

* 34194 5A TA 1154 QA 46. QAB 50. QB 4. 34194 5B TB 1154 QB 4. QBA 50. QA 46. *

* 34194 5AB TAB 1154 QAB 50. QA 46. QB 4. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	5AB	1.	4.	12.	50.	4	200.	0.06400	2.50	0.00	0.	2	0	K50	0.00
34194	6A	1.	4.	13.	54.	4	750.	0.03000	2.50	0.00	0.	2	5	K50	0.00
34194	7A	6.	26.	19.	74.	4	350.	0.06000	2.50	0.00	0.	2	5	K50	0.42
34194	8A	4.	18.	23.	88.	0	0.	0.00000	0.00	0.00	0.	2	5	K50	0.90
34194	9C	7.	20.	7.	20.	4	400.	0.03600	2.00	0.00	0.	2	10	K50	0.10
34194	10C	1.	5.	8.	24.	4	800.	0.03600	2.50	0.00	0.	2	5	K50	1.00
34194	11C	6.	27.	14.	48.	4	100.	0.06000	2.50	0.00	0.	2	5	K50	1.00
34194	12D	2.	9.	2.	9.	4	400.	0.06000	1.50	0.00	0.	2	5	K50	1.00

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* CONFLUENCE Q'S *

* 34194 13C TC 1155 QC 48. QCD 56. QD 9. 34194 13D TD 1154 QD 9. QDC 56. QC 47. *

* 34194 13CD TCD 1155 QCD 56. QC 48. QD 9. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	13CD	2.	9.	16.	56.	4	400.	0.06000	3.00	0.00	0.	2	0	K50	0.00

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* CONFLUENCE Q'S *

* 34194 14A TA 1155 QA 88. QAC 144. QC 56. 34194 14C TC 1155 QC 56. QCA 144. QA 88. *

* 34194 14AC TAC 1155 QAC 144. QA 88. QC 56. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	14AC	16.	56.	39.	144.	4	800.	0.08700	4.00	0.00	0.	2	0	K50	0.00
34194	15A	2.	8.	41.	147.	0	0.	0.00000	0.00	0.00	0.	2	5	K50	0.00
34194	16E	2.	9.	2.	9.	4	270.	0.07400	1.50	0.00	0.	2	5	K50	0.90

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* CONFLUENCE Q'S *

* 34194 17A TA 1156 QA 147. QAE 154. QE 7. 34194 17E TE 1154 QE 9. QEA 141. QA 132. *

* 34194 17AE TAE 1155 QAE 155. QA 146. QE 9. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	17AE	2.	9.	43.	155.	0	0.	0.00000	0.00	0.00	0.	2	0	K50	0.00
34194	18F	8.	36.	8.	36.	4	300.	0.02800	1.50	0.00	0.	2	5	K50	0.90

LONG POINT RESORT - PROJECT COND. MIDDLE HYDROLOGY 50-YR STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	19F	3.	13.	11.	48.	4	110.	0.02800	1.50	0.00	0.	2	5	K50	0.42

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* CONFLUENCE Q'S *

* 34194 20A TA 1155 QA 155. QAF 201. QF 46. 34194 20F TF 1154 QF 48. QFA 189. QA 141. *

* 34194 20AF TAF 1155 QAF 201. QA 155. QF 46. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	20AF	11.	48.	54.	201.	4	20.	0.02800	5.00	0.00	0.	2	0	K50	0.00

1 9-21-2000 SITE LICENSEE: ROBERT BEIN, WILLIAM FROST

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY
HYDROGRAPH FOR DOWNSTREAM END OF LINE A (DISCHARGE PT. 2)

HYDROGRAPH AT 34194 20A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	4.	200	5.	300	6.	400	7.
500	9.	600	11.	700	13.	800	15.	900	18.
1000	23.	1050	24.	1100	28.	1110	31.	1120	36.
1130	39.	1131	39.	1132	40.	1133	40.	1134	41.
1135	41.	1136	42.	1137	44.	1138	47.	1139	50.
1140	54.	1141	57.	1142	61.	1143	64.	1144	68.
1145	71.	1146	74.	1147	77.	1148	79.	1149	83.
1150	88.	1151	103.	1152	132.	1153	166.	1154	189.
1155	201.	1156	191.	1157	167.	1158	134.	1159	106.
1160	85.	1161	72.	1162	63.	1163	56.	1164	50.
1165	45.	1166	40.	1167	37.	1168	34.	1169	33.
1170	32.	1171	31.	1172	30.	1173	30.	1174	29.
1175	29.	1176	28.	1177	28.	1178	28.	1179	27.
1180	27.	1181	27.	1182	27.	1183	27.	1184	27.
1185	27.	1186	27.	1187	27.	1188	27.	1189	27.
1190	27.	1191	27.	1192	26.	1193	26.	1194	25.
1195	25.	1196	24.	1197	24.	1198	23.	1199	23.
1200	23.	1201	23.	1202	23.	1203	23.	1204	23.
1205	23.	1206	22.	1207	22.	1208	22.	1209	22.
1210	22.	1211	22.	1212	22.	1213	22.	1214	21.
1215	20.	1216	20.	1217	19.	1218	19.	1219	19.
1220	19.	1221	18.	1222	18.	1223	18.	1224	18.
1225	18.	1226	18.	1227	18.	1228	18.	1229	18.
1230	18.	1231	18.	1232	18.	1233	17.	1234	17.
1235	17.	1236	16.	1237	16.	1238	16.	1239	16.
1240	16.	1241	15.	1242	15.	1243	15.	1244	15.
1245	15.	1246	15.	1247	15.	1248	15.	1249	15.
1250	15.	1251	15.	1252	15.	1253	15.	1254	15.
1255	15.	1256	15.	1257	15.	1258	15.	1259	15.
1260	15.	1261	15.	1262	15.	1263	15.	1264	15.
1265	15.	1266	14.	1267	14.	1268	14.	1269	14.
1270	14.	1271	14.	1272	14.	1273	14.	1274	14.
1275	14.	1276	14.	1277	14.	1278	14.	1279	14.
1280	14.	1281	14.	1282	14.	1283	14.	1284	14.
1285	14.	1286	14.	1287	14.	1288	14.	1289	14.
1290	14.	1291	14.	1292	14.	1293	14.	1294	14.
1295	14.	1296	14.	1297	14.	1298	14.	1299	14.
1300	14.	1310	11.	1320	9.	1330	10.	1340	9.
1350	7.	1360	6.	1370	6.	1380	6.	1390	6.
1400	6.	1420	4.	1440	4.	1460	4.	1500	4.

Total Runoff = 27.826 Acre-Ft.
Peak Q = 201 CFS
Time to Peak Q = 1155 Minutes

EAST MODEL

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY

LONG POINT RESORT - PROJECT COND. EAST SIDE HYDROLOGY 25-YR STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	1A	25.	61.	25.	61.	0	0.	0.00000	0.00	0.00	0.	2	11	K25	0.42
34194	2B	29.	56.	29.	56.	0	0.	0.00000	0.00	0.00	0.	2	17	K25	0.42

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* CONFLUENCE Q'S *

* 34194 3A TA 1154 QA 61. QAB 117. QB 56. 34194 3B TB 1154 QB 56. QBA 117. QA 61. *

* 34194 3AB TAB 1154 QAB 117. QA 61. QB 56. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	3AB	29.	56.	54.	117.	4	2000.	0.15833	4.00	0.00	0.	2	0	K25	0.00
34194	4A	8.	25.	62.	140.	0	0.	0.00000	0.00	0.00	0.	2	7	K25	0.00
34194	5C	5.	21.	5.	21.	1	600.	0.12500	0.00	0.00	0.	2	5	K25	0.90
34194	6C	9.	31.	14.	47.	0	0.	0.00000	0.00	0.00	0.	2	6	K25	0.00
34194	7C	5.	11.	19.	58.	0	0.	0.00000	0.00	0.00	0.	2	13	K25	0.42
34194	8D	4.	17.	4.	17.	0	0.	0.00000	0.00	0.00	0.	2	5	K25	0.90

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* CONFLUENCE Q'S *

* 34194 9C TC 1154 QC 58. QCD 73. QD 15. 34194 9D TD 1153 QD 17. QDC 72. QC 55. *

* 34194 9CD TCD 1154 QCD 73. QC 58. QD 15. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	9CD	4.	17.	23.	73.	1	1400.	0.17857	0.00	0.00	0.	2	0	K25	0.00
34194	10C	14.	43.	37.	99.	0	0.	0.00000	0.00	0.00	0.	2	7	K25	0.00

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* CONFLUENCE Q'S *

* 34194 11A TA 1155 QA 140. QAC 238. QC 98. 34194 11C TC 1156 QC 99. QCA 236. QA 137. *

* 34194 11AC TAC 1155 QAC 238. QA 140. QC 98. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	11AC	37.	99.	99.	238.	4	1900.	0.06579	4.50	0.00	0.	2	0	K25	0.00
34194	12A	49.	176.	148.	361.	2	400.	0.05000	0.00	0.00	0.	2	6	K25	0.42
34194	13B	23.	79.	23.	79.	4	1200.	0.13333	2.00	0.00	0.	2	6	K25	0.00
34194	14B	18.	50.	41.	126.	1	1200.	0.12900	0.00	0.00	0.	2	9	K25	0.42
34194	15B	20.	62.	61.	163.	4	250.	0.11000	2.50	0.00	0.	2	7	K25	0.00
34194	16B	3.	12.	64.	169.	2	1000.	0.06600	0.00	0.00	0.	2	5	K25	0.42
34194	17B	11.	32.	75.	189.	0	0.	0.00000	0.00	0.00	0.	2	8	K25	0.10
34194	18C	12.	29.	12.	29.	4	200.	0.05000	2.50	0.00	0.	2	10	K25	0.00
34194	19C	3.	8.	15.	37.	4	350.	0.15714	2.50	0.00	0.	2	10	K25	0.42
34194	20C	10.	39.	25.	73.	1	1050.	0.13000	0.00	0.00	0.	2	5	K25	0.00
34194	21C	5.	20.	30.	75.	4	270.	0.13000	2.50	0.00	0.	2	5	K25	0.10
34194	22C	10.	39.	40.	100.	4	350.	0.06700	2.50	0.00	0.	2	5	K25	0.10
34194	23C	2.	8.	42.	106.	4	100.	0.08200	2.00	0.00	0.	2	5	K25	0.00
34194	24C	13.	40.	55.	146.	4	750.	0.04400	3.00	0.00	0.	2	7	K25	0.00
34194	25C	4.	16.	59.	154.	0	0.	0.00000	0.00	0.00	0.	2	5	K25	0.10

LONG POINT RESORT - PROJECT COND. EAST SIDE HYDROLOGY 25-YR STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	26D	7.	17.	7.	17.	4	700.	0.21429	2.00	0.00	0.	2	10	K25	0.00
34194	27D	18.	50.	25.	67.	1	1300.	0.13846	0.00	0.00	0.	2	9	K25	0.42
34194	28D	30.	95.	55.	144.	4	450.	0.01500	2.50	0.00	0.	2	7	K25	0.22
34194	29D	6.	24.	61.	159.	4	300.	0.01500	3.00	0.00	0.	2	5	K25	0.42

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* CONFLUENCE Q'S *

* 34194 30C TC 1155 QC 154. QCD 311. QD 157. 34194 30D TD 1155 QD 157. QDC 311. QC 154. *

* 34194 30CD TCD 1155 QCD 311. QC 154. QD 157. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	30CD	61.	157.	120.	311.	2	1200.	0.02400	0.00	0.00	0.	2	0	K25	0.00
34194	31C	9.	19.	129.	313.	0	0.	0.00000	0.00	0.00	0.	2	13	K25	0.10

****

* CONFLUENCE Q'S *

* 34194 32B TB 1157 QB 189. QBC 497. QC 309. 34194 32C TC 1158 QC 313. QCB 499. QB 186. *

* 34194 32BC TBC 1158 QBC 499. QB 186. QC 313. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	32BC	129.	313.	204.	499.	2	220.	0.06400	0.00	0.00	0.	2	0	K25	0.00
34194	33B	1.	4.	205.	499.	0	0.	0.00000	0.00	0.00	0.	2	5	K25	0.10
34194	34B	1.	4.	206.	500.	0	0.	0.00000	0.00	0.00	0.	2	5	K25	0.10

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* CONFLUENCE Q'S *

* 34194 35A TA 1155 QA 360. QAB 769. QB 409. 34194 35B TB 1158 QB 500. QBA 816. QA 316. *

* 34194 35AB TAB 1157 QAB 835. QA 341. QB 494. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	35AB	206.	500.	354.	835.	4	200.	0.03500	6.00	0.00	0.	2	0	K25	0.00
34194	36A	2.	8.	356.	835.	4	350.	0.03500	6.00	0.00	0.	2	5	K25	0.42
34194	37A	2.	8.	358.	831.	0	0.	0.00000	0.00	0.00	0.	2	5	K25	0.00
34194	38E	2.	8.	2.	8.	4	250.	0.03500	1.50	0.00	0.	2	5	K25	0.90

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* CONFLUENCE Q'S *

* 34194 39A TA 1158 QA 831. QAE 834. QE 3. 34194 39E TE 1154 QE 8. QEA 667. QA 659. *

* 34194 39AE TAE 1158 QAE 834. QA 831. QE 3. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	39AE	2.	8.	360.	834.	4	350.	0.03500	6.00	0.00	0.	2	0	K25	0.00

1 9-21-2000 SITE LICENSEE: ROBERT BEIN, WILLIAM FROST

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY
HYDROGRAPH FOR DOWNSTREAM END OF LINE A (DISCHARGE PT. 1)

HYDROGRAPH AT 34194 39A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	8.	200	10.	300	13.	400	16.
500	24.	600	32.	700	42.	800	54.	900	56.
1000	89.	1050	121.	1100	157.	1110	170.	1120	182.
1130	209.	1131	213.	1132	217.	1133	222.	1134	226.
1135	231.	1136	237.	1137	243.	1138	249.	1139	255.
1140	262.	1141	268.	1142	275.	1143	283.	1144	289.
1145	296.	1146	303.	1147	311.	1148	319.	1149	336.
1150	371.	1151	422.	1152	489.	1153	574.	1154	667.
1155	747.	1156	804.	1157	834.	1158	834.	1159	802.
1160	744.	1161	681.	1162	617.	1163	556.	1164	501.
1165	453.	1166	409.	1167	371.	1168	340.	1169	313.
1170	290.	1171	269.	1172	250.	1173	232.	1174	216.
1175	203.	1176	192.	1177	184.	1178	177.	1179	171.
1180	166.	1181	162.	1182	157.	1183	153.	1184	150.
1185	146.	1186	143.	1187	139.	1188	136.	1189	133.
1190	131.	1191	128.	1192	126.	1193	123.	1194	120.
1195	118.	1196	115.	1197	112.	1198	110.	1199	108.
1200	106.	1201	104.	1202	102.	1203	100.	1204	98.
1205	97.	1206	96.	1207	95.	1208	94.	1209	93.
1210	92.	1211	91.	1212	91.	1213	90.	1214	89.
1215	88.	1216	86.	1217	85.	1218	84.	1219	83.
1220	82.	1221	81.	1222	80.	1223	79.	1224	78.
1225	77.	1226	76.	1227	75.	1228	75.	1229	74.
1230	73.	1231	73.	1232	72.	1233	71.	1234	71.
1235	70.	1236	69.	1237	68.	1238	67.	1239	66.
1240	65.	1241	64.	1242	63.	1243	62.	1244	62.
1245	61.	1246	60.	1247	60.	1248	59.	1249	58.
1250	58.	1251	58.	1252	57.	1253	57.	1254	57.
1255	56.	1256	56.	1257	56.	1258	56.	1259	56.
1260	56.	1261	56.	1262	56.	1263	55.	1264	55.
1265	54.	1266	54.	1267	54.	1268	53.	1269	53.
1270	52.	1271	52.	1272	51.	1273	51.	1274	50.
1275	50.	1276	49.	1277	49.	1278	48.	1279	48.
1280	48.	1281	48.	1282	47.	1283	47.	1284	47.
1285	47.	1286	46.	1287	46.	1288	46.	1289	46.
1290	46.	1291	46.	1292	46.	1293	46.	1294	46.
1295	46.	1296	46.	1297	46.	1298	46.	1299	46.
1300	46.	1310	40.	1320	34.	1330	30.	1340	29.
1350	24.	1360	19.	1370	16.	1380	14.	1390	14.
1400	14.	1420	11.	1440	9.	1460	8.	1500	8.

Total Runoff = 108.798 Acre-Ft.
Peak Q = 834 CFS
Time to Peak Q = 1157 Minutes

LONG POINT RESORT - PROJECT COND. EAST SIDE HYDROLOGY 50-YR STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	1A	25.	70.	25.	70.	0	0.	0.00000	0.00	0.00	0.	2	11	K50	0.42
34194	2B	29.	66.	29.	66.	0	0.	0.00000	0.00	0.00	0.	2	17	K50	0.42

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* CONFLUENCE Q'S *

* 34194 3A TA 1154 QA 70. QAB 136. QB 66. 34194 3B TB 1154 QB 66. QBA 136. QA 70. *

* 34194 3AB TAB 1154 QAB 136. QA 70. QB 66. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	3AB	29.	66.	54.	136.	4	2000.	0.15833	4.00	0.00	0.	2	0	K50	0.00
34194	4A	8.	27.	62.	161.	0	0.	0.00000	0.00	0.00	0.	2	7	K50	0.00
34194	5C	5.	23.	5.	23.	1	600.	0.12500	0.00	0.00	0.	2	5	K50	0.90
34194	6C	9.	34.	14.	52.	0	0.	0.00000	0.00	0.00	0.	2	6	K50	0.00
34194	7C	5.	13.	19.	65.	0	0.	0.00000	0.00	0.00	0.	2	13	K50	0.42
34194	8D	4.	18.	4.	18.	0	0.	0.00000	0.00	0.00	0.	2	5	K50	0.90

****

* CONFLUENCE Q'S *

* 34194 9C TC 1155 QC 65. QCD 81. QD 16. 34194 9D TD 1153 QD 18. QDC 77. QC 59. *

* 34194 9CD TCD 1155 QCD 81. QC 65. QD 16. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	9CD	4.	18.	23.	81.	1	1400.	0.17857	0.00	0.00	0.	2	0	K50	0.00
34194	10C	14.	48.	37.	114.	0	0.	0.00000	0.00	0.00	0.	2	7	K50	0.00

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* CONFLUENCE Q'S *

* 34194 11A TA 1155 QA 161. QAC 268. QC 107. 34194 11C TC 1157 QC 114. QCA 271. QA 156. *

* 34194 11AC TAC 1156 QAC 274. QA 160. QC 113. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	11AC	37.	114.	99.	274.	4	1900.	0.06579	4.50	0.00	0.	2	0	K50	0.00
34194	12A	49.	191.	148.	424.	2	400.	0.05000	0.00	0.00	0.	2	6	K50	0.42
34194	13B	23.	86.	23.	86.	4	1200.	0.13333	2.00	0.00	0.	2	6	K50	0.00
34194	14B	18.	56.	41.	140.	1	1200.	0.12900	0.00	0.00	0.	2	9	K50	0.42
34194	15B	20.	68.	61.	188.	4	250.	0.11000	2.50	0.00	0.	2	7	K50	0.00
34194	16B	3.	13.	64.	193.	2	1000.	0.06600	0.00	0.00	0.	2	5	K50	0.42
34194	17B	11.	35.	75.	218.	0	0.	0.00000	0.00	0.00	0.	2	8	K50	0.10
34194	18C	12.	34.	12.	34.	4	200.	0.05000	2.50	0.00	0.	2	10	K50	0.00
34194	19C	3.	9.	15.	42.	4	350.	0.15714	2.50	0.00	0.	2	10	K50	0.42
34194	20C	10.	42.	25.	83.	1	1050.	0.13000	0.00	0.00	0.	2	5	K50	0.00
34194	21C	5.	21.	30.	89.	4	270.	0.13000	2.50	0.00	0.	2	5	K50	0.10
34194	22C	10.	42.	40.	122.	4	350.	0.06700	2.50	0.00	0.	2	5	K50	0.10
34194	23C	2.	8.	42.	128.	4	100.	0.08200	2.00	0.00	0.	2	5	K50	0.00
34194	24C	13.	44.	55.	169.	4	750.	0.04400	3.00	0.00	0.	2	7	K50	0.00
34194	25C	4.	17.	59.	180.	0	0.	0.00000	0.00	0.00	0.	2	5	K50	0.10

LONG POINT RESORT - PROJECT COND. EAST SIDE HYDROLOGY 50-YR STORM DAY 4

LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	26D	7.	20.	7.	20.	4	700.	0.21429	2.00	0.00	0.	2	10	K50	0.00
34194	27D	18.	56.	25.	76.	1	1300.	0.13846	0.00	0.00	0.	2	9	K50	0.42
34194	28D	30.	105.	55.	162.	4	450.	0.01500	2.50	0.00	0.	2	7	K50	0.22
34194	29D	6.	26.	61.	182.	4	300.	0.01500	3.00	0.00	0.	2	5	K50	0.42

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* CONFLUENCE Q'S *

* 34194 30C TC 1156 QC 180. QCD 360. QD 180. 34194 30D TD 1156 QD 180. QDC 360. QC 180. *

* 34194 30CD TCD 1156 QCD 360. QC 180. QD 180. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	30CD	61.	180.	120.	360.	2	1200.	0.02400	0.00	0.00	0.	2	0	K50	0.00
34194	31C	9.	22.	129.	364.	0	0.	0.00000	0.00	0.00	0.	2	13	K50	0.10

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* CONFLUENCE Q'S *

* 34194 32B TB 1158 QB 218. QBC 582. QC 364. 34194 32C TC 1158 QC 364. QCB 582. QB 218. *

* 34194 32BC TBC 1158 QBC 582. QB 218. QC 364. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	32BC	129.	364.	204.	582.	2	220.	0.06400	0.00	0.00	0.	2	0	K50	0.00
34194	33B	1.	4.	205.	581.	0	0.	0.00000	0.00	0.00	0.	2	5	K50	0.10
34194	34B	1.	4.	206.	582.	0	0.	0.00000	0.00	0.00	0.	2	5	K50	0.10

****

* CONFLUENCE Q'S *

* 34194 35A TA 1156 QA 421. QAB 942. QB 521. 34194 35B TB 1158 QB 582. QBA 959. QA 377. *

* 34194 35AB TAB 1157 QAB 975. QA 411. QB 564. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	35AB	206.	582.	354.	975.	4	200.	0.03500	6.00	0.00	0.	2	0	K50	0.00
34194	36A	2.	9.	356.	970.	4	350.	0.03500	6.00	0.00	0.	2	5	K50	0.42
34194	37A	2.	8.	358.	971.	0	0.	0.00000	0.00	0.00	0.	2	5	K50	0.00
34194	38E	2.	9.	2.	9.	4	250.	0.03500	1.50	0.00	0.	2	5	K50	0.90

****

* CONFLUENCE Q'S *

* 34194 39A TA 1158 QA 971. QAE 975. QE 4. 34194 39E TE 1154 QE 9. QEA 752. QA 743. *

* 34194 39AE TAE 1158 QAE 975. QA 971. QE 4. *

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LOCATION		SUBAREA AREA	SUBAREA Q	TOTAL AREA	TOTAL Q	CONV TYPE	CONV LNGTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL Q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
34194	39AE	2.	9.	360.	975.	4	350.	0.03500	6.00	0.00	0.	2	0	K50	0.00

1 9-21-2000 SITE LICENSEE: ROBERT BEIN, WILLIAM FROST

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY
HYDROGRAPH FOR DOWNSTREAM END OF LINE A (DISCHARGE PT. 1)

HYDROGRAPH AT 34194 39A STORM DAY 4 REDUCTION FACTOR = 1.000

TIME	Q	TIME	Q	TIME	Q	TIME	Q	TIME	Q
0	0.	100	8.	200	12.	300	18.	400	28.
500	39.	600	54.	700	68.	800	78.	900	97.
1000	128.	1050	134.	1100	160.	1110	174.	1120	200.
1130	226.	1131	228.	1132	230.	1133	232.	1134	234.
1135	237.	1136	240.	1137	245.	1138	252.	1139	261.
1140	271.	1141	283.	1142	298.	1143	315.	1144	332.
1145	350.	1146	369.	1147	389.	1148	410.	1149	432.
1150	457.	1151	497.	1152	564.	1153	656.	1154	752.
1155	830.	1156	946.	1157	972.	1158	975.	1159	922.
1160	868.	1161	805.	1162	723.	1163	638.	1164	574.
1165	510.	1166	458.	1167	409.	1168	371.	1169	338.
1170	311.	1171	288.	1172	266.	1173	246.	1174	227.
1175	212.	1176	200.	1177	191.	1178	184.	1179	179.
1180	174.	1181	171.	1182	168.	1183	165.	1184	163.
1185	162.	1186	160.	1187	159.	1188	158.	1189	158.
1190	157.	1191	157.	1192	156.	1193	154.	1194	153.
1195	151.	1196	149.	1197	147.	1198	145.	1199	143.
1200	142.	1201	140.	1202	138.	1203	136.	1204	135.
1205	134.	1206	132.	1207	131.	1208	131.	1209	130.
1210	129.	1211	128.	1212	127.	1213	126.	1214	125.
1215	123.	1216	121.	1217	120.	1218	118.	1219	116.
1220	114.	1221	112.	1222	111.	1223	109.	1224	108.
1225	106.	1226	105.	1227	104.	1228	103.	1229	102.
1230	101.	1231	101.	1232	100.	1233	99.	1234	98.
1235	97.	1236	96.	1237	94.	1238	93.	1239	92.
1240	91.	1241	90.	1242	89.	1243	88.	1244	87.
1245	86.	1246	85.	1247	84.	1248	84.	1249	83.
1250	83.	1251	82.	1252	82.	1253	82.	1254	81.
1255	81.	1256	81.	1257	81.	1258	81.	1259	81.
1260	81.	1261	80.	1262	80.	1263	80.	1264	80.
1265	79.	1266	79.	1267	78.	1268	78.	1269	77.
1270	77.	1271	76.	1272	76.	1273	75.	1274	75.
1275	74.	1276	74.	1277	74.	1278	73.	1279	73.
1280	73.	1281	73.	1282	72.	1283	72.	1284	72.
1285	72.	1286	72.	1287	72.	1288	72.	1289	72.
1290	72.	1291	72.	1292	72.	1293	72.	1294	72.
1295	72.	1296	72.	1297	71.	1298	71.	1299	71.
1300	71.	1310	62.	1320	51.	1330	47.	1340	45.
1350	38.	1360	29.	1370	25.	1380	22.	1390	22.
1400	22.	1420	16.	1440	11.	1460	8.	1500	8.

Total Runoff = 144.583 Acre-Ft.
Peak Q = 975 CFS
Time to Peak Q = 1158 Minutes

15.7 Land Use Data

NOTE TO REVIEWERS:

TABLE 5.7-2, *GENERAL PLAN CONSISTENCY ANALYSIS*, AND TABLE 5.7-3, *COASTAL SPECIFIC PLAN CONSISTENCY ANALYSIS,* ARE INCLUDED IN SECTION 5.7, *LAND USE AND RELEVANT PLANNING*.

15.8 Marine Resources Report

MARINE BIOLOGICAL IMPACT ASSESSMENT TECHNICAL APPENDIX

LONG POINT RESORT
CITY OF RANCHO PALOS VERDES, CALIFORNIA

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January 31, 2001

LONG POINT RESORT EIR
MARINE BIOLOGICAL RESOURCES TECHNICAL APPENDIX

1.0 INTRODUCTION

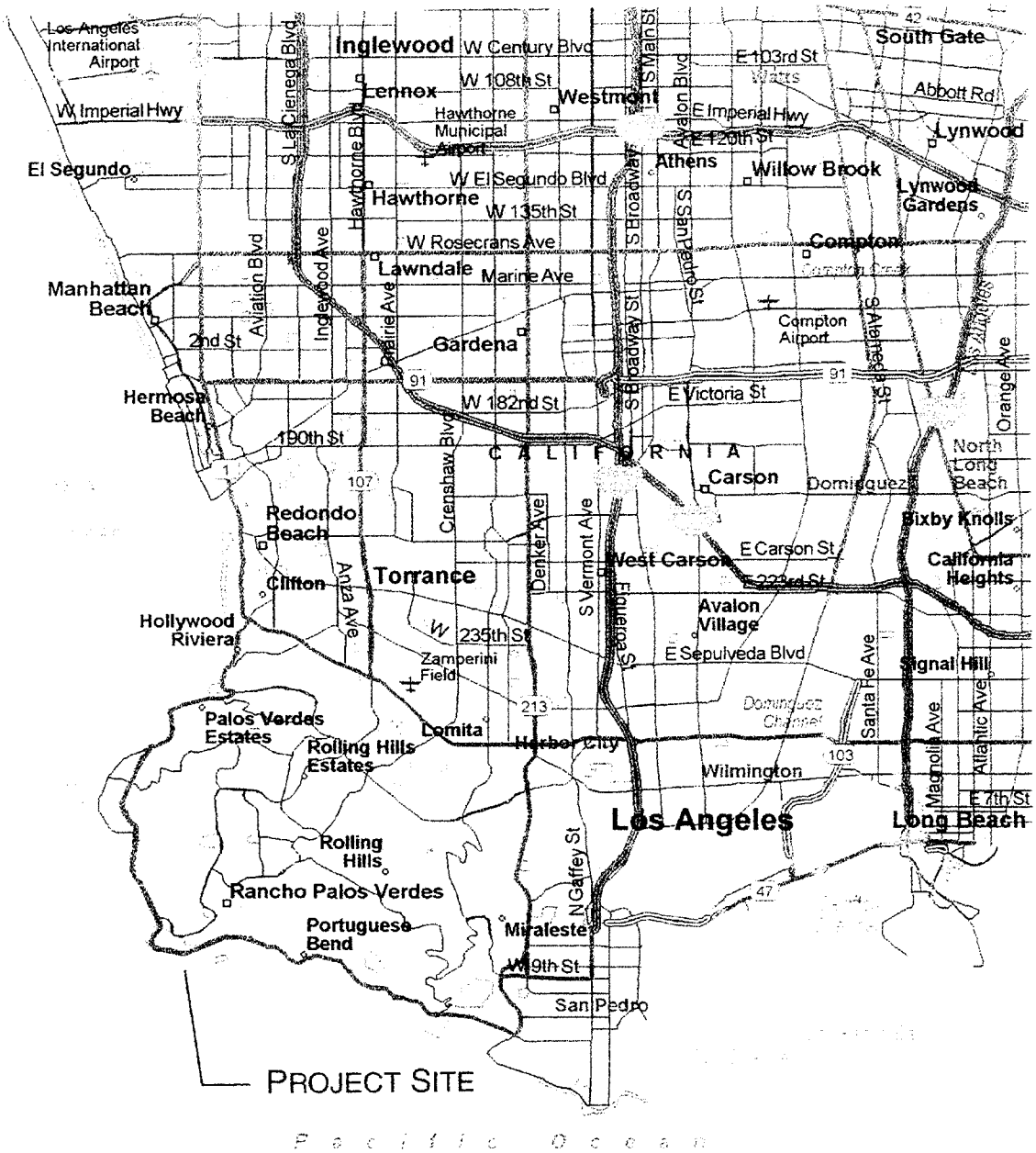
The purpose of this investigation is to assess the potential environmental impacts associated the Long Point Development project on the local marine biological resources of the Rancho Palos Verdes (RPV) coastline. Prepared by Coastal Resources Management (CRM), this study identifies the marine resources living on the shoreline and in the nearshore marine waters adjacent to the project area. Potential impacts of construction and operation of residential, commercial, and recreational/open space development alternatives on local marine life are analyzed and mitigation measures to avoid, reduce, and compensate for unavoidable adverse impacts are identified. The evaluation of project impacts is based upon technical information presented in the Long Point Resort Permit Documentation Report (FORMA 2000), the Runoff Management/Water Quality Management Plan (PBS&J 2000), a technical review of the management plans on the marine environment by Ford (1999), and miscellaneous project memos and documents provided by Robert Bein, William Frost & Associates.

1.1 PROJECT DESCRIPTION AND AREA LOCATION

The Long Point Resort Hotel "Resort Hotel" plan encompasses approximately 168.4 acres in the City of Rancho Palos Verdes, California (Figure 1). The City of Rancho Palos Verdes is located in the southwestern region of Los Angeles County, along the Palos Verdes Peninsula of the Southern California coastline and approximately 25 miles southwest of downtown Los Angeles The site consists of partially vacated Marineland development, natural and undisturbed areas along the coastline of Rancho Palos Verdes.

The proposed resort development consists of two areas; the Resort Hotel Area located on the south side of Palos Verdes Drive South and what is referred to as the Point Vicente Area, located to the northwest of the Resort Area across Palos Verdes Drive South. The Resort Hotel Area is bounded on the south by the Pacific Ocean, to the north by Palos Verdes Drive South, and to the east by residential development. The Upper Point Vicente Area is bounded to the south and west by Palos Verdes Drive South and West, to the north by Hawthorne Avenue, and to the east by vacant undeveloped lands (Figure 1).

The Hotel Resort will consist of visitor serving and resort facilities including a 400 guest room Resort Hotel with pools, tennis courts, gardens and other amenities. The resort will also include 32 villas located adjacent to the hotel complex. Five holes of a nine-hole golf course will be located on the property. The Upper Point Vicente Area will contain the other four golf holes and a driving range. Several areas of proposed natural habitat are also contained within this site. The facilities will overlook the Palos Verdes Peninsula shoreline and nearshore coastal waters, which include such features as coastal bluffs, promontories, rocky intertidal reef platforms, tide pools, boulder beaches, and stretches of cobble and sand beaches between promontories. Offshore, rocky reefs and kelp beds are major features.



LONG POINT RESORT

VICINITY MAP

City of Rancho Palos Verdes • California

FORMA

Figure 1 Local Project Area. Source: FORMA 2000.

2.0 EXISTING CONDITIONS

2.1 COASTAL GEOLOGY

The waters offshore of the Palos Verdes Peninsula are part of the Southern California Mainland Shelf and the seafloor topography reflects the geological features of the local shorelines (Jones 1969). Sediments are coarsest in the wave zone and contain a mixture of sand, gravel, cobble, and shell debris. With increasing depth, sediments grade into fine olive-green sand to silt (Jones 1969). Nearer-to-shore, sediments types and distributions are highly influenced by swell and wave activity and intermittent sediment and debris-laden stormwater flows generated from coastal drainages, as well as local landslide events.

The geomorphology of Palos Verdes is relatively unique for Southern California. It is a coastal promontory with an exceptionally narrow (2 to 5 km) shelf. The Redondo submarine canyon to the northwest and the San Pedro sea valley to the southeast separate the Palos Verdes shelf from adjacent bays. The slope begins at approximately 75 meters water depth and the slope changes from 1° to 10°.

2.2 PHYSICAL OCEANOGRAPHY

Water depths and features along the shoreline of the project area are shown in Figure 2. Oceanographic conditions in the Rancho Palos Verdes study area are largely influenced by the California Current and other offshore water masses, although these are highly modified by local events and oceanographic conditions. Longshore currents along the Palos Verdes coastline flow north at a speed of about 0.09 kn., although surface currents with speeds up to 1.13 knots for several days have been measured on the Palos Verdes shelf (USEPA 1977). Surface currents on the shelf above 100 ft flow north, although they may flow northwest, or south-southeast at all depths and throughout the year. During the winter, they tend to flow northwest and west-southwest below 150 feet; in summer they flow northeast and south-southeast near the surface (Southern California Coastal Water Research Project [SCCWRP] 1973). Longshore currents, caused by breaking waves can move as much as 8 ft/sec, transporting beach sediments along shore in a turbid layer which is denser than seawater and which may flow down submarine canyons as turbidity currents (Drake and Gorsline 1973). Long period storm waves on the shelf can rework bottom sediments to depths of 150 ft.

Seasonal upwelling is common and brings cooler, nutrient-rich waters to upper waters of the shelf, particularly on the downcoast (southeastern side) of the Palos Verdes headland. Other natural phenomena, such as major warming events and storms (El Nino and water mass movement), La Nina (periods of below-average water temperatures and droughts) have affected marine habitats, and the recruitment, abundance, distribution, and succession of marine organisms. Local impacts of El Nino have caused large scale die-back in kelp beds and the abundances of kelp bed associated organisms, as well as influxes of warm water species uncommon to southern California waters (MBC Applied Environmental Sciences 1988). The combination of both natural and man-induced changes in the marine environment offshore of Palos Verdes make it difficult to separate natural from outfall effects (see Section 2.3) .

2.3 WATER AND SEDIMENT QUALITY

The quality of the sediments and overlying waters on the Palos Verdes Shelf is highly influenced by the discharge of partially treated wastewater into the marine environment by the Los Angeles County Joint Water Pollution Control Plant (JWPCP). In 1992, this facility discharged approximately 1.25 x 10^6 meters^3 (330 million gallons) of partial secondary treated wastewater into the sea offshore of Whites Point (Stull 1995). The effluent consists of 85% domestic waste (suspended solids, nutrients, oil and grease and 15% industrial wastes (trace metals, chlorinated hydrocarbons, cyanide, phenols, oil and grease) and is discharged into the ocean via two large submarine outfalls which terminate in diffuser structures three kilometers offshore of Whites Point, approximately five kilometers southeast of Long Point and the proposed Hotel Resort. The water depth at the point of discharge is approximately 60 meters (180 ft).

Treated wastewater has been discharged off Palos Verdes for 55 years (Stull 1995). Flow and suspended solid emissions to the ocean increased with growth in the county from 1937 to 1970. The maximum flow in 1970 was about 330 million gallons per day (mgd).

Prior to the early 1970s, impoverished soft bottom benthic assemblages (consisting primarily of worms, crabs, snails, and sea stars) were located as far as seven miles northwest of the JWPCP outfalls; enriched biomass of infauna was found 10 miles north and five miles south (Stull et al. 1987). The sizes of local kelp beds diminished significantly and nearly became non-existent, partially due to the effects of high particulates from the outfall which reduced the submarine light levels needed for kelp to grow, and secondly, from landslides and increased water temperatures (Wilson 1982, Meistrell and Montagne 1983). Fish assemblages near the outfalls were impoverished and fin erosion and epidermal tumors in demersal fishes (i.e., dover sole) were common. High levels of DDT and DDE in sediments, water, and the food chain decreased the breeding success of California brown pelicans and California sea lions.

The County of Los Angeles continually monitors the health of the marine environment offshore of Palos Verdes at depths between 23, 61, and 137 and 305 meters. Four stations (3A-3D) are located offshore of Long Point (Stull 1995). The location of these stations are shown in Appendix 1. Constant monitoring of the water quality, sediment quality, and the marine life of the Palos Verdes peninsula over the last 20 years has revealed that due to changes in treatment practice (reductions in the mass emissions of solids, higher levels of effluent treatment) and increasingly stringent source control, diverse biological assemblages of invertebrates and fish are more widespread, flatfish fin erosion has disappeared, and kelp beds flourish (Stull 1995).

Improved treatment of effluent has led to reduced levels of trace contaminants (cadmium, copper, lead, and zinc) in the sediments near the JWPCP outfalls. Along with the reduction in mass emissions of solids, these changes have resulted in a recovery of the infaunal assemblage around the outfalls (i.e., increased diversity, shared dominance among more species, and lower numbers of pollution tolerant forms (Stull et al. 1986), a greater diversity of invertebrates, fish, and algae in rocky subtidal environment (Meistral and Montagne 1983), more productive fisheries (Stull et al. 1987), a greater diversity of intertidal algae (Harris 1983) and the reappearance of kelp beds along the Palos Verdes coastline (Wilson 1982).

Generally the contaminant load of surface sediments has been reduced through improved treatment sewage treatment processes but historically elevated levels of contaminants, primarily DDT and PCBs remain partially buried in deeper sediments (Stull et al. 1988, Stull 1995). Highest loads are buried between 10 to 25 cm between 50 and 60 meters of water depth. This is cause for concern because of the bioavailability of DDT and PCBs, and the potential for these contaminants to cause health problems for marine organisms and human consumers (Stull 1995). Offshore of Point Vicente and the Hotel Resort area, the levels of total DDT and total PCBs in the muscle tissues of the Dover Sole in 1991 were lower than at the outfall, but higher than the Northwest Palos Verdes coastline (Stull 1995). Concentrations for these constituents in 1991 were approximately <0.1 mg/kg of total DDT and 0.2 mg/kg wet weight of total PCBs. The concentration of total DDT in kelp bass muscle tissue (a locally-caught sportsfish and commercial species) was similar to tissue concentrations at both the outfall and Northwest Palos Verdes (1 mg/kg wet weight of muscle tissue) whereas the concentration of total PCBs was lower than at both the outfall and Northwest Palos Verdes (0.1 mg/kg wet weight).

Landslides along the Palos Verdes shoreline (in particular, in Abalone Cove and Portuguese Bend) have caused turbid sediment plumes to migrate along the coastline. Some degree of turbidity effects from the slide areas extend over 1 square nautical mile (847.5 acres) between Inspiration Point and Portuguese Bend and can be tracked as distant as Los Angeles Harbor (U.S. ACOE 1992). Since 1980, the landslide has supplied more than seven times the suspended solids than the JWPCP outfall (Sediment Dynamics Workshop Group 1988) and is likely to be a contributing factor in the reduction of kelp bed and reef-associated plant and animal assemblages in the immediate area of the landslides, as well as near the JWPCP outfalls (Stull 1992, U.S. ACOE 1992, Vantuna Research Group and Chambers Group 1996, MBC Applied Environmental Sciences 1988).

Increasingly, water quality from storm runoff in southern California coastal environments has generated concern from both public health and marine resource degradation aspects and is regarded as one of the largest sources of pollution to the coastal waters of the United States (Bay et al. 1999). In Santa Monica Bay, studies were conducted over three wet seasons between 1995 to 1998 to determine the impacts of urban stormwater runoff into the receiving waters of Santa Monica Bay. Two different watersheds were studied; an urbanized watershed (Ballona Creek) and a less urbanized watershed (Malibu Creek). The Ballona Creek watershed is primarily residential, and is generally drained by a large, impermeable channel. Peak flows are relatively high and of shorter duration. The Malibu Creek watershed is less urbanized, more permeable and has relatively lower peak flows than Ballona Creek but duration of flows can last longer. Key findings of the study included:

- Low salinity runoff contained high concentrations of suspended particulate material, derived from various sources such as land erosion, street dust, aerial deposition, and litter. The suspended particulate material increased water turbidity, particularly within the urbanized Ballona Creek region.
- Stormwater plumes extended along the shoreline for up to six miles, and offshore as far of 4 miles.

- Duration of plumes lasted for up to three days for even the smallest rainfall events monitored (0.8 inches).
- Stormwater appeared to enhance, at least in the short-term, phytoplankton productivity.
- Toxicity was found in every undiluted sample from Ballona Creek and often present in diluted samples. Sea urchin fertilization tests were used to assess the toxicity of the stormwater runoff. Toxicity in samples from Malibu creek were rarely present and not often related to plume discharge. Receiving water impacts were less near Malibu Creek and were related to the discharge of less toxic stormwater and lower peak flows.
- Plastics dominated the debris field of the Ballona Creek plume, while organic materials (twigs and charred wood) dominated the floating debris from Malibu Creek.
- Seasonality played an important part in toxicity. First flush storms of the year provided the most concentrated inputs of toxicants to the environment.
- Toxic portions of the stormwater plume from Ballona Creek extended from 1/4 to 2 miles offshore of Ballona Creek. Most toxicity was concentrated near the mouth of Ballona Creek. Toxicity within the water column was rarely present offshore of Malibu Creek, and was not related to plume concentration.
- Toxicity was also found in receiving waters during dry-weather periods, indicating that sources other than urban runoff may contribute to receiving water toxicity. Potential sources include the deposition of contaminants from the atmosphere, biological events such as red tides, and inputs from boating activities.
- Dissolved metals were important contributors to impaired water quality in Ballona Creek. Zinc was responsible for a portion of the toxicity; the influences of pesticides and other organics is uncertain.
- Seafloor sediments were higher in urban stormwater contaminants such as lead and zinc in the receiving waters offshore of Ballona Creek, where as higher concentrations of constituents were derived from natural sources such as fine sediments and organic carbon offshore of Malibu Creek.
- Within sediments offshore of both Ballona Creek and Malibu Creek, sediments exhibited minor changes in toxicity, but these changes were not related to stormwater discharges. Observed benthic biological communities, consisting primarily of worms, mollusks, and microcrustaceans were similar among Malibu Creek, Ballona Creek, and background reference sites.

2.4 MARINE BIOLOGICAL RESOURCES

2.4.1 Shoreline Resources

Shoreline Habitats. The shoreline habitats in the vicinity of the Long Point Hotel Resort include sand, cobble, rocky beaches located in the littoral zone (between extreme high and extreme low tide lines, approximately +7 ft to -2 ft relative to Mean Lower Low Water [MLLW]). These shoreline habitats support diverse assemblages of intertidal plants, invertebrates, and fish. Although this stretch of shoreline is difficult to access (with the exception of Fisherman's Cove), the shoreline between Long Point and Point Vicente is frequented by the public because of the scenery, sunbathing, hiking, scuba diving, , tidepooling, and sportsfishing from the shoreline.

2.4.1.1 Cobble and Gravel Beaches. Cobble and gravel beaches are high-energy shorelines

that generally support no macroalgae and relatively few invertebrates. The most conspicuous organisms are gammarid amphipod crustaceans (*Orchestoidea*) that feed on decaying macroalgae deposited along the high tide line and rock lice (*Ligia occidentalis*) that scavenge in high intertidal areas. Coarse sand and gravel among the intertidal cobble and rock substrate provide unstable, marginal habitat for burrowing organisms; most animals are extremely small and live between the sand grains. In sandier sediments, the dominant invertebrates include polychaete worms (*Euzonius mucronatus* and *Lumbrinereis* spp.) and nemertean worms (Patterson 1974). In the high, mid, and low tide zones, the moist surfaces of the larger cobble and boulders support a surface film of bacteria and blue/green algae that limpets (*Lottia* spp.) and chitons (*Lepidichitona*) graze upon; barnacles (*Chthamalus* and *Balanus* spp.) that attach to larger cobble and boulders will filter feed on phytoplankton and bacteria (CRM 1993).

2.4.1.2 Rocky Intertidal. The most important physical variable to rocky intertidal organisms is tidal level. Tide patterns determine the frequency and duration that organisms are immersed during high and low tides. This factor affects both the feeding time and the time organisms remain wet and resist desiccation (Ricketts and Calvin 1968). Organisms are distributed along the tidal gradient in four general biotic bands or zones (splash zone, high tide, middle, and low tide zones) each associated with a specific tide level. Representative zonation patterns within southern California are shown in Figure 2. Better competitors for space are usually found at the lower tide levels, whereas poorer competitors for space, that can survive long periods without immersion for long periods of time are found at higher tidal levels. Species richness and biodiversity increase from the higher to lower tidal zones.

Many factors affect the distribution of rocky intertidal organisms, including substrate type and size, substrate disturbances (from wave action), sedimentation, fresh water runoff, cloud cover, and competition for space and food. Following disturbances, many organisms will die off. Larval forms will then resettle into the area, and plants and animals will then recolonize the habitat. Depending on the type of disturbance and the species involved, the recovery of intertidal communities may take up to 10 years (Cimberg 1975) although most recovery occurs within one to five years (Murray and Littler 1979).

Rocky intertidal assemblages located near urban centers are also subjected to intense human pressure (trampling, collecting, urban discharges, and landslides) which have resulted in observable reductions in biodiversity along the Palos Verdes Coastline Dawson (1965), Thom (1976), Thom and Widdowson (1978), U.S. ACOE (1992), and Vantuna Research Group and Chambers Group (1996).

Harris (1981 and 1983) studied the intertidal algae at Portuguese Point and determined algal diversity was considerably higher than during the previous decade. She reoccupied rocky intertidal stations sampled by Dawson (1965) and Thom (1976). Upright red algae were conspicuous in the high-to-mid-intertidal areas along with the sand-holding red turf algae *Gelidium sp.* Articulated red corallines covered much of the mid intertidal zone and served as a substrate for large brown and red foliose forms (*Gigartina* sp., *Colpomenia sinuosa, Laurencia pacifica,* and *Chondria californica*). Beyond the mid intertidal, the brown seaweed *Egregia menziesii* formed extensive cover above the coralline complex composed of *Corallina*

vancouverensis and *Lithothrix aspergillum*. Seaward, the siltstone reef pavement was devoid of algae but covered with large numbers of purple sea urchins. Algal genera including *Laurencia, Prionitis, Gelidium, and Dictyopteris* were common on boulders atop the siltstone reef. Brown algae (*Cystoseira osmundacea* and *Sargassum muticum*) and the red alga *Gigartina spinosa* were found in nearby tide pools. Surfgrass was absent but was observed in the area during intertidal surveys conducted by Coastal Resources Management (1993). Harris found five times the number of intertidal algae in 1979 than recorded by Dawson during his collections in 1957. The increase in the number of algae was hypothesized to be a function of improved water quality and reduced human use of the area.

In 1996, the Vantuna Research Group and Chambers Group, Inc. conducted intertidal and subtidal surveys in the vicinity of Palos Verdes Point, Abalone Cove, and Portuguese Bend to assess the impacts of landslides in Portuguese Bend on marine communities, which followed up on earlier studies conducted for the Army Corps of Engineers between 1989 and 1992 (U.S. ACOE 1992). The marine invertebrates and plants associated with the rocky intertidal of the project area include forms that are typical of rocky intertidal beaches between Point Conception and San Diego in warm, temperate regions (Vantuna Research Group and Chambers Group 1996). They recorded a total of 20 taxa of plants, 54 species of invertebrates, and three taxa of fish during a one-day intensive study using three teams of biologists. Their investigations revealed that the intertidal areas of both Portuguese Bend and Abalone Cove have been affected by landslide activity, and that the numbers of foliose red algae are less in these areas than at Palos Verdes Point, several miles upcoast of these two sites. A master species of intertidal organisms observed is provided in Appendix 2.The lowest number of plant taxa was recorded at Portuguese Bend and Abalone Cove (11 and 10 respectively) whereas 17 plants were recorded from Palos Verdes Point. Plant cover was lowest at Portuguese Bend. The number of invertebrate taxa were nearly identical between sites; 36 at both Palos Verdes Point and Abalone Cove, and 35 at Portuguese Bend. Two species of intertidal fish were observed at Portuguese Bend and Palos Verdes Point, while one species was observed at Abalone Cove (*Clinocottus analis*). Common organisms observed during the survey included anemones (*Anthopleura*), coralline algae (*Corallina* spp.). green algae (*Ulva* sp.), rough limpets (*Lottia scabra*), hermit crabs (*Pagurus* sp.), snails (*Tegula eiseni*), brown encrusting algae (*Ralfsia*), mussels (*Mytilus californianus*), tube-building annelid worms (*Phragmatopoma californica*), acorn barnacles (*Balanus glandula*), and the red algae *Endocladia muricata* and *Plocamium* sp.

Tidal pools at Point Fermin, White Point, and Flat Rock Point along the Palos Verdes Peninsula support at least eight species of cryptic fishes (Cross 1982) that either occur in the waters of the tide pools or beneath tide pool rocks. Generally the diversity of these fishes is a function of both the number of microhabitat and available food resources. The most common species are California clingfish (*Gobiesox rhessodon*), wooly sculpin (*Clinocottus analis*), opaleye (*Girella nigricans*), rockpool blenny (*Hypsoblennius gilberti*) and spotted kelpfish (*Gibbonsia elegans*). While clingfish are restricted to living beneath rocks, opaleye are restricted to deep tide pools, the wooly sculpin can be associated with a variety of tide pool habitats, rockpool blennies prefer crevices and holes in and amongst rocks, cobble, and bedrock, and spotted kelpfish prefer tidepools with a red alga turf, and less often, coralline algae. (Cross, 1982).
Species that have been observed or collected in Abalone Cove include California clingfish, kelp

clingfish, wooly sculpin, mussel blenny (*Hypsoblennius jenkensii*), rockpool blenny, spotted kelpfish and opaleye (Stephens 1989, SOS Environmental 1988b).

2.1.4.3 Site Specific Evaluation of the Long Point Specific Plan Area Intertidal Biota

Coastal Resources Management conducted site-specific surveys of the rocky intertidal resources at Long Point and Fisherman's Cove on March 27 and March 28, 1998. The objective of the surveys was to inventory the habitat types and the assemblages of plants and animals which could be potentially affected by construction, development, or increased public access within the Hotel Resort Specific Plan project area.

Sampling methods. Rocky intertidal surveys were conducted during mid-morning to afternoon low tides. Sampling was conducted in the low, middle, high, and splash zone habitats but due to heavy surf and high winds which negated the moderately low tides during the field survey, most of the sampling was conducted above the low tide zone.

The intertidal plant and invertebrate assemblages at Long Point were inventoried at five sites (Sites 1 through 5) between the public access trail at the southeast end of the beach and the Long Point promontory to the west (Figure 3). At Fisherman's Cove, biologists sampled two areas; a small-to-medium sized boulder/cobble field that graded into an intertidal reef platform (Photograph 1) and a high relief rock outcrop 300 meters to the west near the terminus of the western foot trail leading down to the beach (Photograph 2).

Sampling sites was photographed using a 35 mm camera equipped with a 20 mm lens and slide film. This camera was affixed to a 1/8 square meter (1/8 m^2) quadrat. A second 35 mm camera was used to record general site characteristics and habitat types. Biologists also recorded observations made the survey with a microcassette tape recorder. Voucher specimens of taxa that were not readily identified in the field were collected, returned to the laboratory, and identified to the lowest possible taxon. At Long Point, presence/absence data were collected at each of the five sites using a line transect and the 1/8 m^2 photographic sampling grid.

At Fisherman's Cove, species richness as well as abundances were quantified within the 1/8 m^2 sampling area between the splash zone and the low tide zone at sampling intervals ranging from two to five meters depending on the total length of the transect. Plants and sessile and/or colonial invertebrates (i.e., algae, mussels, colonial worms and snails) were enumerated by estimating their total percent cover within each quadrat. Motile and singularly occurring animals (i.e., chitons, crabs, and limpets) were individually counted. The collected data were quantified by percent cover methods or direct counts within each quadrat and transect, and then summarized for the entire project area.

Results. A total of 54 taxa of plants, invertebrates, and fishes were identified from the habitat southeast of Long Point and within Fisherman's Cove. Twenty nine were identified from Long Point and 44 taxa were present in Fisherman's Cove. A master species list of the organisms identified in the project area is presented in Table 1. The rocky intertidal species composition included three taxa of green algae, five taxa of brown algae, nine taxa of red algae, two sea

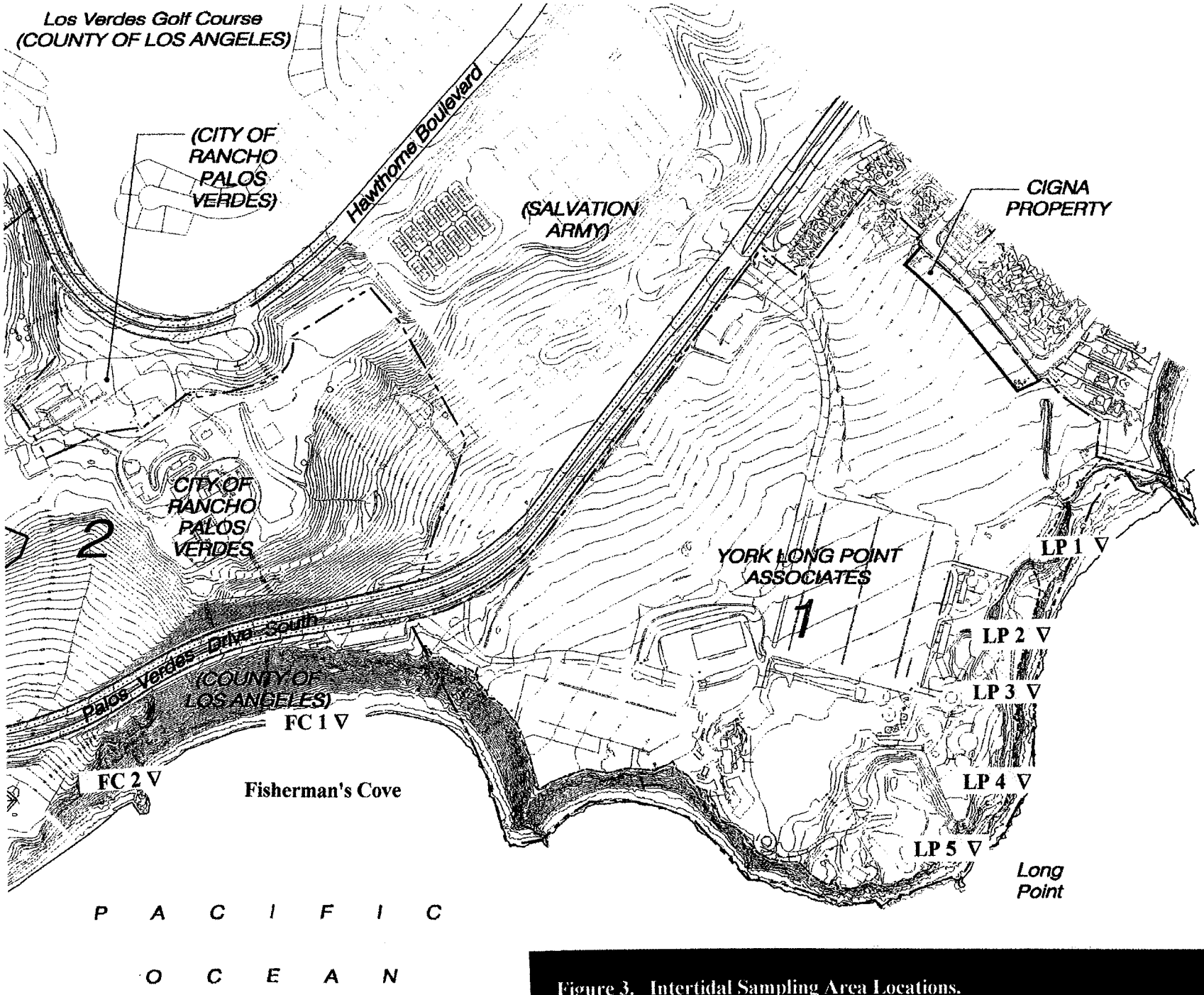
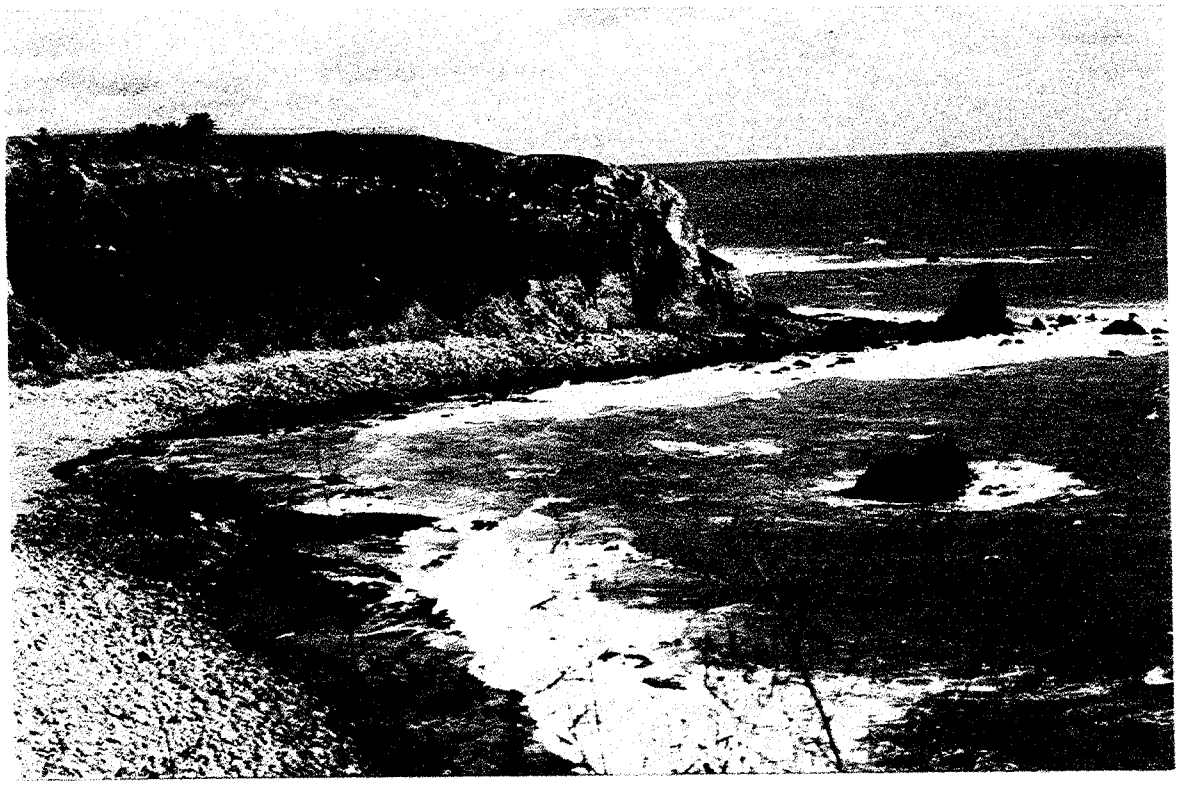
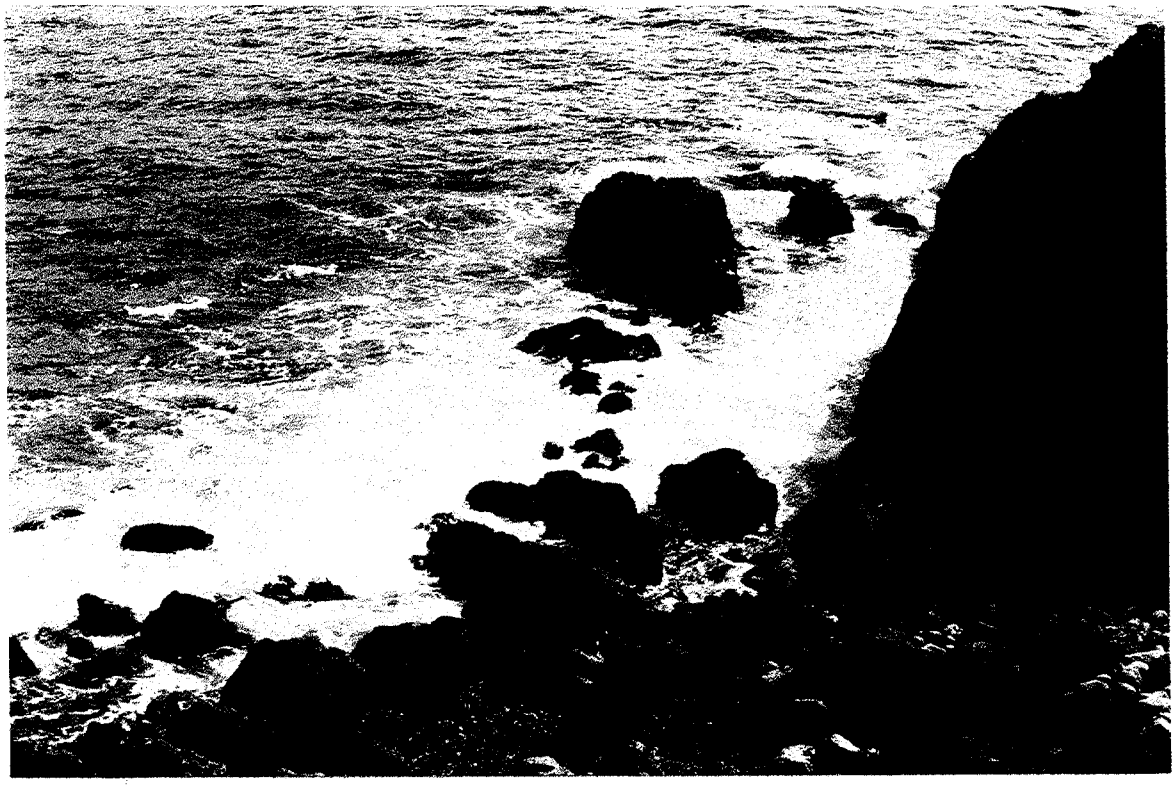


Figure 3. Intertidal Sampling Area Locations.



Photograph 1. Fisherman's Cove Intertidal Sampling Area, Site 1.
Low Relief Boulder/Platform Intertidal Habitat



Photograph 2. Fisherman's Cove Sampling Area 2. High Relief Boulder Habitat

anemones, two species of annelid worms, six crustaceans, 23 species of snails and clams, three echinoderms (seastars and urchins), and one tide pool occurring fish. Four emaciated, dead sea lions (*Zalophus californicus)* were found high up on the rocks at Long Point. A single sea lion was found dead at Fisherman's Cove. These sea lions likely died as a result of the El Nino Oscillation Event of that year, which ultimately resulted in the reduction of sea lion food resources (fish and squid) along the California coast during the winter of 1998.

The Long Point shoreline was characterized by a narrow and steeply sloped backshore of very large boulders one to three meters in diameter. Cobble and coarse sands were present near the access trail at the east end of the beach. The shoreline to the west of the public access trail consisted of low to high relief boulders which extended into the lower intertidal zone. Some high relief rocks (two to three meters in height) were visible in the surf zone. Near the western tip (Long Point) the intertidal area became narrow, and was characterized by higher relief outcrops with ledges, crevices, and overhangs that provided a greater diversity of habitat types than areas to the east. A total of 29 species of plants and invertebrates were observed at the five Long Point sampling sites (Table 1). By site, the number of taxa observed varied from four (Sites C and E) to 15 (Site A). The most frequently occurring taxa (taxa present at more than three sites) included the brown algae (*Egregia menziesii*) red turf algae (*Corallina* spp.) clonal anemones (*Anthopleura elegantissima*), lined shore crabs *(Pachygrapsus crassipes*), buckshot barnacles (*Chthamalus fissus/dalli*), gooseneck barnacles *(Pollicipes polymerus*), owl limpets (*Lottia gigantea*), ochre seastars (*Pisaster ochraceous*), and purple sea urchins (*Strongylocentrotus purpuratus*).

Fisherman's Cove was characterized by a wider and more gently sloping boulder/cobble beach which rimmed the cove. This low relief habitat graded into a stable uplifted reef platform in the center of the Cove which was easily accessible to the public (Photograph 1). Eroded headlands provided more stable and higher relief habitat both to the west and east (Photograph 2). Thirteen 1/8 m^2 quadrats were sampled along two transects. A total of 32 taxa were identified within the confines of the 1/8 m^2 quadrats, while another 12 were observed nearby (Table 1 and Table 2). Within the sampling quadrats, 28 taxa were recorded in the low-to-moderate relief boulder field and reef platform habitat (Site 1, Figure 3) while 16 were encountered in high relief habitat at the narrower rocky headland located 300 meters west of Site 1 (Site 2, Figure 3 and Photograph 3).

Table 2 summarizes species abundance and occurrence data for Fisherman's Cove. Table 3 summarizes the data for the top five counted and percent cover enumerated species. The number of sampled quadrats along each transect varied between five and eight depending on the width of the intertidal platform. The average number of taxa within each quadrat was 9.1. Species richness was noticeably affected by tidal level and substrate type. The lower tidal levels were colonized by more species. Fisherman's Cove Site 1 habitat was more diverse than Site 2 because several different habitat types (high relief boulder, boulder/cobble/sand sediments, relatively flat and low relief boulders, tide pools, and surge channels) were sampled at this site, compared to Site 2 which exhibited a more monotypic, high relief habitat.

The average community abundance per site at Fisherman's Cove was 61.5 and 100.2 at Site 1

and Site 2, respectively (Appendix 2). The greater density of intertidal organisms at Site 2 resulted from substantially higher cover of buckshot barnacles, filamentous green algae, and reef building annelid worms. Overall Site 1 displayed a higher species richness, but similar abundances compared to Site 2.

Dominant Species

The numerically dominant species are shown in Table 3. Dominant motile organisms included periwinkle snails (*Littorina planaxis*) rough limpets (*Lottia scabra*), chitons (*Mopalia mucosa*), urchins (*Strongylocentrotus purpuratus*), limpets (*Lottia gigantea*, *Lottia digitalis* and *Lottia strigatella*. Species which accounted for the highest percent cover included buckshot barnacles (*Chthamalus fissus/dalli*), reef building polychaete worms (*Phragmatopoma californica*) red algae turf, acorn barnacles (*Balanus glandula*), and basal and upright forms of coralline algae (*Corallina* spp. and *Corallina vancouveriensis*). A detailed listing of the occurrences all species, by quadrat and station is listed in Appendix 3. Several of these taxa had high abundances but were not frequently encountered (Table 2). Other species that had high frequency of occurrences and occurred regularly throughout the area, but in lower abundances were the brown algae *Dictyota flabellata*, the crustose red algae *Lithophyllum/Lithothamnion*, the anemone *Anthopleura xanthogrammica*, and the mussel *Mytilus californianus*.

Intertidal Zonation

Each of the sample sites exhibited common community patterns associated with tidal zonation, based upon the presence of indicator species. The results compiled during the field survey suggested that the sampling program was conducted primarily in the splash-to-middle tide zones, and that sampling was less representative of the low zone. A typical, rocky intertidal zonation scheme for southern California is shown in Figure 4. Generally, the faces of the rocky outcrops were relatively high in elevation, and subsequently, species sampled were most representative of the splash and high and tidal zones. The exceptions were crevices, tide pools, and surge channels on the platform, where water was retained over a much higher percentage of the tidal cycle.

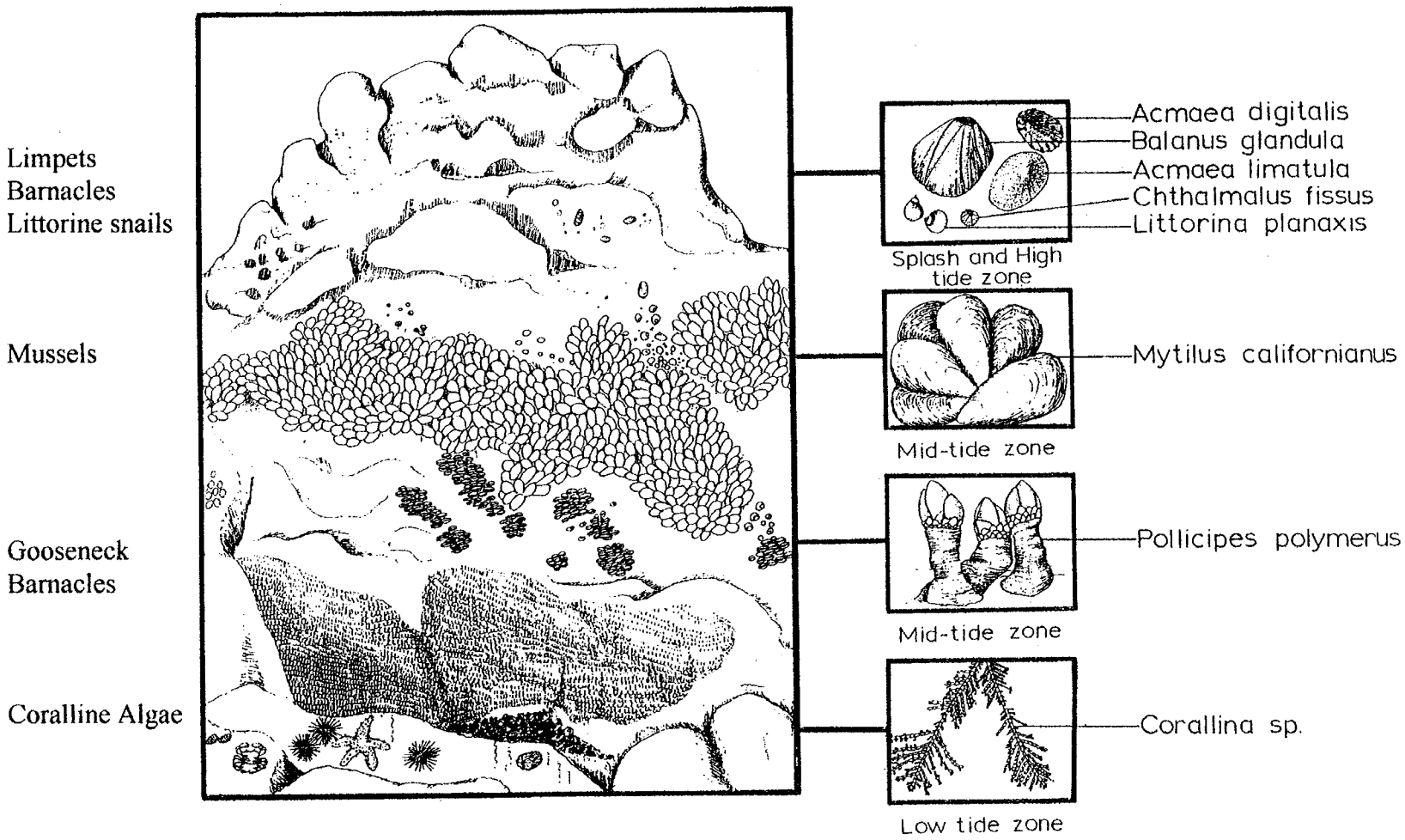


Figure 4. Intertidal Zonation in Southern California.
Source: Reish 1972

Table 1
Rocky Intertidal Master Species List, Long Point Specific Plan Study

		Long Point						Fisherman's Cove			Survey
Common Name	**TAXA**	**1**	**2**	**3**	**4**	**5**	**All**	**1**	**2**	**All**	
Green Algae	**Chlorophyta**										
Green Algae	*Enteromorpha sp.*	x					x				x
filamentous green algae	filamentous green algae turf	x					x				x
sea lettuce	*Ulva californica*	x					x				x
Brown Algae	**Phaeophyta**										
sea potato	*Colpomenia sinuosa*								x	x	x
leafy green	*Dictyota flabellata*							x	x	x	x
feather boa kelp	*Egregia menziesii*		x			x	x				x
brown algae	*Pachydictyon coriaceum*							x		x	x
encrusting brown algae	*Ralfsia sp.(=Pseudolithoderma)*			x			x		x	x	x
Red Algae	**Rhodophyta**										
turf red	*Ceramium sp.*								x	x	x
coralline red	*Corallina spp.*	x				x	x	x		x	x
coralline red	*Corallina vancouveriensis*		x				x	x		x	x
turf red	*Crytopleura sp.*								x	x	x
filamentous red	filamentous red algae turf	x					x	x	x	x	x
turf red	*Gelidium coulteri*							x		x	x
turf red	*Gigartina leptorhynchus*							x		x	x
encrusting red	*Lithophyllum sp./Lithothamnion sp.*							x		x	x
high intertidal red	*Porphyra sp*	x					x				x
Anemones	**Cnidaria**										
clonal anemone	*Anthopleura elegantissima*	x	x				x	x		x	x
solitary green anemone	*Anthopleura xanthogrammica*		x				x	x	x	x	x
Segmented Worms	**Annelida**										
colonial sand castle tube worm	*Phragmatopoma californica*		x				x	x	x	x	x
calcareous tube worm	Spirorbidae, unid.	x					x				x
Barnacles, Crabs, Lobsters	**Arthropoda**										
barnacle	*Balanus glandula*	x					x	x	x	x	x
buckshot barnacle	*Chthamalus fissus/dalli*			x			x	x	x	x	x
rock louse	*Ligia occidentalis*	x					x				x
lined shore crab	*Pachygrapsus crassipes*	x			x		x	x		x	x
gooseneck barnacle	*Pollicipes polymerus*	x	x				x	x		x	x
thatched barnacle	*Tetraclita squamosa*				x		x				x
Snails	**Mollusca-Gastropoda**										
spired whelk	*Acanthina spirata*							x		x	x
sea hare	*Aplysia californica*							x	x	x	x
sea hare	*Aplysia vaccaria*							x		x	x
digitate limpet	*Lottia digitalis*							x	x	x	x
file limpet	*Lottia limatula*							x		x	x
rough limpet	*Lottia scabra*			x			x	x	x	x	x
juvenile limpets	*Lottia sp.*							x	x	x	x

Table 1 (continued)

Continued COMMON NAME	TAXA	Long Point						Fisherman's Cove				Survey
striated limpet	*Lottia strigatella*								x		x	x
	Homoloploma luridum	x					x					x
Kellet's whelk	*Kelletia kelletii*								x		x	x
wavy top snail	*Lithopoma undosa*								x		x	x
banded littorine	*Littorina planaxis*				x		x		x	x	x	x
striped littorine	*Littorina scutulata*				x		x		x	x	x	x
owl limpet	*Lottia gigantea*	x		x	x		x		x	x	x	x
mossy chiton	*Mopalia mucosa*									x	x	x
kelp snail	*Norrisia norrisii*								x		x	x
chiton	*Nuttalina californica*		x				x		x		x	x
	Roperia poulsoni								x		x	x
calcareous tube snail	*Serpulorbis squamigerus*								x		x	x
black turban snail	*Tegula funebralis*	x					x		x		x	x
banded turban snail	*Tegula gallina*								x		x	x
Bivalves	**Mollusca-Pelecypoda**											
California mussel	*Mytilus californianus*		x				x		x		x	x
boring clams	Pholadidae, unid.								x		x	x
Sea stars	**Echinodermata-Asteroidea**											
ochre sea star	*Pisaster ochraecous*		x		x	x	x					x
Urchins	**Echinodermata-Echinoidea**											
red urchin	*Strongylocentrotus franciscanus*								x		x	x
purple urchin	*Strongylocentrotus purpuratus*				x	x	x		x	x	x	x
Fish	**Vertebrata-Pisces**											
tide-pool sculpin	*Clinocottus analis*								x		x	x
	Total Number of Taxa	15	9	4	7	4	**29**		**39**	**19**	**44**	**54**

Table 2 . Fisherman's Cove Rocky Intertidal Data Summary

PERCENT COVER TAXA	SUMMARY					
(data per 1/8 sq. meter area)	**Total**	**%Total**	**Mean**	**Std Dev**	**Occ**	**%Occ**
Chthamalus fissus/dalli	166	16.7	41.5	26.6	4	30.8
Phragmatopoma californica	95	9.6	47.5	32.5	2	15.4
filamentous red algae turf	90	9.1	45.0	35.0	2	15.4
Balanus glandula	63	6.3	15.8	14.3	4	30.8
Corallina spp.	47	4.7	9.4	10.8	5	38.5
Dictyota flabellata	40	4.0	10.0	6.1	4	30.8
Lithophyllum sp./Lithothamnion sp.	20	2.0	20.0	0.0	1	7.7
Anthopleura elegantissima	20	2.0	20.0	0.0	1	7.7
Anthopleura xanthogrammica	14	1.4	2.8	1.8	5	38.5
Serpulorbis squamigerus	10	1.0	10.0	0.0	1	7.7
Pseudolithoderma sp.	10	1.0	10.0	0.0	1	7.7
Mytilus californianus	8	0.8	2.7	2.4	3	23.1
Gigartina leptorhynchus	5	0.5	5.0	0.0	1	7.7
Corallina vancouveriensis	5	0.5	5.0	0.0	1	7.7
Colpomenia sinuosa	1	0.1	1.0	0.0	1	7.7
Pollicipes polymerus	1	0.1	1.0	0.0	1	7.7
Subtotal Percent Cover Taxa	595	59.9	15.4	12.4	13	100.0
Number of Species	17					

COUNTED TAXA	SUMMARY					
(data per 1/8 square meter area)	**Total**	**%Total**	**Mean**	**Std Dev**	**Occ**	**%Occ**
Littorina planaxis	188	18.9	62.7	25.7	3	23.1
Lottia scabra	66	6.6	9.4	8.2	7	53.8
Mopalia mucosa	45	4.5	22.5	20.5	2	15.4
Strongylocentrotus purpuratus	31	3.1	7.8	6.4	4	30.8
Lottia gigantea	21	2.1	7.0	2.4	3	23.1
Lottia digitalis	12	1.2	4.0	2.9	3	23.1
Lottia sp.	10	1.0	3.3	0.5	3	23.1
Lottia strigatella	6	0.6	6.0	0.0	1	7.7
Nuttalina fluxa	5	0.5	2.5	1.5	2	15.4
Tegula funebralis	5	0.5	2.5	1.5	2	15.4
Acanthina spirata	4	0.4	4.0	0.0	1	7.7
Aplysia californica	1	0.1	1.0	0.0	1	7.7
Kelletia kelletii	1	0.1	1.0	0.0	1	7.7
Pachygrapsus crassipes	1	0.1	1.0	0.0	1	7.7
Aplysia vaccaria	1	0.1	1.0	0.0	1	7.7
Lottia limatula	1	0.1	1.0	0.0	1	7.7
Subtotal Counted Taxa	398	40.1	8.5	4.4	13	100.0
Number of Species	16					
Total Abundance	993	100.0	131.4	161.9	13	100.0
Mean Abundance	200.9		24.3	33.6	13	100.0
Number of Taxa	32.0		9.1	6.5	13	100.0

Table 3. Numerically Dominant Intertidal Species at Fisherman's Cove March 1998

Species	Method of Enumeration	Total Abundance per 1/8 sq. m	Occurrences ( ) and Percent Occurrence (%) (n=13 total)
Littorina planaxis **periwinkle snail**	direct counts	188	(3), 23.1%
Lottia scabra **rough limpet**	direct counts	66	(7), 53.8%
Mopalia mucosa **mossy chiton**	direct counts	45	(2), 15.4%
Strongylocentrotus purpuratus **purple sea urchin**	direct counts	31	(4), 30.8%
Lottia gigantea **owl limpet**	direct counts	21	(3), 23.1
Chthamalus fissus/dalli buckshot barnacle	percent cover	166	(4), 30.8%
Phragmatopoma californica **reef building worm**	percent cover	95	(2), 15.4%
filamentous red algae green algae	percent cover	90	(2), 15.4%
Balanus glandula **acorn barnacle**	percent cover	63	(4), 30.8%
Corallina **spp. coralline red algae**	percent cover	47	(5), 38.5%

The angular and vertical sides of the reef platforms were difficult to sample; however, the organisms observed in these areas were very typical of middle and lower tidal zones. High intertidal areas were colonized by periwinkle snails (*Littorina planaxis, L scutulata*), limpets (*Lottia scabra* and *L. digitalis)* and barnacles (*Chthamalus fissus/dalli*, and *Balanus glandula*). Algal cover on flat surfaces in the high zone at Long Point was dominated by the red algae *Porphyra californica*, and green algae (*Enteromorpha* and *Ulva*).

The middle to low tide zones were characterized by constant surge and wave action. The rims of

the larger and more stable outcrops were partially colonized by mussels (*Mytilus californianus)* and gooseneck barnacles (*Pollicipes polymerus*). More protected areas of the outcrops were colonized by anemones (*Anthopleura elegantissima*, *A. xanthogrammica*), whereas the bases of the rocks were occasionally colonized by reef building sabellariid polychaete worms (*Phragmatopoma californica)* and colonial tube snails (*Serpulorbis squamigerus*). Other invertebrates present included snails *(Acanthina spirata, Kelletia kelletii*) chitons (*Mopalia mucosa, Nutallina californica*), limpets (*Lottia gigantea, L. strigatella, L. limatula*), sea hares (*Aplysia california, A. vaccaria*), urchins (*Strongylocentrotus purpuratus, S. franciscanus*), and ochre seastars (*Pisaster ochraceous*). Lined shore crabs (*Pachygrapsus crassipes*) and hermit crabs (*Pagurus* spp.) were ubiquitous throughout the low intertidal pools, although not necessarily located in the study quadrats.

The surfaces of rocks in the middle and lower tide zones were also colonized by crustose red algae (*Lithophyllum/Lithothamnion* complex) and coralline algae (*Corallina* spp.) mixed with filamentous red algae (*Ceramium, Gigartina,* and *Cryptopleura*). Macrophytic brown algae ("kelp") was present, but not overly abundant. No surfgrass was observed, although it likely occurs in the very low to shallow subtidal zone. The most common smaller brown macrophyte was *Dictyota flabellata*, whereas feather boa kelp (*Egregia menziesii*), was the only larger macrophyte observed. Overall, both areas (Long Point and Fisherman's Cove) lacked a diversity of small, leafy red algae taxa that are generally common to lower tide pool areas. This pattern was also observed by the Vantuna Research Group and Chambers Group (1996) in Abalone Cove and Portuguese Bend and by Coastal Resources Management (1994 and 1997) along the Malibu coastline. These trends are locally a result of landslide activity; however, the lack of foliose red algae during March 1998 may also be related to seasonal effects and accentuated by winter run-off and heavy surf conditions associated with the El Nino phenomenon.

2.4.2 Nearshore Benthic (Seafloor) Environment

Subtidal Habitats. The nearshore seafloor topography is a mosaic of unconsolidated sand, silt, and clay sediments as well as hard bottom (reefs) composed of shale and or boulder fields. Seasonally sediment scour and accretion events alternately expose and cover low lying reefs within the littoral zone (wave zone) and can affect the stability of the area's bottom (benthic) community structure, abundance, and diversity. Subtidal reefs are located off of the project area shoreline to depths of 100 ft. Giant kelp forests grow on these reefs, and support a wide diversity of other marine plants, invertebrates, and fishes.

2.4.2.1 Subtidal Plants

Offshore beds of giant kelp (*Macrocystis pyrifera*) along the Palos Verdes coastline are significant because they increase the diversity of the subtidal invertebrate and fish communities (Tegner and Dayton 1987, Foster 1985). The local beds were eliminated between 1958 and 1975 due to pressures from pollution, grazing, and increased water temperatures (Wilson 1982). Between 1975 and 1977 the California Dept. of Fish and Game attempted to restart kelp at nine locations along the Palos Verdes coastline, including Abalone Cove. By 1975 the local kelp was re-established. The yearly extent of the kelp canopy is highly variable. It typically declines

during warm water conditions unfavorable to kelp growth found during El Nino years and expands during cooler water episodes associated with the La Nina condition. The long-term term distribution of kelp between 1980 and 1989 along the Palos Verdes shoreline is shown in Figure 5 (Ecoscan 1989).

Other plants occurring on the hard bottom reef areas in the region include surfgrass (*Phyllospadix* spp.) and the brown algaes *Cystoseira, Sargassum, and Egregia.* Smaller algae also occur subtidally, encrusting or colonizing the cobble and rock substrate. Common smaller algal forms included crustose red algae (*Lithothamnion/Lithothamnion*), and coralline red algae (*Corallina* spp., and *Bossiella* spp.) (Vantuna Research Group and Chambers Group 1996).

The Los Angeles County Sanitation District marine biological staff monitors the health of the shallow subtidal environment at four stations offshore of Long Point (Dave Montagne, Los Angeles County Sanitation District, pers. com. 1997). Diver observations recorded at depths of 6, 12, 18, and 24 meters. These sites were surveyed 32 times between 1972 and 1997 for the occurrences of plants, invertebrates, and fishes. A list of subtidal species observed during the surveys is provided in Appendix 4.The list include two species of green algae (Chlorophyta) 13 species of brown algae (Phaeophyta), and 17 species of red algae (Rhodophyta).

2.4.2.2 Subtidal Reef Macroinvertebrates

At depths between 6 and 24 meters offshore of Long Point, the Los Angeles County Sanitation District staff recorded 151 species of reef invertebrates between 1972 and 1997 (Appendix4). They recorded 21 sponge taxa, 19 species of cnidarians, 10 species of annelid worms, 12 species of crustaceans, 65 species of mollusks, 8 species of ectoprocts, and 16 species of urochordates (Dave Montagne, Los Angeles County Sanitation District, pers. com. Nearby the Long Point project area, 26 species of macroinvertebrates were identified in Abalone Cove during September 1988 (Stephens, 1989). Although no densities were given, the most frequently listed species were red and purple sea urchins, turban snails, anemones, reef building annelid worms, and limpets. Purple urchins and white urchins (*Lytechinus* sp.) were the dominant urchins. Sea fans (*Muricea californica*) were reported to be increasing in numbers due to better water quality. Abalone (*Haliotis spp.*) populations were believed to be decreasing due to urchin population increases that have reduced the abalone's primary food supply, drift algae. Overfishing and viral infections in abalone are also reported to factors in the decline of the abalone population.

The subtidal rocky habitat in the kelp bed at Bunker Point consists of at least 12 species of invertebrates at depths of 10 to 20 feet in May 1988 (SOS Environmental Inc. 1988a). No densities were given, but the most frequently occurring species were turban snails, wavy top snails, red and purple sea urchins, kelp snails and sea anemones. Lobsters were reported at a depth of 10 feet.

A greater number of species (43) were present in more intensively sampled diver transects in the same area during 1977 (Grigg 1978). Twenty eight species occurred at 20 ft depths and 30 species were recorded at 30 ft depths. The most abundant taxa were cerianthid anemones, gorgonian sea fans, turban snails, dog whelks, festive snails, kelp crabs, bat stars, and red sea

Figure 5. Historical Distribution of Giant Kelp (*Macrocystis py*
Source: Ecoscan 1989. Red = growing area of kelp, Summer
area in selected years 1980-1988. Red and Blue together= Maxi
1980-1989.

urchins. Many of these species are characteristic of "halo" distributions, i.e., they are more abundant in areas at intermediate distances from sewage outfalls, such as the LA JWPCP discharge off White Point.

2.4.2.3 Soft Bottom-Dwelling Invertebrates

Sediment dwelling (benthic) invertebrates live within the sediments (infauna) or on the sediment surface (epibenthic invertebrates). Generally, the smallest infaunal organisms (the meiofauna) are generally not well studied but include one-celled protozoans, small roundworms, small polychaetes, oligochaetes, copepods, gastrotrichs, flatworms, kinorhynchs, and tardigrades. Macroinfaunal invertebrates of the Palos Verdes Shelf and Santa Monica Bay region are more commonly monitored and are used by scientists as indicators of environmental change because the organisms do not migrate and are readily collected. Benthic infauna are also important because they are important prey for many benthic feeding fishes (Allen 1982). The most abundant types of benthic macroinvertebrates are polychaete worms, crustaceans (i.e., amphipods, cumaceans, isopods, and ostracods), mollusks (clams, snails, octopus, sea slugs), and echinoderms (sea stars, brittle stars, sea urchins, and sea cucumbers.

2.4.3 Water Column Assemblages

The open water habitat supports bacteria, plankton (phytoplankton and zooplankton), and nekton (larger mobile invertebrates, fishes, and marine mammals). The abundances and distributions of these organisms are influenced by many factors, of which temperature, nutrients, and phytoplankton abundance are extremely important. Local currents, upwelling, and contaminants from regional wastewater outfalls will also influence the pelagic community (SCCWRP 1973).

2.4.3.1 Phytoplankton

Phytoplankton (blue-green algae, green algae, diatoms, dinoflagellates, euglenoids) are microscopic plants that form the basis of pelagic food webs (Riznyk 1974). Diatoms are dominant during spring when upwelling waters and light levels favor production, and secondarily during fall when nutrients again are abundant. Dinoflagellates are dominant in periods when diatom abundance is low (Mullin 1986).

2.4.3.2 Zooplankton

Zooplanktonic organisms include small animals that drift with the current such as crustaceans (copepods, krill, mysid shrimp) pelagic snails and pelagic polychaetes. Some spend their entire life as zooplankton (holoplankters) while others spend only a part of their life cycle in the plankton (meroplankters). Some zooplankton are larger, such as the jellyfish. Kleppel et al. (1982) sampled the Santa Monica Bay plankton community and determined that most of the zooplankton were copepods (*Acartia tonsa* and *Calanus pacificus*), which are representative of coastal regions. These animals are found in the water column at most depths, and will migrate to the surface at night and to deeper waters during the day. Zooplankton are important because they are primary consumers, and graze on phytoplankton. In turn, zooplankton are consumed by

higher order consumers such as fish.

2.4.3.3 Fishes

Fishes of the inshore-Palos Verdes shelf include both migratory and non-migratory species, and several have commercial and sportsfish value (Stull et al. 1987). A variety of substrate and habitat types along the Palos Verdes Shelf (rocky bottom, sand, mud, kelp beds, and neritic) account for a higher diversity of fishes than in more homogenous areas (SOS Environmental 1988a). Nearshore, the fish fauna is typically composed of neritic, sand bottom, hard bottom, and kelp bed associated species (Grigg 1978).

Dominant pelagic forms that can occur locally include chub (Pacific) mackerel, northern anchovy, and Pacific sardine. Occasionally, other species such as yellowtail and Pacific barracuda may move closer to shore, in response to El Nino events when water temperatures are elevated. Closer to shore the dominant neritic species include queenfish, jacksmelt, topsmelt, Pacific Bonito, shortbelly rockfish and white seabass (MBC Applied Environmental Sciences 1988).

Fishes identified in the surfzone habitat between Abalone Cove and Portuguese Bend include topsmelt (*Atherinops affinis*) walleye surfperch (*Hyperprospon argenteum*), dwarf surfperch (*Micrometrus minimus*), and calico surfperch (*Amphicteus koelzi*) (Vantuna Research Group and Chambers Group 1996). Walleye surfperch were also found in non-turbid waters of Portuguese Bend.

The nearshore fish composition over reefs and soft bottoms includes a mixture of hard bottom and soft bottom associated species and typically includes reef associates such as spotted kelpfish, opaleye, black surfperch, and kelp bass. Wilson (pers com. 1989) reported that garibaldi, barred sand bass, blacksmith, and señorita were also prominent members of the Abalone Cove fish community. At deeper depths (six to 30 fathoms) over sandy/mud sediments, fish abundances are dominated by speckled sanddab, white croaker, tonguefish, California halibut, and horny head turbot, all of which are common species of the Palos Verdes shelf (SCCWRP 1973).

2.4.2.4 Marine Mammals

Pinnipeds and Sea Otters. California sea lions (*Zalophus californianus*) and harbor seals (*Phoca vitulina*) occur in the nearshore waters of Palos Verdes (Bonnell et al 1981). These species forage beneath the surface on pelagic and demersal fishes and squid. Occasionally, sub-adult male southern sea otters are sighted along the Palos Verdes coastline (U.S. ACOE 1992).

Cetaceans. Four species of baleen whales and eight species of toothed whales occur over the Palos Verdes shelf (Bonnell et al 1981, Dohl et al 1981). The California gray whale (Eschricthius robustus), bottlenose dolphin (*Tursiops truncatus*), common dolphin (*Delphinus delphius*), and pacific white sided dolphin (*Lagerhynchus obliquens*) are the most common species in the project vicinity. Sitings of sperm whales (*Physeter catadon*) and Dall's porpoise (*Phocenoides dalli*) are also reported in the general area (U.S. ACOE 1992). One of the most important areas

of marine mammal concentrations is within a nine mile radius of Point Vicente (Bonnell et al 1981) and includes the waters offshore of Abalone Cove and Portuguese Bend.

2.4.4 Marine Avifauna

Seabirds, waterfowl, and shorebirds occur along the Palos Verdes shoreline throughout the year, but concentrations are usually highest during the fall to spring period when seasonal migrants spend their winters along the southern California shoreline (Bonnell et al. 1981). Common shoreline species include willet (*Cataptrophorus semipalmatus*), whimbrel (*Numenius phaeopus*), marbled godwit (*Limosa fedoa*), sanderling (*Calidris alba*), and western and ring-billed gulls (*Larus occidentalis* and *L. delawarensis*). The western grebe (*Aechmophorus occidentalis*), various species of cormorants (*Phalacrocorax* spp.) and surf scoter (*Melanitta perspiillata*) are among the bird species which occupy the nearshore waters of this area. Several species of terns (*Sterna* spp.), gulls (*Larus* spp.) and California brown pelican (*Pelecanus occidentalis*) are expected to occur in the offshore area.

2.5 THREATENED, ENDANGERED, AND NON-LISTED SENSITIVE SPECIES

2.5.1 California Brown Pelican

The brown pelican is a federally listed endangered species that occurs along the southern California coastline for most of the year. No breeding habitat occurs on the mainland; the species nests primarily on the Channel Islands. Brown pelicans are common along the Palos Verdes shoreline and utilize the rocky shores for roosting and the nearshore waters for foraging (Briggs et al. 1981, California Brown Pelican Recovery Team 1983).

2.5.2 California Gray Whale

The California gray whale is a federally-listed threatened species. Gray whales swim offshore of the project area during their seasonal migration between their summer arctic feeding grounds to their winter Baja California calving and nursery lagoons (Jones et al. 1984). Their population is estimated to exceed 22,000 animals and is growing at a rate of 2.5 percent each year (Reilly et al. 1983).

Between late December and late February, gray whales are southbound and follow one of several routes through the southern California Bight, i.e., the waters between Point Conception and the Mexican Border (Dohl et al. 1981). A portion of the migrants follow a migration route along the coastline within a few miles of the shoreline (Dohl et al. 1981). Between late February and late March, the first of two pulses of gray whales migrate north (Poole 1984, Dohl et al. 1981). This pulse consists of non-cow/calf animals. Juveniles frequently travel close to shore along the shoreline of Long Point to Palos Verdes Point. Cows with young-of-the-year calves appear between late March through early May and usually travel within an eighth of a mile of the shoreline. The Point Vicente area is a well known site for observing gray whales.

2.5.3 California Grunion

The California grunion (*Leuresthes tenuis*) is considered a sensitive fish species by resource agencies but it does not have any official listing. Grunion use many beaches in southern California as spawning habitat. Boulder and cobble beaches in the project area along the Palos Verdes coastline are not conducive to grunion spawning activity. Grunion lay their eggs in finer grained beach sands during the highest spring tides between late February or early March, to early September (Walker 1952). There are no known grunion spawning areas within the project area.

2.6 SENSITIVE HABITATS

2.6.1 Refuges and Reserves

The local coastline in Fisherman's Cove and along Long Point is protected under a Rancho Palos Verdes Marine Life Preserve ordinance. Fishing is allowed within this area, but the taking of invertebrates and all other marine life is regulated by California sportsfishing code. Nearby, the shoreline extending between Inspiration Point and 0.5 miles northwest of Portuguese Point (including Abalone Cove and the waters extending 300 feet offshore) are protected under State of California legislation as the Abalone Cove Ecological Reserve and listed as Marine Protected Area Site 71 (McArdle 1997). The taking of any marine life and the disturbance of any geological or archaeological formations is prohibited. Murray (1997) has demonstrated that the designation that affords the highest level of protection (the Ecological Reserve) in southern California has been ineffective at reducing the degradation of intertidal habitat because of the lack of enforcement against trampling and the take of intertidal invertebrates. Beyond Abalone Cove, the nearest protected habitat is the Point Fermin Marine Life Refuge, approximately seven miles to the southeast of Long Point.

2.6.2 Surfgrass

Surfgrass (*Phyllospadix* spp.) is a sensitive marine resource that occurs in rocky shoreline and rocky subtidal habitats at depths to approximately 20 feet. Its sensitivity is related to its use by invertebrates and fishes as nursery habitat and its susceptibility to long-term damage because it is a very slow growing species. Revegetation occurs naturally through seeding and eventually spreading of roots and rhizomes over surfaces of rocks. No surfgrass was observed during the field surveys due to wave and surf conditions. It was not present at either Abalone Cove or Portuguese Bend during the Van Tuna Group investigations in 1996, but was located at Palos Verdes Point (Vantuna Research Group and Chambers Group, Inc. 1996). However, it was reported to be present in Abalone Cove at a depth of approximately 1.0 to 5.0 ft Mean Lower Low Water (MLLW) in 1989 (Stephens 1989).

2.6.3 Reefs and Kelp Beds

Although subtidal reefs do not have official status as a sensitive habitat or resource, kelp forests associated with reefs afford protection and cover for many marine invertebrates and fishes. Kelp (*Macrocystis pyrifera*) grows on rock and cobble habitat offshore of the Palos Verdes shoreline at depths between 20 and 45 feet. The historical distribution of kelp along the Palos Verdes

coastline is shown in Figure 5. Since the early 1970s, kelp has shown excellent growth, although diebacks have occurred during warm water El Nino periods.

2.7 Fisheries

The Palos Verdes Peninsula is an important partyboat and commercial fish and invertebrate catch region in California. Portuguese Bend and Abalone Cove are within the southern part of California Department of Fish and Game Block 720. Much of Block 720 is above deep canyon and channel waters, whereas the Portuguese Bend and Abalone Cove are in shelf waters characterized by rocky to silty sediments (Stull et al. 1987). Block 719, just east of Block 720 covers a smaller area and is mostly over the shelf. The types of species caught, and catch trends are affected by a number of environmental factors (temperature, upwelling, rainfall, storm events) and societal factors (environmental contamination, dumping, fishing practices, and economics (Stull et al. 1987).

2.7.1 Partyboat Fishery

Between 1978 and 1984, the Palos Verdes fishery accounted for 6.8% of California's party boat catch (2.65 million of 38.78 million fish). The dominant catch for the Palos Verdes region between 1981 and 1985 was Pacific mackerel, kelp-sand bass complex (kelp bass, bared sand bass, spotted sand bass), Pacific Bonito, and rockfish complex (boccaccio, vermillion, cow, and olive). The catch per angler (5.17) in 1981-1985 was lower than the preceding five year period (8.19) possibly due to (1) El Nino and severe storms of 1982-1983 and (2) public awareness of contaminated fish tissues (Stull et al 1987).

Block 720 generated 76% of the total Palos Verdes catch since the 1930s, although the percent taken in both blocks (719 and 720) varied by species and year. The higher catch in Block 720 is likely due to the greater marine area, higher habitat diversity, and especially the higher angler effort from more boat marinas. Kelp-sand bass complex species, rockfish complex species, Pacific bonito, are the most frequently caught groups in Block 720. During El Nino periods, mackerel, yellowtail and barracuda are important partyboat catches. While the rockfish complex is the highest-caught complex overall, it declined in the 1980s due to kelp associated losses during El Nino.

2.7.2 Commercial Fishery

The total commercial catch on the Palos Verdes Peninsula was 50 million pounds between 1969 and 1983 (Stull et al 1987) with peaks of over 14 million pounds in 1976-1977. Most of the catch was northern anchovy. In block 720, northern anchovy also dominated the catch accounting for 76% of the landings (4 million pounds), along with Pacific mackerel (4%) sea urchin (3%), Pacific bonito (2%), and rock crab (2%). Other species caught in Block 720 were market squid, white croaker, white seabass, California spiny lobster, California halibut, California scorpionfish, California barracuda, and California sheephead (Stull et al. 1987).

3.0 PROJECT IMPACTS

3.1 THRESHOLDS FOR SIGNIFICANCE

The threshold for significance of impacts to marine biological resources is determined by scientific judgement, and considers the relative importance of the habitat and/or species affected by project implementation. For the purposes of this analysis, the project's effects on biological resources are considered to be significant if it would:

- Substantially affect a rare, threatened, endangered, or candidate plant or animal species, or the habitat of any such species;
- Substantially diminish or degrade the habitat of any marine plant or animal;
- Result in notable net loss of a biotic community that is subject to local, state, and/or federal regulations or that is otherwise of very limited occurrence in the region.
- Interfere substantially with the movement of any resident or migratory fish and wildlife species; or
- Conflict with adopted environmental policies, general plans, or regulatory policies of the community and State of California.

3.2 RELEVANT CALIFORNIA ENVIROMENTAL POLICIES AND ACTS

The California Coastal Act (State of California 1976, amended 1999) provides the basis for protection of land and marine resources within the California coastal zone. The following relevant sections of the Coastal Act apply to protection of local marine resources in the vicinity of the proposed Long Point Resort.

Section 30231 of the California Coastal Act:

"*The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through among other means, minimizing adverse effects of wastewater discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with groundwater flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*

Section 30107.5 of the California Coastal Act.

Environmentally sensitive areas are "any area in which plan or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily or degraded by human activities and developments"

Section 30240 of the California Coastal Act:

(a) *Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*

(b) *Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade these areas, and shall be compatible with the continuance of those habitats and recreational areas.*

Section 30230 of the California Coastal Act:

Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economical significance. Use of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific , and educational purposes.

3.3 PROPOSED ACTION

The Hotel Resort will consist of visitor serving and resort facilities including a 400 guest room Resort Hotel with a restaurant, meeting areas, a spa, pools, saunas, Jacuzzis, tennis courts, gardens and other amenities. The resort will also include 50 resort villas and 32 resort casitas located adjacent to the hotel complex. Five holes of a nine-hole golf course will be located on the property. The Upper Point Vicente Area will contain the other four golf holes and a driving range. Several areas of proposed natural habitat are also contained within this site. The resort will provide public access through public trails and access ways to the beach. All structures will be set back a minimum of 25 feet from the edge of the bluff. No resort amenities will be placed on the shoreline. The proposed land uses for the site are shown in Figure 6.

A stormwater conveyance system will be employed that will manage stormwater flowing onto the site, as well as flows generated onsite. The system would manage a majority of the project site's runoff and would discharge to the ocean through two main outlets located at the base of the bluffs to reduce the amount of erosion at the site. The areas of the proposed project site not served by this system (most of the Upper Point Vicente site) will continue to drain through natural drainages and through existing facilities. There are no improvements to the system in this area because the project would not cause the stormwater flow rates to increase.

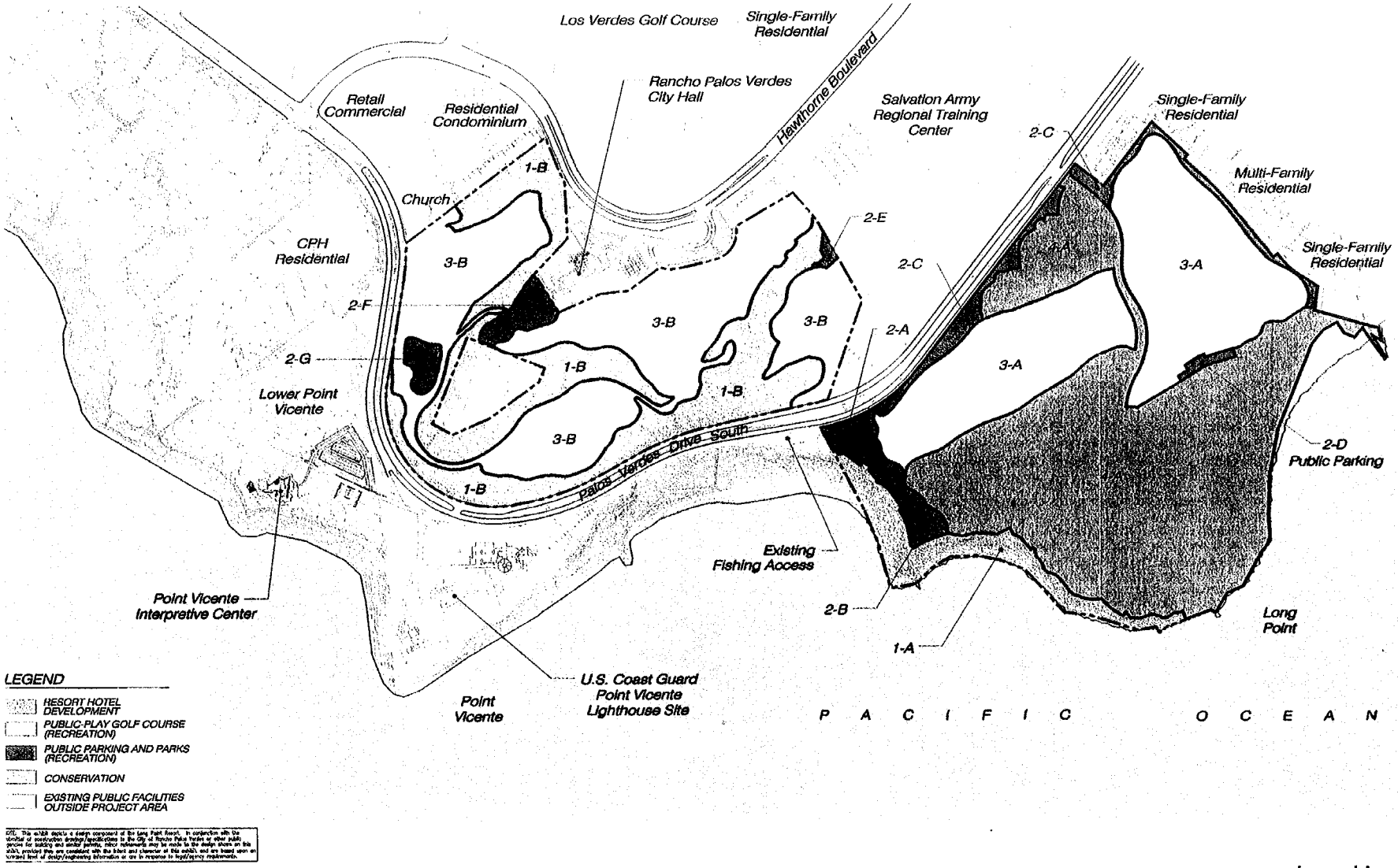


Figure 6. Long Point Resort Project Design. Source: FORMA 2000.

3.4 PROJECT-RELATED ISSUES THAT COULD ADVERSELY AFFECT MARINE BIOLOGICAL RESOURCES AND PROJECT DESIGN FEATURES TO MINIMIZE AND REDUCE PROJECT IMPACTS ON MARINE RESOURCES

Construction of coastal projects like a resort development may involve design aspects that could adversely affect shoreline and nearshore marine resources. This project incorporates upfront Best Management Practices and Project Design Features (PDFs) that ensure there will be no adverse and significant short-term or long-term effects on local water quality and subsequent adverse effects on marine biological resources. Particular aspects of this project that have a potential to degrade water quality and the quality of local marine resources include drainage, hydrology, water quality, and visitor impacts to shoreline resources. These project-related issues are analyzed for the type and degree of environmental effect that they might have on marine resources in Section 3.5 and 3.6.

3.4.1 Construction Erosion Control Plan and Storm Water Pollution Prevention Plan Project Design Features (PDF)

Project construction impacts on water quality and marine resources will be reduced to less than significant with the implementation of an Erosion Control Plan and a Storm Water Pollution Prevention Plan that incorporates specific Best Management Practices to avoid impacts to water quality.

An Erosion Control Plan should be developed by the Applicant and submitted to the City of Rancho Palos Verdes for approval prior to the initiation of construction. This plan will reduce the potential impacts of airborne dust deposition and waterborne soil erosion during storm events on the marine environment. Specific BMPs that could be included in the Erosion Management Plan include:

1. Water trucks shall be used during all grading activities to prevent visible dust emissions.

2. All trucks hauling debris or excavated materials shall be covered or maintain at least 2 feet of freeboard;

3. No grading shall occur during periods of high velocity Santa Ana winds exceeding 30 miles per hour;

4. Enclose, cover, water twice daily, or apply non-toxic chemical stabilizers to exposed stockpiles with five percent or greater silt content.

5. During the rainy season (October-April) or if slopes are generally exposed to erosion, the slopes should be stabilized and compacted, and/or temporarily hydroseeded.

6. The use of silt fencing, hay bales, sand bags, temporary detention basins, and other methods should be considered that will prevent the transport of dust or eroded soils into the marine environment.

7. During the rainy season, silt fences should be installed around the perimeter of the construction site until all grading has been completed.

8. The construction site should be monitored by a state-licensed civil engineering firm during construction activities and any storm events to ensure that all BMPs have been implemented and that the BMPs are effective at minimizing and avoiding dust generation or the transport of stormwater into the marine environment.

A Storm Water Pollution Prevention Plan must be prepared by the Applicant (PBS&J 2000). This document shall identify source control and or treatment control BMPs that will avoid and/or mitigate runoff pollutants at the specific site to the "maximum extent practical". BMPs shall be developed to mitigate for potential adverse impacts from nutrients, heavy metals, toxic chemicals related to construction and cleaning; waste materials such as concrete wash water, paints and paint equipment, wood, paper and concrete materials related to building materials and packaging, food containers and sanitary wastes; and fuels, lubricants, and other toxicants related to construction equipment and its maintenance. PBS&J (2000)

3.4.2 Post-Construction (Operational) Project Runoff Management/Water Quality Management Plan Project Design Feature

In order to e avoid potentially significant effects of the operation of the hotel, hotel amenities, casitas, and golf course on water quality and marine resources, a detailed Runoff Management Plan/Water Quality Plan was prepared by PBS&J (2000). This plan is discussed in greater detail in Appendix __ and includes a comprehensive analysis of the potential effects of the resort operation on marine biological resources (Ford 1999). The plan addresses the current deteriorated drainage systems, improvements to the drainage system to manage stormwater and dry weather runoff, hydrology, water quality of the resort's runoff, and mitigation measures to reduce potentially significant project-related effects to less than significant.

The Runoff Management/Water Quality Management Program PDF consists of several strategies and a series of Best Management Practices (BMPs) that will provide source control for pollutants as well as treatment of runoff constituents. Features of the Plan include:

1. Reducing impermeable surfaces by maximizing landscaped areas and natural areas and minimizing impermeable surfaces such as paved areas, rooftops, and paths. A large section of the site will be golf course that will maximize infiltration of precipitation and other runoff sources.

2. Using swales and natural drainages to promote biofiltration of runoff. Two swales will be used on the Resort Hotel Area. On the Upper Point Vicente Area, drainage will be conveyed overland either across the golf course or through swales. Offsite runoff will continue to flow through a swale on the site that will be conveyed to the Resort Area where it will again enter another swale.

3. Ground maintenance will limit trash and debris, and internal roads and parking lots on the site will be cleaned weekly by street sweepers.

4. Drop infiltration devices will be used at all curb inlets within the internal parking structures to remove oil, grease, debris, and suspended sediments from the water.

5. Monitoring of the drop infiltration devices will occur on a monthly interval during the rainy season, following any precipitation event, and at the end of the dry season prior to the first precipitation event of the wet season.

6. Nuisance flows will be diverted during the dry season between April 15th and October 15th to the nearest sewage line and taken to the local sewage treatment plant for treatment rather than being discharged to the ocean.

7. Swales and inlets will be sized to accommodate and treat entire first flush events.

8. The golf course runoff will be managed through several techniques including (a) computerized irrigation to reduce the amount of runoff and conserve water (b) using fertilizers that have a low leaching potential, and that will minimize over-fertilizing the golf course (c) using Integrated Pest Management (IPM) techniques to monitor, treating, and irradicating pests using the least environmentally damaging methods and spot treatment of pesticides to avoid large applications; (d) storage of environmentally hazardous materials in an appropriate building or in areas that limit the hazards of spills and fires; (e) disposing of grass clippings by composting or spread along the golf course in the rough or a wooded area, and properly disposing of solvent, degreasers, pesticides and their containers through a service that will properly recycle or dispose of these chemicals.

9. Since many constituents in urban runoff cannot be fully removed by using filtration or other methods, common source control BMPs identified in the California "Municipal" Handbook will be implemented. These include: (a) using informational materials for employees of the resort and guests regarding care of the natural environment (BMP SCO); (b) using proper methods of cleaning up spills and disposal of materials within the resort complex and the golf course maintenance areas (BMP SC10); (c) controlling the storage of hazardous materials so they are inaccessible to storm runoff (BMP SC20); (d) posting storm drain signs that will say "drains to the ocean" (BMP SC30); (e) using recycled oil for maintenance and security vehicles (BMP SC32); (f) inspecting service vehicles and golf course vehicles (BMP SC40); (g) street cleaning using sweepers on the resort area parking lots (BMP SC70); (h) maintaining the catch basin inlet filtration devices (BMP SC71); (i) using vegetation controls that do not contribute to stormwater runoff pollution (BMP SC72); and inspecting and flushing the storm drains to prevent a buildup of sediment of sediment and other pollutants at the energy dissipaters at the ocean outlets.

10. A comprehensive water quality monitoring program will be conducted at several locations along the drainage and at some points of the proposed development. It is also recommended that the ocean waters be tested in the event that any concentrations of pollutants with the stormwater exceeded the California Toxics Rule or the California Ocean Plan. If it is determined that the

proposed mitigation measures are not sufficient to reduce the concentrations of pollutants, then additional measures will be added to the plan by the applicant to ensure compliance with all water quality criteria.

Implementation of the proposed Runoff Management Plan/Water Quality Plan PDF proposed for the project (PBS&J 2000), compliance with the Standard Urban Stormwater Mitigation Plan (SUSMP) guidelines (PBS&J 2000), and conducting detailed runoff monitoring programs during construction and operation of the Long Point Resort will reduce potentially significant water quality and hydrological impacts associated with stormwater and dry weather runoff to less than significant impacts (PBS&J 2000). Consequently, hydrological and water quality effects will have less than significant impacts on marine resources with the inclusion of these measures.

3.5 ANALYSIS OF CONSTRUCTION IMPACTS

3.5.1 Grading

3.5.1.1 Impacts to Intertidal Resources.

With the inclusion of the Erosion Control Plan and the Storm Water Pollution Prevention Plan in the project design, grading activities would have a less than significant impact on intertidal resources.

Habitat burial. Cut and fill operations will be necessary for the grading of the hotel facilities, golf course, and other hotel-related developments. Earthwork will result approximately 550,000 cubic yards of cut and 500,00 cubic yards of fill (FORMA 2000). During storm events, exposed sand and silty soils, and organic debris from the construction site could be eroded and washed down the bluffs and/or through the existing storm drains into the intertidal and subtidal habitats and then transported upcoast or downcoast in the littoral drift. This could result in localized shoreline burial of rocky intertidal habitat and mortality of marine life. The diversity and abundance of intertidal plants and invertebrates would decrease if graded soils were transported and trapped in tidal pools that could not be flushed through tidal and wave action. Sands and silts could cover the bottom of the tide pools as well as low-lying boulder habitat. These trapped sediments could smother algae and sessile invertebrates (anemones, sponges, tube worms, barnacles, mussels, and tube snails). Finer-grained mud sediments would remain in suspension and create turbid conditions in the tide pools until the tides could flush the suspended sediments out of the tide pools.

Such an occurrence occurred locally in May 1998 with the accidental burial of 0.6 acres of rocky intertidal habitat at the Capital Pacific Homes (CPH) residential construction site immediately upcoast of the Long Point Resort Project, when stormwater protection devices on the construction site were removed prior to an un-anticipated, late-spring El Nino storm. Up to nine inches of sand and mud buried the habitat and intertidal organisms until southerly swells began to dissipate the material. Tide pool burial was still evident one year following the burial episode, but natural cleansing of the habitat had reduced the depth of burial 60% and marine organisms had recruited back into the tidepools (CRM 1998, 1999). Full recovery from such man-induced

or natural events however, can take up to several years (Cimberg 1975, Murray 1997).
A decrease in algae cover would result in a decrease of rocky intertidal primary productivity, particularly for delicate red and green foliaceous algae, and upper intertidal rockweeds. A reduction in algal cover could also result in less food availability for herbivorous invertebrates (chitons, limpets, snails, and hermit crabs), a shift in species composition to more sand-tolerant forms (coralline algae), and a decrease in secondary production.

Runoff contaminant loads. Typical pollutants generated during grading activities and other construction activities could include nutrients, heavy metals, pesticides and herbicides, toxic chemicals related to construction and cleaning, waste materials and debris, fuel, lubricants and other toxins related to construction equipment and its maintenance (PBS&J 2000). If these pollutants enter the ocean through airborne or water-borne transport methods, then water quality degradation and potential adverse impacts to marine life could potentially occur. Direct mortality, reduced viability, loss of food resources, and habitat contamination could result.

The generation of these pollutants from the construction site will be mitigated by the inclusion and implementation of water quality management PDFs described in Section 2.3 so that the California Toxics Rule and California Ocean Plan discharge requirements are met. In instances where runoff concentrations exceed Ocean Plan discharge requirements, immediate and rapid dilution of the runoff should be adequate to reduce concentrations to levels that will not be harmful to marine organisms (Ford1999, PBS&J 2000). Strict adherence to identified source controls and project BMPs will result in short-term, and less than significant impacts on local shoreline and nearshore marine resources.

Dust generation. Grading and construction may result in the production of dust generated from the operation of construction equipment and vehicles on the site. During high velocity, dry windy conditions, this dust could potentially be transported offshore into the marine environment, particularly during Santa Ana wind conditions. The addition of dust to the tide pool waters would result in a short-term, less-than-significant impact that would form a light coating of sediment in tide pool habitat and open water areas depending on the velocity and duration of the wind event. This material would be removed during high tides and waves. The deposition of fine dust in the project area could potentially result in a short-term increase of water turbidity and a reduction in photosynthetic processes. Such a reduction would result in a slight decrease in photosynthetic activity of intertidal plants.

Because of the expected short duration of any wind events that might generate dust the expected effect will be less-than significant on water quality and marine resources. The generation of dust from the construction site will also be mitigated by the inclusion of project water quality management PDFs discussed in Section 3.4.1 that will reduce the amount of dust generated by the project.

In summary, the significant impacts of grading and construction activities will be less than significant on intertidal marine resources with the incorporation of Project Design Features including (1) a Storm Water Pollution Prevention Plan (SWPPP) that shall be prepared by the applicant (2) implementation of Best Management Practices (BMPs) identified within the State

of California "California Storm Water Best Management Practice Handbook for Construction Activity" and (3) preparation and implementation of a Construction Erosion Control Plan prior to site construction. The preparation and implementation of these plans will be the responsibility of the applicant.

These plans and documents will identify dry season and wet season runoff control measures, source control, and or treatment controls that will avoid and/or mitigate potential soil erosion, runoff pollutants, and other stormwater constituents.

3.5.1.2 Impacts to Nearshore Resources (Open Water and Benthic Environments)

Grading activities will have a less than significant impact on nearshore marine resources with the inclusion and implementation of the Erosion Control Plan and the Storm Water Pollutant Prevention Plan PDF .

The waters offshore of Long Point support a productive and diverse open water community of plankton, fishes, and marine mammals. These waters are also utilized for sportsfishing and commercial fishing. The nearshore benthic environment consists of rocky subtidal, reefs that support giant kelp forests and associated fishes, invertebrates, and plants. The unconsolidated sediments of the project region support benthic organisms such as worms, clams, and crustaceans.

Stormwater runoff could potentially result in higher nearshore turbidity and a localized short-term significant impact on water quality and marine resources related to a reduced ability of plants to photosynthesize. Topsoils transported to offshore waters by storm water flows, nuisance water flows, or gusty winds would stay in suspension and be transported along the shoreline. Water column habitat and nearshore reefs would be temporarily affected as water turbidity might increase. Short-term reductions in submarine light intensity, slight reductions in primary productivity, and reduced subsurface visibility for sight-foraging fishes and seabirds would be expected.

Less than significant effects on nearshore marine life are anticipated with the inclusion and implementation of the Erosion Control Plan and the Storm Water Pollutant Prevention PDF . Project water quality control plan PDFs will ensure that marine biological resources will be protected from short-term effects like those described in Section 3.4.1.

3.5.1.3 Impacts to Sensitive Species

Grading activities will have a less than significant impact on surfgrass and kelp bed sensitive resources with the inclusion and implementation of the Erosion Control Plan and the Storm Water Pollutant Prevention Plan PDF.

<u>Surfgrass and Kelp</u>. **Reduction in surfgrass and kelp production due to runoff and construction grading-related activities would constitute a short-term significant effect.** A light-to-moderate coating of sediments could potentially reach intertidal and/or open water

environments. These sediments could settle on rocky habitat that supports sensitive species of plants including surfgrass (*Phyllospadix torreyi*) in the low intertidal and shallow subtidal zones along the Palos Verdes shoreline, and giant kelp (*Macrocystis pyrifera*) located at depths between 20 and 60 ft. Surfgrass grows in high energy regimes from the shoreline to approximately 20 ft depths. It is naturally subjected to periodic sand inundation and can survive short periods of burial. Ocean swells, waves, and currents would dissipate the sediments throughout the water column and transport them away from the area's resources. Giant kelp plants may be susceptible to short-term stresses due to a build up of sediment on the kelp fronds or burial of newly settled recruits. While the potential for such impacts are low a significant amount of sediment transported offshore as a result of erosion from the project site could result in adverse effects to these nearshore keystone species of plants. However, the implementation of the Resort's Erosion Control Plan and the Storm Water Pollutant Prevention Plan PDF (Section 3.4.1) will result in less than significant impacts to marine resources because it would assist in reducing the suspended sediment load to the nearshore marine environment.

Listed and Non-listed Species of Birds. Shorebirds and seabirds would experience less-than-significant impacts from grading activities. The California brown pelican and other seabirds that use their visual-acuity as a foraging mechanism could potentially be displaced a turbidity plume resulting from grading activities if the plume turbidity prevents seabirds from keying in on baitfish schools. This would result in short-term, significant impacts changes in their foraging behavior but would be mitigated to less than significant with the implementation of the project's Erosion Control Plan PDF. (Section 3.4.1) because the amount of suspended load reaching the nearshore environment will be substantially reduced.

Marine Mammals. No impacts to marine mammals are anticipated from construction-related grading activities. Local pinnipeds and cetaceans that might be foraging or transiting the waters offshore of the construction site would not be affected by grading activities. Implementation of the Erosion Control Plan PDF (Section 3) will reduce the potential for turbidity plumes and other runoff from affecting the nearshore and offshore waters.

3.5.1.4. Sensitive Habitats

Grading related activities will have no significant effects to State of California Marine Managed Areas. Fisherman's Cove and the Long Point shoreline is a locally protected marine habitat. This area extends between Inspiration Point and 0.5 mi northwest of Portuguese Point, including Abalone Cove and the offshore is protected under State of California legislation as the Abalone Cove Ecological Reserve and listed as Marine Protected Area Site 71 (McArdle 1997). Damage or the modification of theses habitat would be considered significant environmental impacts. The types of impacts which could occur to these areas are discussed above regarding rocky intertidal habitats. However, with the implementation of the project's Erosion Control Plan and the Stormwater Pollutant Prevention PDFs , no adverse effects to these sensitive habitats are anticipated because the amount of suspended sediments reaching the shoreline and nearshore waters will be substantially reduced.

3.5.2 Storm Drain Construction

Existing storm drains. Currently, there are four stormwater discharge locations on the Hotel Resort project site (PBS&J 2000) and several smaller ones located on the Upper Point Vicente Site. The locations are shown in Figure 7a and 7b. Discharge Point A is located at the southeastern edge of the project site. This discharge is intermittent, and cascades off the top of the bluff over the edge and down an incision in the bluff face to the shoreline below. The runoff has created non-native vegetation at the base of the bluff, and discharges to the ocean over a stretch of rocky beach. Discharge Point B is located 300 feet west of Discharge Point A and is a low flow natural drainage. Discharge Point C is located at the southern tip of the property and flows intermittently throughout the year. The runoff is discharged into the rocky intertidal. Discharge Point D is located near the western corner of the Resort Hotel area close to Palos Verdes Drive South and the secondary access road to Marineland that branches off of Palos Verdes Drive South. The discharge point is a 4-foot wide concrete spillway that conveys runoff to the edge of the cliff. The site also possesses several minor drainage features that currently drain to the beach. These are of concern because although they are minor, they contribute to erosion and destabilization of the bluffs.

On the Upper Point Vicente Site, several man made drainages collect and divert runoff from the Upper Point Vicente Area. These drainages convey the runoff to the bluff top, and runoff is discharged over the bluff to the rocky intertidal zone at the base of the bluff.

Proposed storm drains. For the hotel area, major surface water flows of runoff over the bluff will be eliminated, and will be discharged at two points (Figure 8a). Discharge Point I will consist of an impact stilling basin (energy dissipater) that will dissipate the energy of the flows existing from a 72 inch pipeline onto the shoreline. This will be located at the southeastern extreme of the project area and out of the public access area. Discharge Point II will be located at the southern edge near "Long Point", where runoff flow from a 60 inch pipe and will be dissipated by a second impact stilling basin. These storm drains will direct storm water and runoff from the project site and will empty the flow onto the project area shorelines. The energy dissipaters will reduce runoff velocities and mitigate shoreline erosion/scouring, consistent with the requirements of the City of Rancho Palos Verdes and the California Coastal Commission.

For the Upper Point Vicente Site, drainage will continue to follow natural water courses to the ocean (Figure 8b). No improvements to these drainages are planned because there will be no increase in hydrological characteristics of the Upper Point Vicente site (PBS&J 2000).

3.5.2.1 Impacts to Intertidal Resources

Impact sill (energy dissipater) construction along the shoreline at Discharge Points I and II will have short-term and less than significant impacts on shoreline environments and intertidal communities. Construction activities will be short-term and limited to the shoreline above the MHT line where impact sills will be constructed. Construction will occur behind the beach berm. Inclusion of an Erosion Control Plan and the Storm Water Pollution Prevention Plan PDFs will assist in preventing construction-related grading impacts while the storm drain and energy dissipaters are being constructed.

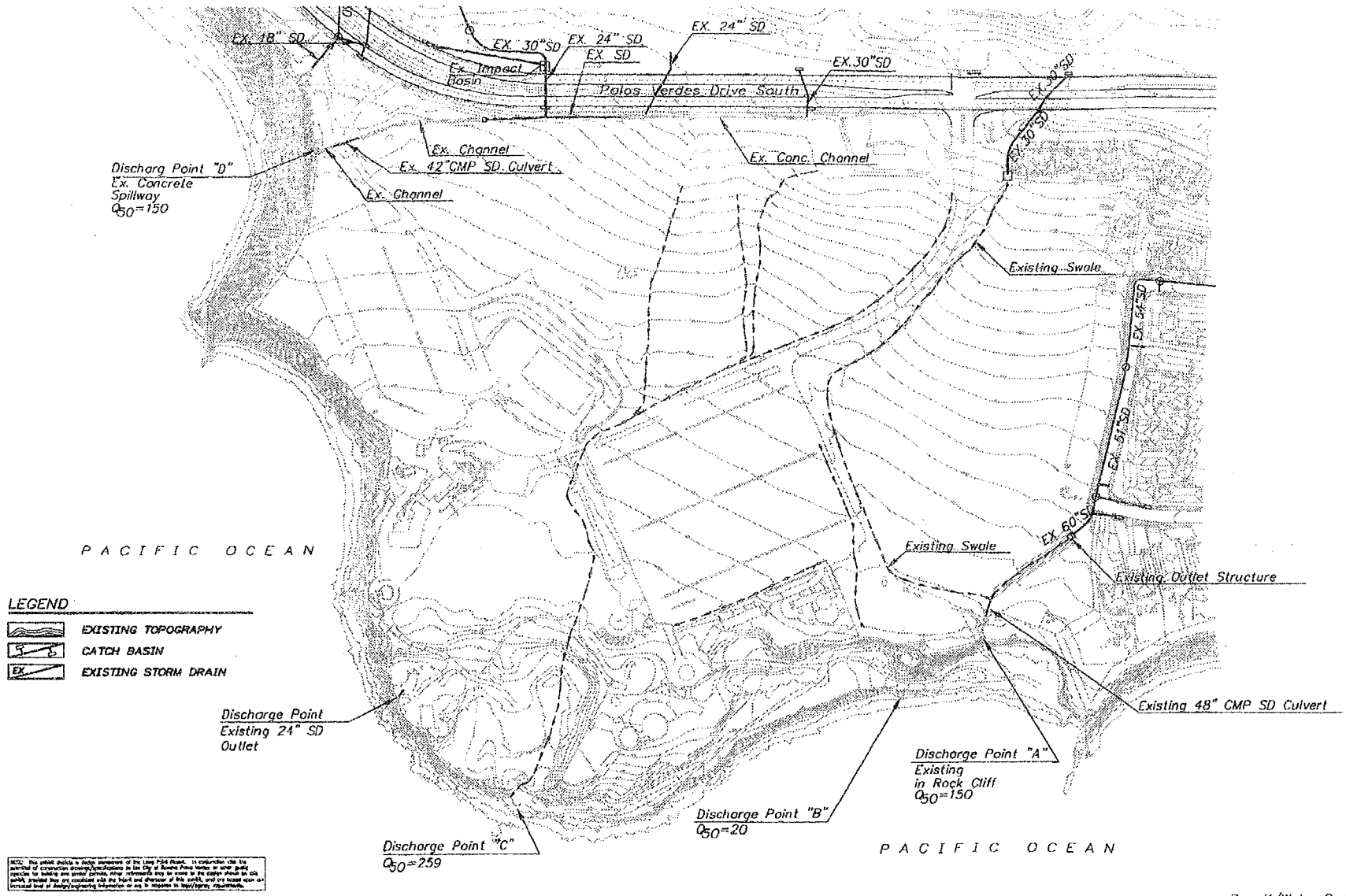


Figure 2.2
Runoff/Water Quality Management Plan
RESORT HOTEL AREA EXISTING DRAINAGE CONDITIONS

Figure 7a. Existing Distribution of Storm Drains in the Hotel Resort Area.
Source: PBS&J 2000

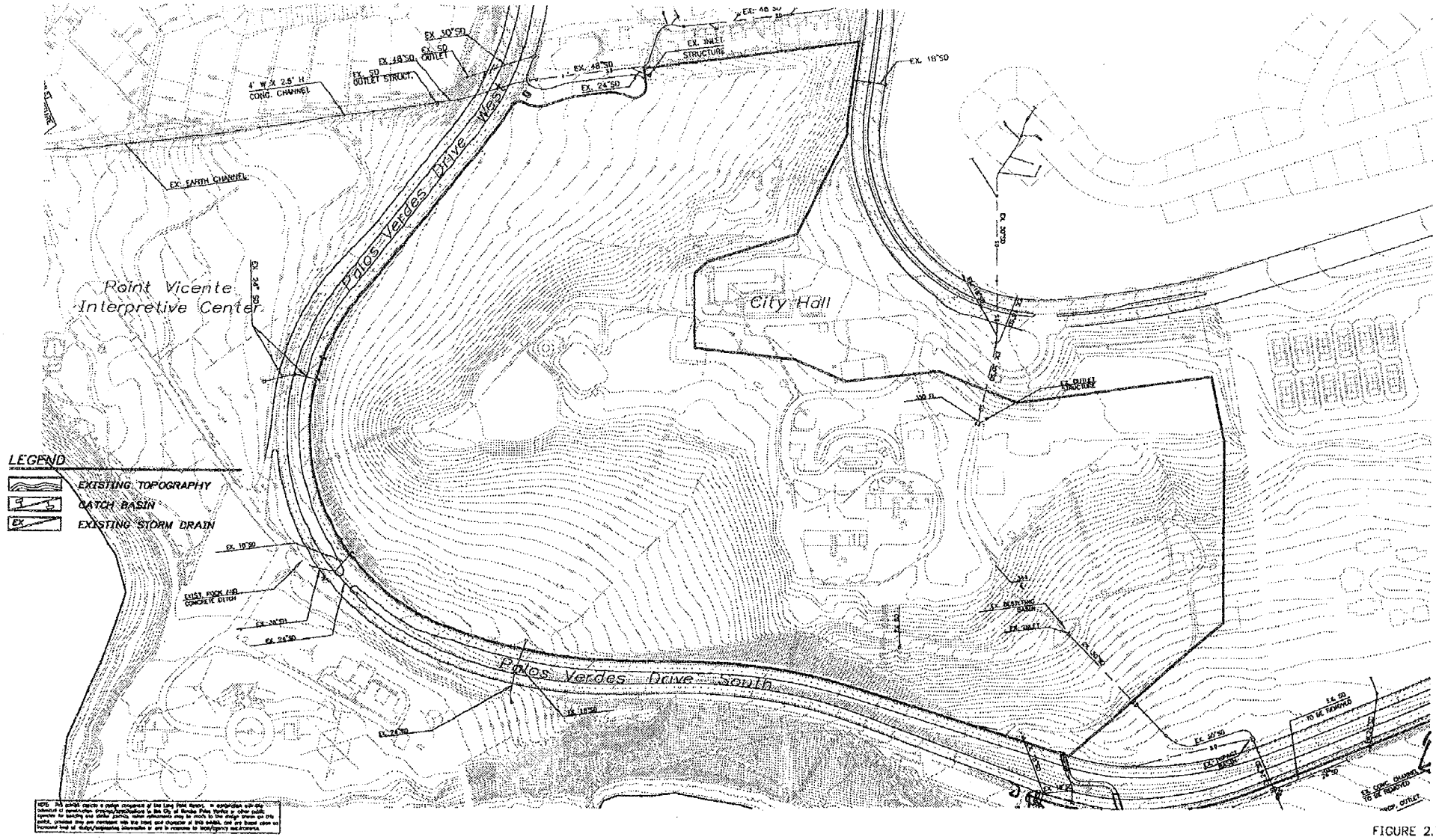


FIGURE 2.7

LONG POINT RESORT

City of Rancho Palos Verdes • California

Figure 7b. Existing Distribution of Storm Drains in the Upper Point Vicente Are
Source: PBS&J 2000

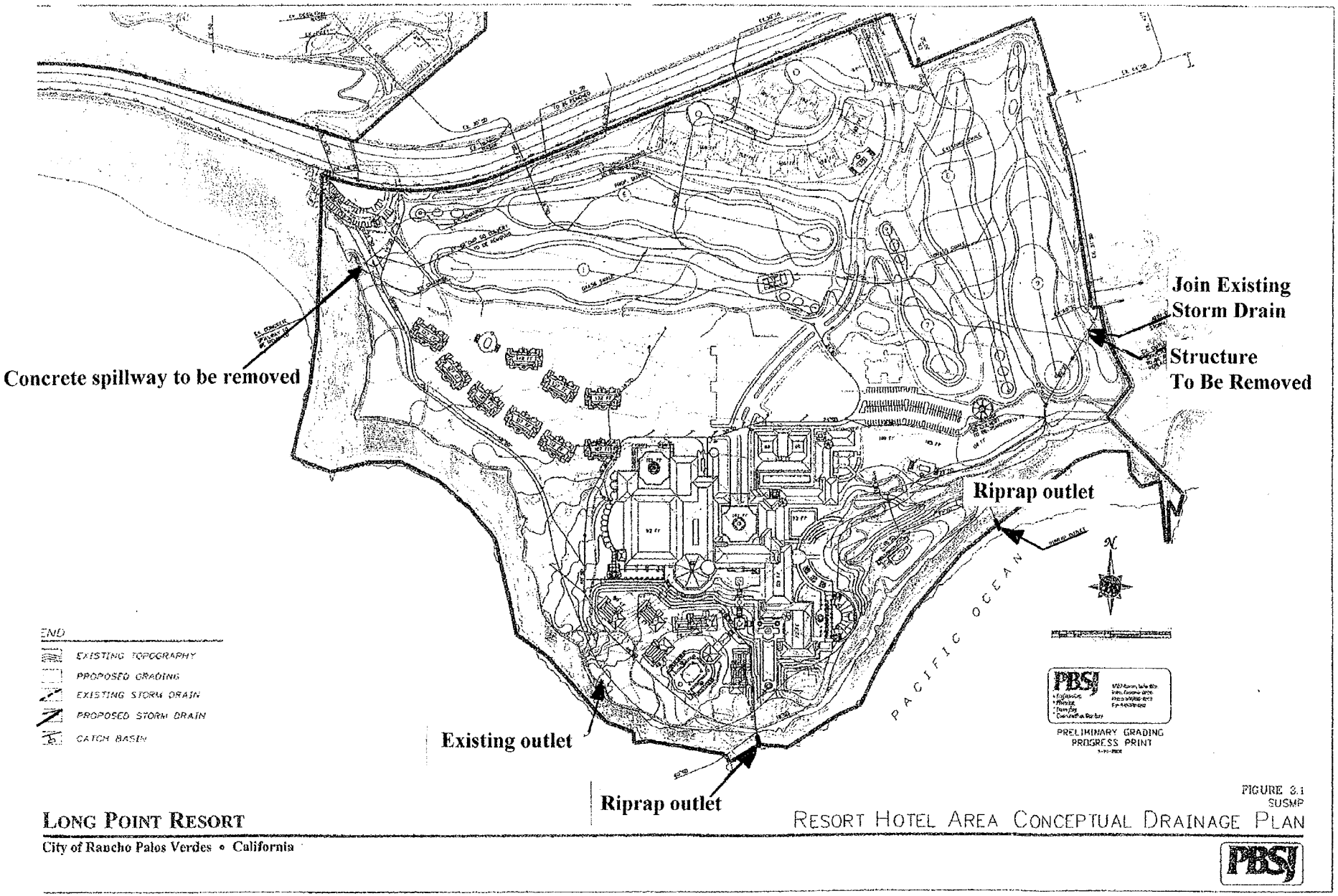


Figure 8a. Conceptual Drainage Plan in the Hotel Resort Area.
Source: PBS&J 2000.

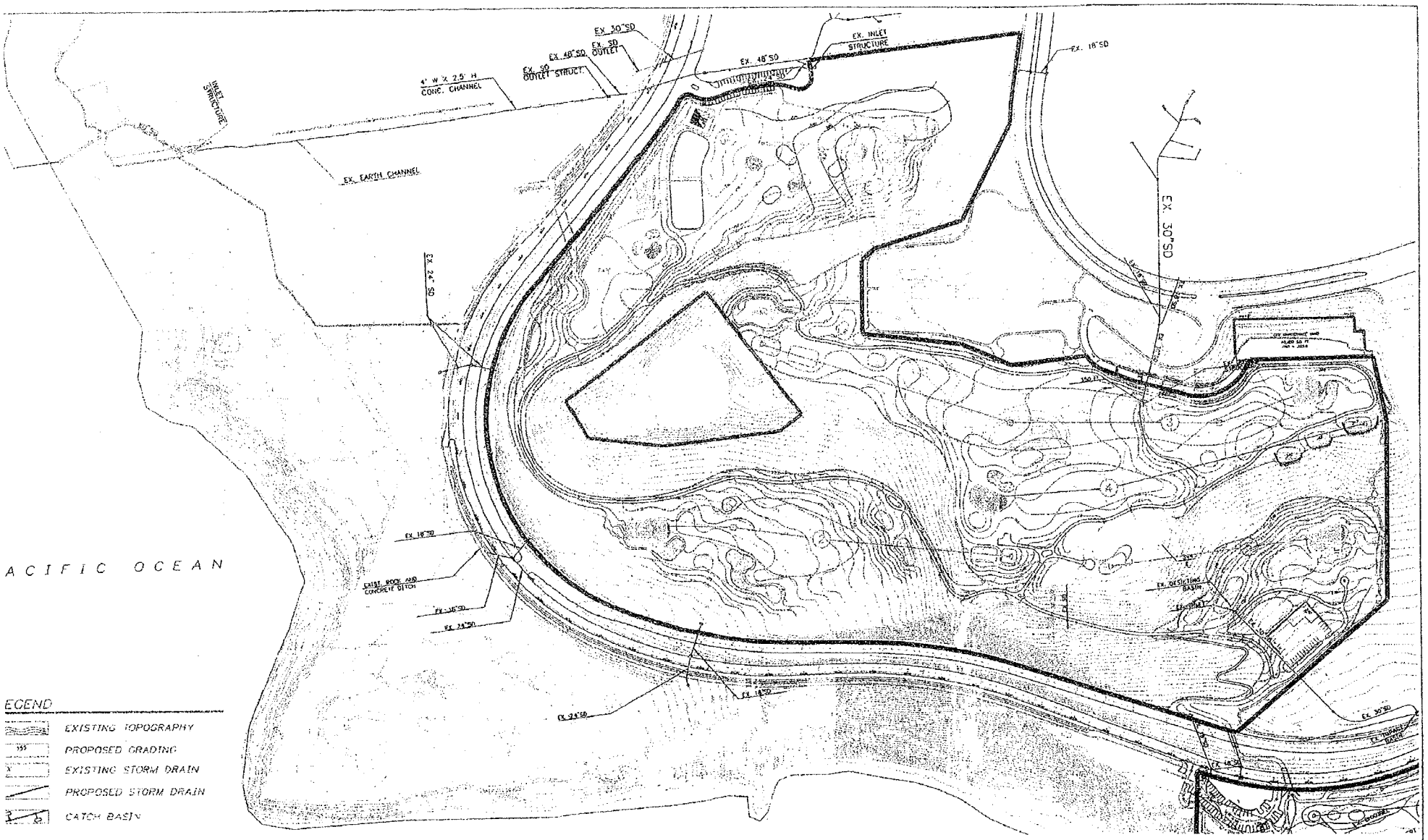


FIGURE 3.2
SUSMP

LONG POINT RESORT

City of Rancho Palos Verdes • California

Figure 8b. Conceptual Drainage Plan in the Upper Point Vicente Area.
Source: PBS&J 2000.

Impact sills will likely consist of rock rip rap or concrete materials. The construction of these sills may require equipment to transit over the backshore of the beach will require personnel, trucks and/or dozers to move materials to each of the discharge sites. Vehicles will not transit over rocky intertidal habitat to access the construction sites. Construction workers may occasionally use the intertidal areas and the sandy beach habitats during their breaks or lunch periods.

While less than significant construction impacts are anticipated, contractors should provide workers with specific BMPs to avoid and minimize disturbances to the rocky intertidal habitat and associated plant and animal communities while working on the beaches in the project area and to remove all debris from the shoreline following completion of impact sill construction. See Section 3.5.2.6 for suggested BMPs.

3.5.2.2. Impacts to Nearshore Marine Resources

Nearshore marine resources (kelp beds, surfgrass beds, fishes, and reefs) are out of the proposed area of stormdrain and energy dissipater construction and therefore will not be affected by the shoreline storm drain construction activity.

3.5.2.3 Impacts to Listed and Non-listed Species of Birds. _

Storm drain construction will have short-term, less than significant impacts to shorebirds and seabirds. Roosting California brown pelicans and other birds may be temporarily displaced as a result of shoreline construction activity, if shorebirds are roosting on the backshore at the time of construction . However, the temporary displacement of these birds will not result in any significant impacts to endangered specie, or non-listed shorebirds and seabirds because there are no seabird breeding sites on the beach and no physiological stress or injury to individual birds is anticipated

3.5.2.4 Impacts to Marine Mammals

No impacts to marine mammals are anticipated from storm drain construction activities. There are no known haul out areas for harbor seals or sea lions within the areas proposed for construction which precludes any significant population-level effects on these species. However, if individual sea lions or harbor seals are present within 50 meters of construction activity, then construction activity shall be monitored by a marine mammal biologist who will have the authority to temporarily halt construction activities should it be determined by the biologist that the individual may be physically harmed by construction activities.

3.5.2.5 Impacts to Sensitive Habitats

Sensitive Resources (kelp beds and surf grass beds) will not be affected by shoreline construction activity. These resources will not be within the construction area corridor and will not be directly or indirectly affected by shoreline construction activity.

3.5.2.6 Shoreline Construction Management BMPs

In addition to standard Best Management Practices employed for storm drain construction, the following BMPs should be implemented to ensure that impacts to shoreline habitats and shoreline organisms are avoided:

- All beach vehicular movement shall be limited to the backshore environment behind the beach berm.
- All construction debris shall be removed from the site as often as deemed necessary by the City's Construction Monitor to prevent the material from being washed out to sea on the high tides.
- Coastal protection devices shall minimize intrusion into sand beach habitat. Any sand beach habitat that is disturbed during the construction habitat shall be restored to its natural state following the completion of construction.

3.5.2.7 Construction Monitoring

A construction-period water quality monitoring program should be implemented that will include monitoring of suspended solids and runoff contaminants from the project site to ensure that the local marine resources are not being degraded. This monitoring program should include the construction site, local tide pools, and nearshore waters offshore of the Long Point Resort prior to, during, and following the grading activities. If it is determined that tide pool or ocean water quality has been degraded by construction activities, then adaptive management techniques should be implemented to correct water quality violations in order to prevent adverse effects on marine organisms.

3.6 LONG TERM IMPACTS

Potential long term effects that could affect marine biological resources as a result of the operation of the Long Point Resort include (1) degradation of water quality as a consequence of stormwater and dry weather runoff from the project site and a subsequent degradation of marine habitat and (2) from the direct and indirect effects of increased tourism (visitor use) to the local shoreline. Because the Long Point Project incorporates a long-term Runoff Management/Water Quality Management Plan as a Project Design Feature, no long-term water quality impacts are anticipated and this will minimize and avoid adverse and significant effects on marine habitats and marine biota.

3.6.1 Impacts of Reduced Salinity on Marine Organisms

Changes in salinity related to stormwater discharge and subsequent effects on marine life are a function of many variables. Many of these variables are highly site-specific and can only be predicted through the implementation of water quality and hydraulic computer modeling programs to predict effects, and then secondly, monitoring of marine organisms. Some of the physical variables that will influence the salinity of the stormwater include volume of flow, velocity of flow, tide condition, temperature, and mixing process (winds, waves, and current).

In general, the range of salinity tolerated by plants and animals living in the sea is less than for organisms living in brackish water, hypersaline water, or brine (Kinne 1964) because they are not as well adapted at maintaining internal ionic balances as organisms that live in widely fluctuating environments. Euryhaline organisms (organisms able to tolerate a wide range of salinity) in estuaries can function within a range of 10 to 15 parts per thousand ($^{o}/_{oo}$) of their optimum salinities (Kinne 1964). Some organisms, such as intertidally-occurring snails (*Littorina saxitalis*), are tolerant of short-term salinity changes from 25-80 $^{o}/_{oo}$ (Berger 1989). How an organism responds to a reduction or increase in salinity also depends on many factors, including its age, life cycle stage, sex, and sexual phase (sexual vs. asexual). Generally, open ocean marine organisms are least tolerant of changes in salinity in their sexual phases, during their early embryonic stages, which may be related to changes in their metabolic rate during development. Hatched young, however, may be more salinity-tolerant than senile adults (Kinne 1964), a possible adaptation for emigration between low-salinity nursery areas in estuaries to higher-salinity offshore habitats. Death from low-or-high salinity presumably never occurs in the open ocean under natural conditions, but may be encountered by organisms living in coastal, littoral, estuarine, hypersaline, or brackish waters (Kinne 1964). Such organisms are often subject to considerable salinity variations that are related to dilution, especially during heavy rains, or to excessive evaporation during prolonged periods of drought.

Fluctuating salinities affect phytoplankton and marine macroalgae by creating osmotic stress and ionic imbalances that will subsequently affect their rate of growth and development, rate of survival, photosynthesis, and respiration (Kirth 1989). Microalgae can respond and make adjustments to salinity increases or decreases rather rapidly, within several minutes for initial adjustment, and several minutes to reach acclimation and return to a steady-state condition. Macroalgae, however, may require several hours to adjust and acclimate (Kirth 1989). Phytoplankton and algae can also buffer the effects of salinity changes anatomically and physiologically, for example, by developing large water vacuoles, and massive, overlapping thalli. In marine invertebrates and fishes, fluctuations in salinity affect the rate and efficiency of most metabolic processes, including growth, reproduction, feeding, and respiration, even if salinity increases or decreases are within the zones of an organism's tolerance (Kinne 1964). Most marine invertebrates are osmoconformers and their internal salt concentrations are the same as the external seawater. Eggs of many open-ocean invertebrates will shrink and die upon exposure to high salinities or swell and burst upon exposure to lower salinities. Estuarine invertebrates and all bony fishes are osmoregulators, having developed the ability to adjust their internal water and salt environment (Kinne 1964). Changes in density and viscosity may affect the amount of energy that has to be spent for movement or maintaining a certain depth for plankton and certain water column fishes (Kirth 1989).

While the ability of marine forms for tolerance, regulation, and behavior adaptation appears to be more restricted than estuarine forms, they can respond to salinity changes over a small range and for limited periods (Kinne 1964). Intertidal organisms tolerance to thermal and osmotic shock also decreases at lower tidal levels and, therefore, exposure to stormwater flow during low and minus tides can produce negative impacts, depending on the duration and salinity. Bay et al. (1996) conducted toxicity tests of dry weather flow from the Santa Monica Bay watershed in 1990-1993 using sensitive life stages of purple urchins, red abalone, and giant kelp. Their studies suggested that toxic effects were produced when salinity fell below 28 g/kg (parts per thousand).

When salinities decrease, motile species such as fish, crustaceans (shrimps, crabs, lobsters), echinoderms (sea stars and urchins), and gastropods (snails) can behaviorally adapt by migrating offshore or into deeper tide pools. Polychaete worms, mollusks (bivalves and snails), and fishes produce a protective mucous coating. Clams, such as mussels and oysters will slow down their metabolism and close their shells. Polychaetes and crabs will retreat into burrows. Bivalves and barnacles may live "indefinitely" in extreme low-or-high average salinities if the length of the active period allowed by short-term salinity fluctuations are sufficient for feeding and defecating.

Sea anemones exposed to periods of stormwater runoff expel their symbiotic microscopic algae (zooanthellae) and become bleached, which is interpreted to be an indicator of stress related to hyposalinity. During storm events, salinities can be reduced to 0.0 (freshwater) a few hours after low tide (Martin et al. 1996). Field studied conducted at Leo Carrillo State Beach in 1995 by Martin et al. (1996) suggested that a greater area of habitat was affected where heavy equipment had been used to bulldoze sand in order to direct the stormwater runoff much more broadly, rather than allowing it to continue to run in its natural, narrow channel.

Deleterious effects were also observed when anemones were exposed to short duration pulses of hyposaline water, similar to tidal exposure in tidepools during freshwater runoff; bleaching was even more pronounced and rapid than bleaching in response to constant, long-term exposure to hyposaline conditions. This would occur during short-duration storms and runoff. The degree of bleaching in anemones observed in laboratory tests was related to salinity concentration; the lower the salinity, the greater the degree of bleaching. At the end of a five-day test, sea anemones exposed to salinities of 32 $^{o}/_{oo}$, 24 $^{o}/_{oo}$, 16 $^{o}/_{oo}$, and 8 $^{o}/_{oo}$ retained approximately 95%, 80%, 60%, and 20% respectively, of their initial number of zooanthellae.

Recovery Times. The rate of recovery of rocky intertidal communities to episodic stormwater runoff disturbances will be dependent upon variables such as the volume and frequency of runoff, the time of year, the degree mortality, the ability of planktonic larvae to recruit onto surfaces, and the amount and type of habitat affected. Macroalgae may recover physiologically within several hours of the impact, while many organisms will behaviorally adapt by closing their shells (snails and mussels) or burrowing (clams and worms). If an area is denuded, bacteria, algal spores, and invertebrate larvae will begin to recolonize the area but the rate of colonization is dependent upon a series of either seasonal or successional changes from the establishment of bacteria to the climax community of mussels and other plants and invertebrates. For fully denuded areas, splash zone (above the high tide zone) plants and barnacle recovery occurs within one year (Murray and Littler 1979), upper intertidal species (barnacles, red seaweed and

brown seaweed) fully recover within four to eight years (Cimberg 1975), mid-intertidal species (mussels) recover within six to nine years (Cimberg 1975 and VTN 1984), and low intertidal species (seaweeds, surfgrass, anemones, and polychaetes) rocky intertidal habitats take up to 10 years to recover (MBC 1985). Early successional stages such as the barnacle *Chthamalus,* and the opportunistic green algae *Ulva* and *Enteromorpha* may settle first but are eventually out competed by later stages such as the barnacle *Balanus,* and the red algae *Gigartina* and *Rhodymenia*. Other disturbances may occur and push back the recovery process. For example, continual runoff and constant low salinities in the intertidal zone would delay the recovery process and keep the community in a constant state of disturbance.

Full recovery of subtidal reef-associated organisms from disturbances may take between one and 10 years, depending on the type of disturbance and the frequency of the disturbance (Turner et al. 1969, Cimberg 1975). Repeated disturbances result in unstable and low diversity communities. Using artificial substrates, Turner et al. (1969) monitored the recolonization and successional sequence of several different species that exhibit both slow and fast-growing life cycles. Recolonization was quickest for barnacles, hydroids, mollusks, polychaetes, ascidians, sponges, and ectoprocts which recolonized during the first year. Anemones and gorgonians recolonized between the second and fourth years, while stony corals recolonized the substrate only after a five-year period. In addition, constant disturbances will prevent long-term colonizing species of algae from becoming established. Species tolerant of repeated disturbances, such as turf and encrusting algae, will be more successful than leafy foliose forms. Surfgrass and coralline turf are adapted to seasonal influxes of sand and periods of burial although surfgrass, when removed from an area, may take up to 10 years to recover. Physical scouring and burial is an important factor in the mortality of juvenile kelp plants (Rosenthal et al. 1974). Young juvenile plants, and in particular, newly settled sporophytes cannot tolerate burial for any length of time. Higher levels of turbidity will also result in less light penetration to the reef, and subsequent reductions in the number of juvenile giant kelp recruits.

3.6.1.1 Reduced Salinity Impacts on Intertidal Organisms

Reduced salinity in stormwater will have a less than significant impact on nearshore marine resources with the inclusion and implementation of the Runoff Management/Water Quality Management Plan. Urban runoff will flow onto the backshore of the shoreline at the south and southeast end of the project area at Discharge I and Discharge II. These discharges will be 1,100 feet apart and will have energy dissipaters to reduce the energy and velocity of flow onto the beaches. The distance between the two discharges will assist in preventing a combined discharge effect (Ford 1999). The Q_{50} (peak flows during a 50 year storm) for Discharge I and Discharge II are anticipated to be 740 and 360 cfs, which are 43% and 39% higher than pre-project discharge rates (PBS&J 2000). The increase for Discharge I is higher because the tributary area is greater, and greater for Discharge 2 because of both an increase in tributary area as well as an addition of impermeable surfaces from the development of the site (PBS&J 2000). While the increases appear to be substantial over pre-project conditions, the runoff time sequences determined for these discharges are relatively short, and in all cases last for 20 to 30 minutes (Ford1999). Given the facts that: (1) the discharge duration of even the worse-case 50 year storms would be relatively short; (2) that the discharge of runoff would occur

within a high energy and well mixed nearshore zone; and (3) marine intertidal organisms are generally well adapted to short term variations in salinity and temperature, the potential for adverse effects related to decreases in ambient salinity of rocky intertidal organisms is relatively low, and likely to be short-term, and less than significant (Ford 1999).

Prolonged exposure, as a result of significant storms over time, would likely increase the potential for deleterious effects on tide pool organisms. These events would likely occur during years of higher rainfall, such as those periods when the El Nino Oscillation Events produce storms that are of longer duration and of greater intensity. These storms would not only affect the local area, but rocky intertidal areas along the coastline.

Nuisance flows will be only be diverted during the dry season between April 15th and October 15th to the nearest wastewater line and disposed of through the County of Los Angeles Sanitation District system. Therefore, rocky intertidal life will not be affected by any dry weather runoff . Between October 15th and April 15th (the annual period when rainfall is highest) nuisance runoff with a lower salinity with mix with normal rainwater runoff that will flow into the marine environment. The runoff will be dissipated with ambient salinity ocean water through tidal action and ocean current mixing processes.

In the event that wave action during large storms, high tides, and storm surges damage shoreline dissipaters and storm drain pipes on the shoreline, the effect on intertidal resources would be a short-term increase in exposure to higher velocity freshwater discharges and sediment flows. This discharge could erode sediments from the backshore, and potentially bury or scour rocky intertidal habitat that could result in some localized mortality of intertidal invertebrates. This would be a localized significant adverse effect on intertidal marine life. Recovery could take up to several years. Placement of a stormdrain pipe and dissipater structure at a higher elevation may mitigate any potential losses due to significant storm event that would damage storm drain structures.

3.6.1.2 Reduced Salinity Impacts on Nearshore Water Column and Benthic Marine Communities.

Due to the short duration of projected high-flow stormwater runoff events, water column and benthic nearshore marine resources will not be significantly impacted by stormwater runoff that reduces ambient salinity levels. Short-term changes in fish behavior or feeding strategies could be affected, if a freshwater lens persisted within the surface layer for an extended period of time or extended to the seafloor. Benthic invertebrates may temporarily be exposed to slightly reduced salinities, but the short duration exposure would not result in significant adverse impacts to populations of benthic invertebrates or benthic fishes.

Nuisance flows will be diverted during the dry season between April 15th and October 15th to the nearest wastewater line and disposed of through the County of Los Angeles Sanitation District system. Therefore, nearshore water column and benthic marine fishes will not be affected by any dry weather runoff from the project site.

3.6.1.3 Reduced Salinity Impacts on Listed and Non-Listed Marine Birds

Reduced salinity as a result of stormwater runoff events will have no significant effects on shorebirds and seabirds. These guilds will forage in fresh and/or saltwater habitat or can move to areas unaffected by stormwater runoff.

3.6.1.4 Reduced Salinity Impacts on Listed and Non Listed Marine Mammals

Reduced salinity as a result of stormwater runoff events will have no significant effects on marine mammals. Pinniped food resources will not be affected by reduced salinities and cetaceans transiting along the coast will not be physiologically or behaviorally affected.

3.6.1.5 Reduced Salinity Impacts on Sensitive Habitats

No adverse significant impacts on seagrass beds, kelp beds, or Marine Managed Areas are anticipated as a result of project urban runoff hydrology. The short duration of expected high flows and the high energy nature of the coastal waters within the area will assist in the mixing process and will counteract the influence of the stormwater flow into the marine environment (Ford 1999). Nuisance flows will be diverted during the dry season between April 15th and October 15th to the nearest wastewater line and disposed of through the County of Los Angeles Sanitation District system. Therefore, sensitive marine habitats will not be affected by any dry weather runoff from the project site. See Section 3.6.1.1 for a discussion of effects on intertidal organisms.

3.6.2 Urban Runoff Effects on Rocky Intertidal Organisms

As described in Section 2.3 and 3.6, and in the discussion that follows, runoff from urbanized and increasingly urbanized areas of Los Angeles County has a potential to degrade ocean water quality that would have direct and negative effects on marine life. Degradation would potentially occur as a function of chemical toxicity, reduced water clarity, aesthetics, a pulsed decrease in water salinity and subsequent die-off organisms unable to tolerate rapid changes in salinity. In light of the potential for adverse effects, the Long Point Resort Project Plan incorporates specific Best Management Practices within the Runoff Management/Water Quality Management Plan to minimize and avoid adverse impacts to local water quality and marine biological resources. The following discussion provides an overview of the sources and types of urban runoff effects on marine life.

Sources of Contaminants. In general, sources of contaminants in runoff include household and industrial wastes, accidental spills, sewer overflows, septic tank leaks, illegal and illicit connections, excess runoff and chemicals from landscape irrigation, rubbish, used crankcase oil, grease, food by-products, wash water, debris discarded from the street, animal droppings, and settled air pollutants (Santa Monica Bay Restoration Project [SMBRP] 1994). Street runoff carries metal, rubber, and oil residues from highways, while garden runoff carries pesticides (Soule et al. 1992). Urban runoff consists of a combination of both naturally occurring dissolved constituents and contaminants. These are of concern because they can be directly toxic to marine

organisms or accumulate in their tissues and make them unfit for human consumption. The most common naturally occurring compounds are dissolved solids (such as calcium carbonate, bicarbonate, sulfate, chloride, calcium sodium, magnesium and organic carbon) and metals (such as barium, iron and manganese). These constituents are generally not harmful to marine organisms at normal concentrations.

Toxicity in Urban Runoff. Compounds found in urban runoff varies with land use practices. Impervious areas (paved surfaces) contribute high concentrations of oils and grease and heavy metals (zinc, lead, copper, cadmium, mercury, and nickel) while landscaped areas (lawns, open spaces) contribute higher concentrations of nutrients (nitrates, ammonia, phosphates), pesticides, and herbicides. Filter feeding intertidal organisms have a particularly high potential for bioaccumulating pesticides such as DDT, complex chlorinated hydrocarbons such as PCBs and organometallic compounds such methy-mercury. These organohalide toxicants are usually associated with the fine settleable solid fraction of runoff containing fine silt materials. Many intertidal organisms are less able than vertebrates to transform organic and metal contaminants into less toxic forms (SMBRP 1993).

Most contaminants that enter drainages and other water bodies are generated during the first major storm event of the season. This first flush effect creates an immediate pulse in the concentration of contaminants and debris that accumulate in street gutters and streets during the previous dry season (Bay et al. 1999, Engineering Science 1987). Dry weather runoff flow volumes from developments (irrigation, car washing, and pavement cleaning) when compared to stormwater runoff are substantially lower in volume but still can contain substantial concentrations of toxicants and debris such as grass clippings, motor oils, household pesticides, and drainage from road drips and accidental spills.

Organic enrichment due to accidental wastewater overflow into the local storm drains may occur. These flows would result in short-term water degradation and bacterial contamination of the shoreline and nearshore waters. Urban wastewater also can carry significant amounts of suspended sediments eroded during storms. In addition, accumulations of trash and debris can temporarily limit light availability in the water column. Styrofoam and plastic bags are known to be ingested by fishes, seabirds, and marine mammals.

In studies conducted by UCLA and Woodward Clyde Consultants (1992), oil and grease were dominant constituents in runoff from multi-family residential, commercial, public, light industrial, and other urban areas; BOD in single family residential areas; and TKN in open areas. Single-family residential areas contribute the highest percentage of BOD, COD, total phosphorous, soluble phosphorous, TKN, nitrite and nitrate, copper, lead, and zinc. Open space contribute the highest percentage of total suspended solids, while multi-family residential areas contribute the highest percentage of oil and grease. Because there is no means of treating surface runoff at present (other than tying the system into a municipal wastewater facility system which is planned for the dry weather period for the Resort), source control and implementing public education and involvement programs are the primary practices to reduce the level of contamination in urban runoff.

Toxicity Experimental Effect Studies. In many cases, toxic effects are difficult to quantify (Schiff and Stevenson 1996). Studies conducted for the San Diego Regional Stormwater Monitoring program indicated that event mean concentrations (EMC) of wet weather runoff contaminants from residential areas of San Diego had similar mean concentrations of constituents of suspended solids, oil and grease, cadmium, chromium, nickel, and zinc compared to industrial or commercial areas. Potential effects included significant reduced reproduction in a 7-day chronic toxicity study of stormwater effluents to the freshwater cladoceran *Ceriodaphnia*. Other studies indicated that San Diego stormwater have measured impaired larval growth of the fish *Pimephales* and significantly reduced hatching success and normal development of the fish *Menidia* and *Medaka* fish embryos (Schiff and Stevenson 1996). It should be noted however, that none of these species are endemic to the Long Point receiving waters, and toxicity results do not necessarily reflect site-specific toxic impacts to the marine environment. Studies from Santa Monica Bay, however, do show substantial differences in contaminants types and concentrations comparing urban area stormwater runoff (Ballona Creek) with non urban areas stormwater runoff (Malibu Creek)

Dry weather flow studies at Ballona Creek in Santa Monica bay indicate that toxicity to sea urchins and abalone larvae occurred above a stormwater effluent concentration of 6% (Bay et al. 1996). No adults of these forms were found near the storm drains although larvae of the adults or similar species likely occurred in the water column. Their data clearly showed the potential of toxicity of dry weather flows but did not accurately predict ecological effects on site-specific species. Since dry weather flows are were diluted over 100 times once they mixed with Santa Monica Bay waters, ecological effects are hypothesized to be unlikely since water column toxicity appeared at a concentration of 20 times the dilution of the stormwater effluent (Bay et al 1996 and 1999). Other toxic effects may arise from sediment toxicity and increased contaminant bioaccumulation caused by the deposition of contaminated sediments.

The above cited studies suggest that both dry and wet season stormwater runoff events have the potential to cause environmental effects to organisms at some defined levels of toxicity and that a stringent urban runoff/water quality management plan is required to protect water quality and marine resources of the project area.

The primary components of stormwater that could affect local marine life in the vicinity of Long Point include eroded sediments, nitrogen and phosphorous concentrations, pesticides and herbicides, petrochemicals, heavy metals, and organic debris, and decreased water salinity . Increasing the amount of impervious surfaces (roofs, streets, sidewalks, parking areas, and drive-ways) will also increase the amount of runoff from the project property. A large portion of the Long Point development area will be retained as natural or developed open area (a golf course); these areas will be fertilized and managed for pests and weeds. The introduction of nutrients, treatment applications for pests and weeds into the soils, and runoff from the golf course is a potential concern because these materials could be transported to the shoreline and discharged into ocean waters. Design plans for the storm drain systems include provisions for the removal of the majority of oil, grease, debris, and other constituents commonly found in urban runoff. However, the system will not be able to reduce the concentrations of nutrients, or organic/metal contaminants in the runoff. Source control BMPs are the most likely way to achieve lower levels

of these contaminants.

The Runoff Management/Water Quality Management Plan PDF for the Long Point Resort Project minimizes and avoids potential long-term impacts of the discharge of harmful contaminants to the ocean, a reduction of marine habitat values in the vicinity of the discharge, reductions in the diversity of intertidal and benthic soft bottom invertebrates, reef plants, invertebrate and fishes, a potential reduction of seagrass and kelp bed productivity in the vicinity of the discharge, long-term accumulation of contaminants in the food web, and human health risks.

3.6.2.1 Urban Runoff Effects on Intertidal Marine Resources

Contaminants contained in urban runoff will have short-term and less than significant impacts on rocky intertidal habitats and communities. The discharge of urban runoff and contaminants from the project site is expected to have short-term and less than significant impacts on rocky intertidal habitats and marine organisms because concentrations of contaminants are expected to meet California Toxics Rule standards for undiluted stormwater and, in the majority of cases, the California Ocean Plan as a result of the implementation of the Runoff Management/Water Quality Management Plan. Periodic episodes of higher turbidity will accompany urban runoff into the intertidal zone. If not mitigated, the combination of factors, could potentially cause metabolic stresses to intertidal plants, invertebrates, and fishes.

Discharge I and Discharge II are sufficiently separated (approximately 1,100 feet apart) to prevent mixing of the two runoff plumes from these sources, and only in the very rare instances of extremely high runoff would potential mixing occur (PBS&J 2000; Ford1999). In instances where runoff concentrations exceed Ocean Plan discharge requirements, immediate and rapid dilution of the runoff should be adequate to reduce concentrations to levels that will not be harmful to marine organisms (Ford1999, PBS&J 2000).

Nuisance flows will be diverted during the dry season between April 15th and October 15th to the nearest wastewater line and disposed of through the County of Los Angeles Sanitation District system. Therefore, no urban water runoff impacts to rocky intertidal systems related to the presence of contaminants will occur between spring to early fall periods.

Strict adherence to, and proper implementation of identified source controls and project BMPs contained within the Runoff Management/Water Quality Management Plan (discussed in Section 3.4.2) will result in short-term and less than significant impacts on local shoreline habitats and intertidal communities.

3.6.2.2 Urban Runoff Effects on Nearshore Water Column and Benthic Marine Resources

Urban runoff contaminants will have short-term and less-than-significant adverse impacts on nearshore water column and benthic resources. Under normal conditions, and with the inclusion of stringent Runoff Management/Water Quality Management Plans, the level of contaminants expected to be contained within the storm water discharge will be very low and

will not significantly impact populations of fishes or benthic invertebrates. Turbidity may temporarily increase due to the runoff characteristics, but the plume would be dissipated quickly due to the high wave energy environment. Strict adherence to, and proper implementation of identified source controls and project BMPs contained within the Runoff Management/Water Quality Management Plan (discussed in Section 3.4.2) will result in short-term, and less than significant impacts on water column and benthic communities.

Since nuisance flows will be diverted during the dry season between April 15th and October 15th to the nearest wastewater line and disposed of through the County of Los Angeles Sanitation District system, no urban water runoff impacts on water column and benthic organisms related to the presence of contaminants will occur between spring to early fall periods.

3.6.2.3 Urban Runoff Effects on Listed and Non Listed Species of Shorebirds

Contaminants contained in urban runoff will have less than significant impacts on shorebirds and seabirds. The level of contaminants expected to be contained within the storm water discharge will be very low and will not significantly impact populations of shorebirds or seabirds that may come in contact with the water through ingestion of water, their prey, or physical contact. Shorebirds and seabirds do not concentrate their foraging within particular areas of the coastline which further reduces the likelihood that they would be adversely affected.

Nuisance flows will be diverted during the dry season between April 15th and October 15th to the nearest wastewater line and disposed of through the County of Los Angeles Sanitation District system. Therefore, no urban water runoff impacts on seabirds related to the presence of contaminants will occur between spring to early fall periods.

3.6.2.4 Urban Runoff Effects on Listed and Non Listed Species of Marine Mammals

Contaminants contained in urban runoff will have a less than significant adverse impact on marine mammals.. The anticipated low level of contaminants that will be discharged within the urban runoff will not adversely affect pinnipeds or cetaceans that may temporarily be in the project area. No food web biomagnification effects would occur, since BMPs and source controls contained within the Runoff Management/Water Quality Management Plans would reduce the concentration of contaminants to acceptable discharge levels. Short-term turbidity increases would not substantially affect the foraging or movement patterns of any marine mammal located within the project area.

Nuisance flows will be diverted during the dry season between April 15th and October 15th to the nearest wastewater line and disposed of through the County of Los Angeles Sanitation District system. Therefore, no urban water runoff impacts on marine mammals related to the presence of contaminants will occur between spring to early fall periods.

3.6.2.5 With the inclusion of a strictly implemented Runoff Management/Water Quality Management Plan, accidental spills of concentrated hydrocarbons, pesticides, herbicides,

and other contaminants will have a less than significant impact on marine resources. Accidental, concentrated spills of hydrocarbons, pesticides, herbicides that reach the intertidal zone and nearshore waters have a high potential to cause plant and animal mortality that would result in long term degradation of the intertidal community or reef habitats. These events would result in a significant long-term adverse impact to marine organisms, including sensitive species of kelp and surfgrass with recovery times that could range between one and ten years (Murray and Littler 1979; Cimberg 1975). Strict adherence to, and proper implementation of identified source controls and project BMPs contained within the Runoff Management/Water Quality Management Plan (discussed in Section 3.4.2) will reduce the reduce the likelihood of accidental spills of hazardous materials or known contaminants from reaching the shoreline and coastal waters.

3.6.2.6 Long-Term Water Quality and Marine Resource Monitoring Program. While project-level effects are anticipated to be mitigated through the inclusion and implementation of the Runoff Management/Water Quality Management Plan PDF, a comprehensive water quality and marine resources monitoring program should be conducted for a period of five years following completion of resort construction to ensure that source controls and BMPs within the PDFs are satisfactorily protecting the beneficial uses of the receiving waters and marine life. Yearly monitoring reports shall detail the results of the field surveys. If the yearly conclusions indicate that water quality and/or the marine life in the vicinity of the Long Point Resort has been adversely affected, then adaptive management strategies shall be implemented to correct runoff control deficiencies. If at the end of the fifth year the results indicate that the beneficial uses of the receiving waters are being attained, the monitoring program shall be deemed completed.

The monitoring program should include monitoring of suspended solids and runoff contaminants from the project site to ensure that the local marine resources are not being degraded. This monitoring program should include the construction site, local tide pools, and nearshore waters offshore of the Long Point Resort prior to, during, and following the grading activities. Marine biological surveys should be conducted to document the health of key rocky intertidal species, rocky habitat quality in the vicinity of the discharges, surfgrass distribution, and nearshore kelp bed characteristics within the immediate vicinity (less than a radius of one nautical mile) from each of the two discharges.

3.7 Visitor Use

The development of the Long Point hotel facilities, amenities, and golf course could potentially draw a considerable number of both local and out of town guests. Activities such as sunbathing, snorkeling, scuba diving, and fishing will increase the recreational use value of the area shoreline.

Over 100 species of plants, invertebrates, and fishes have been documented within the tide pools along the Rancho Palos Verdes shoreline (Vantuna Research Group 1996, CRM 1998). Increased use of the tide pools by nature enthusiasts, fishermen, and potential poachers, could conceivably create additional pressures on the rocky intertidal and shallow subtidal habitats. This could contribute to long-term habitat degradation and reduction in rocky intertidal

biodiversity through:

- the taking (collecting) of the larger, more conspicuous invertebrates (i.e., chitons, mussels, turban snails, sea stars, and wavy top snails);
- trampling and smothering of turf-forming algae (i.e., *Gelidium/Corallina* complexes) and small, delicate upright species of algae (i.e., *Gigartina, Rhodymenia, Callophyllis*); colonial invertebrates (i.e., reef building worms, clonal anemones, and mussels) and inconspicuous soft-bodied invertebrates (anemones, sea hares, nudibranchs, sponges, and tunicates); and
- increased fishing pressure on reef-associated species such as opaleye perch and kelp bass.

Without a visitor use plan, the potential impacts from increased visitor use would be a significant and long-term reduction in the value of the intertidal habitat. Intertidal marine resources in southern California are in a steady state of deterioration because of unmanaged or under-managed policies which regulate these areas (Murray 1997).

Dr. Murray's studies suggest that unlawful collecting was highest in the Dana Point Marine Life Refuge and most collecting occurred during the fall and winter periods when low tides occurred during the afternoon. Trampling studies also indicated that rockweed, a high intertidal seaweed suffers substantial damage when subjected to high visitor damage. Therefore, additional visitor use during summer periods, when the tourist season is highest, has a potential to increase the damage to the mid and high intertidal zone which are generally the ones most exposed during summer daylight hours.

3.7.1 Visitor Use Impacts on Shoreline Resources

3.7.1.1 Increased visitor use of the Long Point and Fisherman Cove shoreline could potentially result in an adverse, significant impact on rocky intertidal habitat and organisms. The Long Point and Fisherman's Cove rocky intertidal habitat could be degraded as a result of the development of the Long Point Resort. Of the two regions, the most accessible to the general public and the one that has a higher species richness and diversity is Fisherman's Cove. The primary periods of increased visitor use would be from Memorial Day to Labor Day and during low tide between November and February. Visitors would access the shoreline from access paths to Long Point, and from the parking lot at Fisherman's Cove. Visitor activities that would be expected along the shoreline include tide pooling, walking, sitting, and collecting plants and animals (Murray 1997).

The resulting impacts due to increased visitor intensity would be a significant and long-term reduction in the value of the intertidal habitat. Intertidal marine resources in southern California are in a steady state of deterioration because of unmanaged or under-managed policies which regulate these areas (Murray 1997).

3.7.2 Mitigation Measures to Reduce Potentially Significant Visitor Use Impacts on Rocky Intertidal Organisms

3.7.2.1 The intertidal resources of the Fisherman's Cove and east to the tip of Long Point shall be actively managed by the City of Rancho Palos Verdes and the Applicant to offset potentially significant impacts to intertidal marine resources. This area shall be managed as part of Conservation Area 1-A in association with the westerly bluffs below the bluff-top edge of the Resort Hotel Area. The area shall be designated as a Habitat Reserve. Planning Area 1-A is approximately 150 feet away from any Resort Hotel Development and adjoins the County of Los Angeles's Point Vicente Fishing Access Area. Although recreational fishing for fin fish is permitted the Habitat Reserve Designation will restrict certain uses below the Resort Hotel including commercial fishing, the collection of invertebrates, and the disturbances of plants, birds, and other animal life. This level of protection will help ensure the ongoing conservation of this ecosystem and "sustainable" use of coastal resources within this stretch of the Rancho Palos Verdes shoreline.

3.7.2.2. The City and the Applicant shall work with a qualified marine biologist to develop a Long-term Shoreline Resource Management Plan that will identify and detail the means by which visitor use to the rocky outcrops of the project area will be actively managed. At a minimum the plan shall implement monitoring and enforcement of protected regulations herein: (1) signage; (2) enforcement of posted regulations; (3) on-site naturalists or other personnel to enforce regulations and to cite violators; (4) educational and docent programs; and (5) areas of restricted or no access.

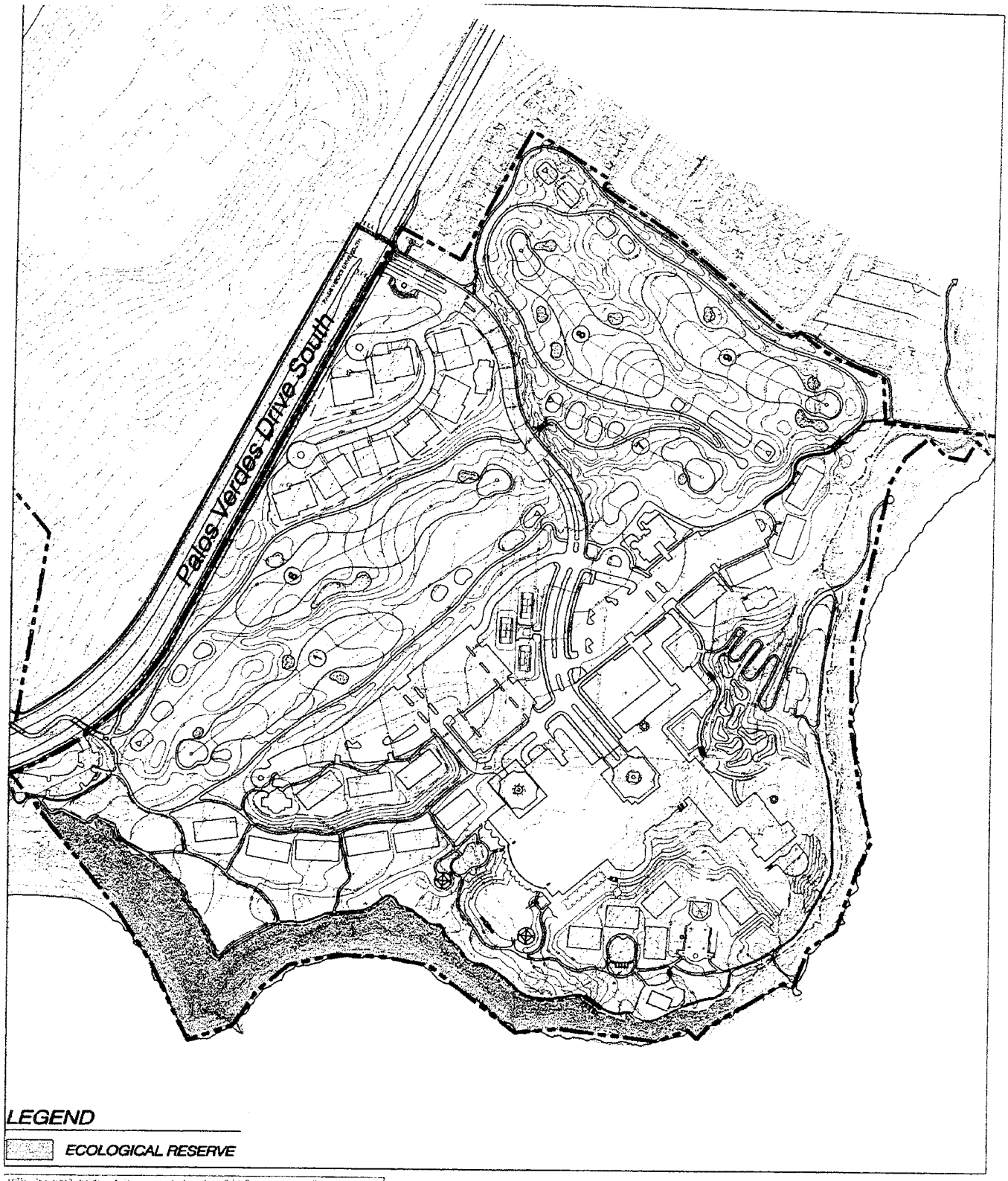
3.7.2.3 The Applicant should develop an educational booklet for hotel guests that provides ways to prevent ecological damage to the intertidal and subtidal habitats.

3.7.2.4. The Applicant should develop an interpretive display at the hotel/resort that informs visitors of the area's natural resources and provides suggestions for minimizing damage to these resources.

3.7.2.5 The Applicant should post simple, but direct and enforceable signage in multiple languages at all access points to the rocky intertidal habitats from the residential and resort areas to advise the public of the area's ecological value and to help prevent degradation of the intertidal habitat.

3.7.2.6. The Applicant and the City of Rancho Palos Verdes shall provide training for **and enforcement of the Habitat Reserve shoreline on a daily basis during the summer and on weekends during the winter months between Labor Day and Memorial Day.** Enforcement personnel shall have the authority to enforce local statutes and State of California laws regarding fishing limits and the illegal take of marine plants and animals.

3.7.2.7 Conduct intertidal monitoring studies. The purpose of this monitoring program will be to document the effects of visitor use and storm drain discharges on the Habitat Reserve intertidal and marine life. In association with surveys being conducted to assess runoff effects on marine life, the visitor use monitoring program shall include quarterly (four times/year) monitoring surveys of beach and rocky intertidal habitat use and concurrent intertidal biological



NOTE: This exhibit depicts a design component of the Long Point Resort. In conjunction with the submittal of construction drawings/specifications to the City of Rancho Palos Verdes or other public agencies for building and similar permits, minor refinements may be made to the design shown on this exhibit, provided they are consistent with the intent and character of this exhibit, and are based upon an increased level of design/engineering information or are in response to legal/agency requirements.

LONG POINT RESORT

City of Rancho Palos Verdes • California

BLUFF/BEACH HABITAT RESERVE WITHIN RESORT HOTEL AREA

FORMA JUNE 2000

Figure 9. Conservation Area 1A Habitat Reserve. Source FORMA 2000.

resource surveys over a five-year post-construction monitoring period to determine if the management program is effective at preventing degradation of the intertidal communities. Methodology to be used shall be consistent with other long-term intertidal monitoring programs within Southern California and shall be approved by the California Department of Fish and Game.

Annual reports shall be prepared and the management plan's objectives shall be evaluated and updated as necessary to ensure protection of the intertidal resources. If it is determined through survey results that after the first five years the overall management program is not effective in reducing the degradation of intertidal habitat, a written assessment of the management plan shall be prepared by the assigned marine biologist(s). This assessment shall prescribe alternative methods for improvement of habitat quality and health. The assessment report/revised program shall be reviewed by the City of Rancho Palos Verdes prior to implementation of alternative methods. The assessment/revised program shall be prepared and submitted for review prior to the completion of the sixth year after implementation of the original Resource Management Plan.

4.0 CUMULATIVE IMPACTS

The proposed Long Point Resort Project will have a long-term cumulative impact on marine biological resources as a result of:

- Potential visitor increases in the use of the rocky intertidal habitat at Long Point and Fisherman's Cove above the levels that presently exist. These impacts will include increased visitor-induced damage to intertidal and subtidal marine organisms as a result of increased trampling and the illegal taking of plants, invertebrates, and fishes. This effect will be mitigated by the implementation of the Habitat Reserve Designation for Planning Area 1-A, the preparation and implementation of a Marine Resources Management Plan, and a 5-year monitoring program to assess project effects on marine life.

- Potential water quality degradation in the vicinity of Long Point and Fisherman's Cove. The cumulative impacts of water quality degradation could, potentially occur as a result of an increase in storm water and nuisance water runoff into the ocean from this and other future planned developments on the Rancho Palos Verdes Peninsula. However, with the continual updating in technology of source controls and BMPs contained in the Runoff Management/Water Quality Management Plan, the cumulative impacts of this project, in association with other planned projects on the Palos Verdes Peninsula is anticipated to be a long-term, but less than significant effect on local water quality and local marine resources along the Rancho Palos Verdes shoreline.

Mitigation measures to ensure that cumulative effects are minimized are also presented in Section 3.0. In addition, a more effective enforcement program for protecting marine life along the Palos Verdes Peninsula at the city, county, and state levels would assist in preventing a long-term cumulative degradation of shoreline marine life.

5.0 ALTERNATIVE ANALYSIS

The environmental impacts on marine resources are analyzed for two project alternatives to the proposed Long Point Resort Development. These alternatives are:

- **The No Project Alternative; and**
- **Alternative A: Expanded Upper Point Vicente development to include the approximately 3.9 acre site on the Upper Point Vicente landform that was retained by the U.S. Coast Guard when the federal government transferred ownership of the bulk of the Upper Point Vicente to the City in of Rancho Palos Verdes in 1975.**

5.1 NO PROJECT ALTERNATIVE

5.1.1 Impacts on Marine Resources

The no project alternative would have no environmental impacts on marine resources. Currently levels of runoff would continue to flow over the bluff and without the possibility of repair, bluff erosion would continue. This would, however, result in continued bluff erosion and unmitigated runoff into the waters offshore of Long Point.

5.1.2 Mitigation Measures

None required.

5.2 ALTERNATIVE A

Under this alternative, 3.9 acres of land would be added to the Upper Point Vicente Area. This area would be used for (1) restoration of native habitat (2) expansion of City Hall Park, and (3) expansion of the public-use golf course.

5.2.1 Impacts on Marine Resources

This alternative would not increase the level of anticipated environmental effects on marine resources for either construction-related activities or the long-term use of the area as natural habitat, public park area, or golf course area. In-place mitigation measures to reduce potential runoff and water quality impacts contained within the Runoff Management/Water Quality Management Plan for the Proposed Project will also mitigate any potentially significant effects related to the construction or long-term use of the additional 3.9 acres of land.

5.2.2 Mitigation Measures

None required.

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COASTAL RESOURCES MANAGEMENT

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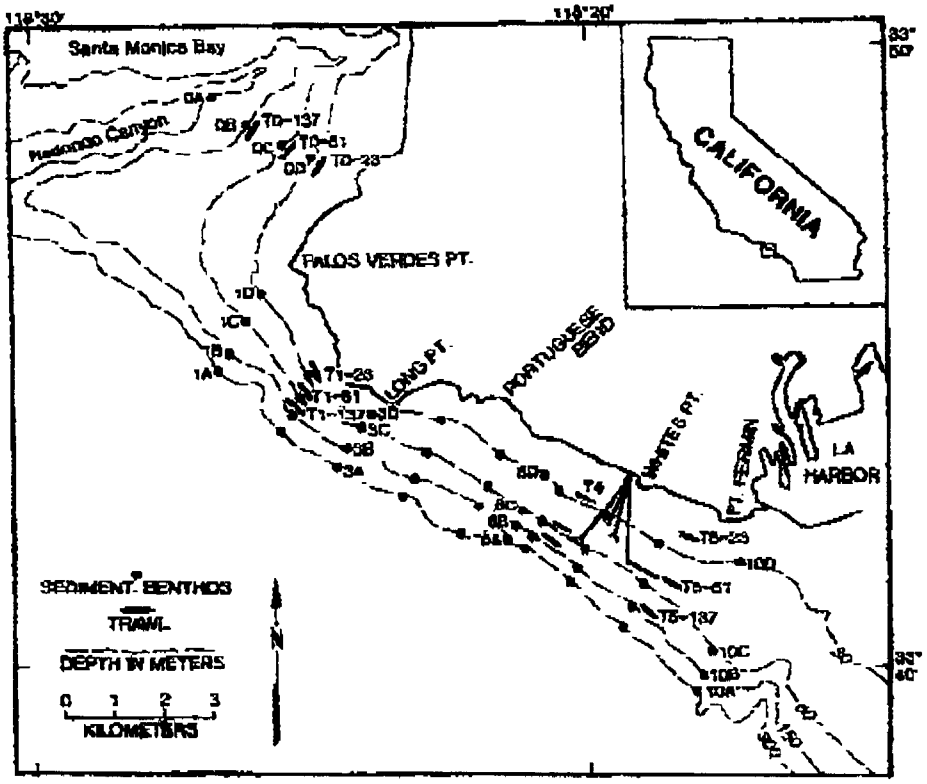
APPENDIX 1

Location of County of Los Angeles Water Quality Monitoring Stations Offshore of Long Point


Santa Monica Bay
Redondo Canyon
PALOS VERDES PT.
LONG PT.
PORTUGUESE BEND
WHITES PT.
FT. FERMIN
LA HARBOR
CALIFORNIA
SEDIMENT BENTHOS
TRAWL
DEPTH IN METERS
0 1 2 3
KILOMETERS
N

APPENDIX 2

Rocky Intertidal Data, Vantuna Research Group and Chambers Consultants, Inc.
July 1995

Table 3.3.1 Master list of intertidal species observed during 1995 surveys.

Species	Abalone Cove	Portuguese Bend	Palos Verdes Point
Plants			
Chlorophyta			
Codium sp.		X	
Codium fragile		X	
Enteromorpha sp.		X	X
Ulva sp.	X	X	X
unidentified	X	X	X
Phaeophyta			
Colpomenia peregrina	X		X
Colpomenia sinuosa	X		
Egregia menziesii	X	X	X
Fucus sp.			X
Ralfsia pacifica	X	X	X
Sargassum muticum	X		X
Zonaria sp.			X
unidentified			X
Rhodophyta			
Corallina sp.	X	X	X
Endocladia muricata		X	X
Gigartina sp.		X	X
Halosaccion glandiforme			X
Lithothamnion californicum	X	X	X
Plocamium sp.			X
Spermatophytes			
Phyllospadix torreyi			X
Invertebrates			
Porifera			
yellow sponge			X
Coelenterata			
Anthopleura elegantissima	X	X	X
Anthopleura xanthogrammica	X	X	X
Corynactis californica	X		X
Platyhelminthes			
Notoplana sp.			X
Annelida			
Phragmatopoma californica	X	X	
Spirorbis borealis		X	X
Mollusca			
Acanthina sp.	X	X	
Acmaea mitra	X	X	X
Anisodoris nobilis			X
Aplysia california	X	X	
Bulla gouldiana	X		

Table 3.3.1, continued.

Species	Abalone Cove	Portuguese Bend	Palos Verdes Point
Calliostoma sp.	X		
Ceratostoma sp.	X		
Chromodoris macfarlandi			X
Collisella asmi		X	
Collisella digitalis	X	X	X
Collisella instabilis	X	X	
Collisella limatula	X	X	X
Collisella pelta	X	X	X
Collisella scabra	X	X	X
Conus californicus	X		X
Crepidula onyx	X		
Cynoplax hartwegii	X	X	X
Epitonium tinctium			X
Fissurella volcano		X	X
Littorina keenae		X	X
Littorina scutulata	X	X	X
Lottia gigantea	X	X	X
Megathura crenulata			X
Mopalia muscosa	X	X	
Mytilus californianus	X	X	X
Norrisia norrisi	X		
Nucella sp.	X		
Nuttallina californica	X	X	X
Polyplacophora	X	X	X
Serpulorbis squamigerus		X	X
Stenoplax sp.			X
Tegula eiseni	X	X	X
Tegula funebralis	X	X	X
Arthropoda			
Balanus glandula	X	X	X
Chthamalus fissus	X		
Ligia sp.		X	
Lysmata sp.		X	X
Megabalanus californicus	X	X	
Pachygrapsus crassipes	X	X	X
Pagurus sp.	X	X	X
Pollicipes polymerus		X	X
Tetraclita rubescens	X	X	

Table 3.3.1, continued.

Species	Abalone Cove	Portuguese Bend	Palos Verdes Point
Echiniodermata			X
Ophiactis simplex	X		
Pisaster ochraceus			X
Strongylocentrotus franciscanus	X	X	X
Strongylocentrotus purpuratus			
Vertebrata	X	X	X
Clinocottus analis			X
Gibonssia elegans		X	
Girella nigricans			

APPENDIX 3

Rocky Intertidal Data for Long Point and Fisherman's Cove, Coastal Resources Management, March 1998

SURVEY: Rancho Palos Verdes
STATION: Fisherman's Cove Area 1
DATE: March 23, 1998

Sampling Level	AREA 1; Boulder field and elevated reef structure-mid beach 26 meters from trail												
	0	5	10	15	20	25	30	35	Total	Mean	Std Dev	Occ	%Occ
Percent Cover Taxa	HB	LRB	B/C/S	LRB	LRB	TP	RP	CH					
Chthamalus fissus/dalli	75					1			76	38.0	37.0	2	25.0
Corallina spp.			5	1		1	30	10	47	9.4	10.8	5	62.5
Balanus glandula	3					40			43	21.5	18.5	2	25.0
Dictyota flabellata					3		10	20	35	11.7	6.2	3	37.5
Lithophyllum sp./Lithothamnion sp.							20		20	20.0	0.0	1	12.5
Anthopleura elegantissima						20			20	20.0	0.0	1	12.5
Phragmatopoma californica		15							15	15.0	0.0	2	25.0
Anthopleura xanthogrammica		1		2		5	5		13	3.3	1.8	4	50.0
filamentous red algae turf								10	10	10.0	0.0	1	12.5
Serpulorbis squamigerus							10		10	10.0	0.0	1	12.5
Gigartina leptorhynchus							5		5	5.0	0.0	1	12.5
Corallina vancouveriensis							5		5	5.0	0.0	1	12.5
Mytilus californianus		1				1			2	1.0	0.0	2	25.0
Pollicipes polymerus						1			1	1.0	0.0	1	12.5
Ralfsia sp.													
Colpomenia sinuosa													
Counted Species													
Littorina planaxis	95								95	95.0	0.0	1	12.5
Strongylocentrotus purpuratus					12		2	16	30	10.0	5.9	2	25.0
Collisella scabra	3	5		1		20			29	7.3	7.5	4	50.0
Collisella sp.			3				4		7	3.5	0.5	2	25.0
Collisella strigatella				6					6	6.0	0.0	1	12.5
Nuttalina fluxa		4					1		5	2.5	1.5	2	25.0
Tegula funebralis		4	1						5	2.5	1.5	2	25.0
Collisella digitalis	1	3							4	2.0	1.0	2	25.0
Acanthina spirata						4			4	4.0	0.0	1	12.5
Aplysia californica				1					1	1.0	0.0	1	12.5
Kelletia kelletii						1			1	1.0	0.0	1	12.5
Pachygrapsus crassipes							1		1	1.0	0.0	1	12.5
Aplysia vaccaria					1				1	1.0	0.0	1	12.5
Collisella limatula			1						1	1.0	0.0	1	12.5
Mopalia mucosa													
Lottia gigantea													
Abundance	177	33	10	11	18	94	93	56	492	61.5	54.0	8	100.0
Mean Abundance	35.4	4.7	2.5	2.2	6.0	9.4	8.5	14.0	82.7	10.3	10.1	8	100.0
Number of Taxa	7	8	5	6	4	11	11	5	28	7.1	2.5	8	100.0

Key: HR=High relief boulder; LRB=Low Relief Boulder; B/C/S=Boulder/Cobble/Sand; TP=Tide Pool; RP=Reef Platform; CH=Channel

Fisherman's Cove Rocky Intertidal Survey

AREA 2; West end at base of trail; large rock outcrops; sheer outcrop and high relief; 8 m from cliff

	0	5	13	15	17	Total	Mean	Std Dev	Occ	%Occ
Percent Cover Taxa	HRB	HRB	HRB	HRB	LRB					
Chthamalus fissus/dalli	40	50				90	45.0	5.0	2	40
Phragmatopoma californica				80		80	80.0	0.0	1	20
filamentous red algae turf					80	80	80.0	0.0	1	20
Balanus glandula		10		10		20	10.0	0.0	2	40
Ralfsia sp.				10		10	10.0	0.0	1	20
Mytilus californianus				6		6	6.0	0.0	1	20
Dictyota flabellata					5	5	5.0	0.0	1	20
Anthopleura xanthogrammica				1		1	1.0	0.0	1	20
Colpomenia sinuosa					1	1	1.0	0.0	1	20
Corallina spp.										
Lithophyllum sp./Lithothamnion sp.										
Anthopleura elegantissima										
Serpulorbis squamigerus										
Gigartina leptorhynchus										
Corallina vancouveriensis										
Pollicipes polymerus										
Counted Species										
Littorina planaxis	61	32				93	46.5	14.5	2	40
Mopalia mucosa			2	43		45	22.5	20.5	2	40
Collisella scabra		7	6	24		37	12.3	8.3	3	60
Lottia gigantea		4	7	10		21	7.0	2.4	3	60
Collisella digitalis		8				8	8.0	0.0	1	20
Collisella sp.			3			3	3.0	0.0	1	20
Strongylocentrotus purpuratus					1	1	1.0	0.0	1	20
Collisella strigatella										
Nuttalina fluxa										
Tegula funebralis										
Acanthina spirata										
Aplysia californica										
Kelletia kelletii										
Pachygrapsus crassipes										
Aplysia vaccaria										
Collisella limatula										
Abundance	101	111	18	184	87	501	100.2	53.0	5	100
Mean Abundance	50.5	18.5	4.5	23.0	21.8	118.3	23.7	15.0	5	100
Number of Taxa	3	7	5	8	4	16	5.4	1.9	5	100

APPENDIX 4

Los Angeles County Sanitation District Subtidal Species List for Long Point, 1972-1997.

LONG POINT SUBTIDAL MASTER SPECIES LIST 1972-1977
Source: LA County Sanitation District

Phylum	Species or Taxa	6M	12M	18M	24M
Chlorophyta	Cladophora sp	X	X	X	X
	Ulva californica	X			X
Phaeophyta	Desmarestia sp	X			
	Dictyopteris undulata	X	X	X	
	Pachydictyon coriaceum/Dictyota sp	X	X	X	X
	Taonia lennebackeriae	X	X		X
	Zonaria farlowii		X		
	Ectocarpus sp		X		
	Cystoseira osmundacea	X	X	X	
	Laminariales		X		
	Egregia menziesii	X	X		X
	Eisenia arborea	X	X	X	X
	Pterygophora californica	X	X		
	Macrocystis pyrifera	X			
	Colpomenia sinuosa		X		
Rhodophyta	filamentous red algae	X	X	X	X
	leafy red algae	X	X	X	
	Bossiella sp	X	X		
	Calliarthron sp	X	X	X	
	Corallina officinalis var chilensis	X	X	X	X
	crustose corallines	X	X	X	
	Jania sp	X			
	Prionitis sp	X		X	
	Prionitis sp 1	X			
	Hildenbrandia prototypus	X	X	X	
	Callophyllis sp	X	X	X	
	Gigartina spinosa	X			
	Gymnogongrus leptophyllus		X		X
	Gymnogongrus platyphyllus	X	X		
	Gymnogongrus sp			X	
	Gelidium pulchrum/Pterocladia	X	X		
	Gelidium robustum	X	X	X	X
Porifera	Porifera		X	X	
	Calcarea	X			
	Leucosolenia eleanor	X			
	Leucilla nuttingi	X	X	X	
	Leucandra heathi	X	X	X	
	Leucetta losangelensis	X	X	X	
	blue scallop sponge	X			
	orange encrusting sponge	X	X	X	X
	red encrusting sponge	X	X	X	X
	Hemectyon hyle		X	X	
	Penares cortius		X	X	X
	Stelletta clarella		X	X	X
	Cliona celata	X	X	X	
	Spheciospongia confoederata			X	X
	Tethya aurantium		X	X	
	Sigmadocia sp 1			X	
	Toxadocia zumi			X	
	Cyamon neon		X	X	
	Trikentrion sp				
	Anaata spongigartina			X	
	Hymenamphiastra cyanocrypta			X	X
	Tetilla arb		X	X	X
Cnidaria	burrowing anemone	X	X	X	X
	Anthopleura elegantissima	X	X	X	
	Urticina sp	X	X	X	X
	Alcyonacea			X	X
	Alcyonacea sp A	X	X	X	
	Stolonifera	X		X	X
	Clavularia sp	X	X	X	X
	Eugorgia rubens		X		
	Lophogorgia chilensis			X	
	Muricea californica		X	X	
	Muricea fruticosa		X	X	
	Pachycerianthus sp		X	X	
	Corynactis californica	X	X	X	X
	Coenocyathus bowersi				X
	Paracyathus stearnsii	X	X	X	X
	Astrangia lajollaensis	X	X	X	
	Hydrozoa	X	X	X	

	Species	6M	12M	18M	24M
	Hydractinia sp	X	X	X	
	Aglaophenia sp	X	X	X	
Annelida	Diopatra tridentata	X	X	X	
	Eudistylia polymorpha	X	X	X	X
	Myxicola sp		X	X	X
	Sabellidae		X		X
	Salmacina tribranchiata	X	X	X	
	Serpulidae			X	
	Dodecaceria fewkesii	X		X	X
	Spionidae		X		X
	Phragmatopoma californica	X	X		X
	Terebellidae		X		
Arthropoda	Balanus sp	X	X		
	Paguristes ulreyi	X	X	X	
	Lysmata californica	X	X		
	Majidae	X			
	Scyra acutifrons			X	X
	Paguridae	X	X	X	
	Pagurus retrorsimanus	X	X	X	X
	Pagurus sp	X	X	X	
	Phimochirus californiensis	X	X	X	X
	Panulirus interruptus	X		X	
	Pandalus danae		X	X	
	Paraxanthias taylori			X	
Mollusca	Pholadidae		X		
Bivalvia	Lithophaga plumula			X	
	Pododesmus macrochisma	X	X	X	
	Crassadoma gigantea	X	X	X	X
	Chama arcana			X	
	Globivenus fordii			X	
Cephalopoda	Octopus sp	X	X	X	
Gastropoda	Apiysia californica	X	X		
	Aplysia vaccaria	X	X		
	Kelletia kelletii	X	X	X	X
	Mitrella sp	X	X		
	Conus californicus	X	X	X	X
	Ophiodermella inermis	X			
	Fusinus luteopictus			X	
	Fusinus sp	X			
	Mitra idae	X	X	X	X
	Ceratostoma nuttalli	X		X	
	Maxwellia gemma	X	X	X	
	Maxwellia santarosana	X	X	X	
	Pteropurpura sp	X	X	X	X
	Nassarius mendicus	X	X	X	
	Crassispira semiinflata		X	X	X
	Crepidula onyx	X	X	X	
	Crepidula perforans	X			
	Crepidula sp	X			
	Cypraea spadicea	X	X	X	X
	Trivia californiana		X	X	
	Petaloconchus sp		X	X	
	Serpulorbis squamigerus	X	X	X	
	Vermetidae		X	X	
	Nudibranchia			X	
	Archidoris montereyensis		X	X	X
	Atagema alba			X	
	Cadlina limbaughorum		X	X	
	Chromodoris macfarlandi		X		
	Mexichromis porterae	X	X	X	
	Doriopsilla albopunctata		X	X	X
	Anisodoris nobilis		X	X	X
	Diaulula sandiegensis		X	X	X
	Hermissenda crassicornis		X	X	X
	Flabellina iodinea	X	X	X	X
	Flabellina sp			X	
	Hopkinsia rosacea		X	X	
	Acanthodoris lutea	X		X	
	Laila cockerelli	X	X	X	
	Triopha catalinae			X	
	Tritonia festiva	X			
	Acmaea mitra	X	X		
	Diodora aspera			X	

	Species	6M	12M	18M	24M
	Megathura crenulata	X	X	X	X
	Haliotis cracherodii	X			
	Haliotis fulgens	X			
	Haliotis rufescens	X			
	Calliostoma annulatum		X	X	
	Calliostoma gemmulatum		X		
	Calliostoma gloriosum		X	X	
	Calliostoma tricolor		X	X	
	Norrisia norrisi	X	X		
	Tegula eiseni	X	X	X	
	Tegula funebralis	X			
	Tegula regina	X			
	Tegula sp	X	X		
	Lithopoma gibberosa	X	X	X	
	Lithopoma undosa	X	X	X	
Polyplacophora	Polyplacophora		X		
Phorona	Phoronis sp	X	X	X	
Echinodermata	Astrometis sertulifera				
	Pisaster brevispinis		X		
	Pisaster giganteus capitatus	X	X	X	X
	Pisaster ochraceus			X	
	Astropecten armatus		X		X
	Henricia leviuscula				
	Asterina miniata	X	X	X	
	Strongylocentrotus franciscanus	X	X	X	
	Strongylocentrotus purpuratus	X	X	X	X
	Lytechinus pictus	X	X	X	
	Parastichopus parvimensis	X	X	X	
	Cucumaria salma	X			
	Cucumaria sp	X			
	Eupentacta quinquesemita	X	X	X	
	Ophiuroidea			X	X
	Ophioderma panamense		X	X	
Ectoprocta	encrusting bryozoan	X	X	X	
	erect bryozoan	X	X	X	
	Bugula neritina		X	X	
	Celleporina robertsoniae	X	X	X	X
	Antropora tincta	X	X	X	X
	Phidolopora labiata	X	X	X	X
	Rhynchozoon sp	X	X	X	X
	Diaperoforma sp	X	X	X	X
Urochordata	colonial tunicate	X	X	X	
	solitary tunicate	X	X	X	
	Archidistoma psammion	X	X		
	Clavelina huntsmani	X	X	X	
	Cystodytes lobatus	X	X	X	
	Trididemnum opacum	X	X		
	Aplidium californicum	X	X	X	
	Aplidium solidum	X	X	X	
	Aplidium sp	X	X	X	X
	Euherdmania claviformis	X	X		
	Ritterella pulchra		X	X	
	Boitenia villosa		X	X	
	Pyura haustor	X	X	X	
	Styela montereyensis		X		
	Styela sp	X	X	X	
	Styela sp 1	X	X	X	
Chordata	Gymnothorax mordax	X			
	Atherinops affinis	X			
	Rimicola eigenmanni	X			
	Rathbunella alleni				
	Rathbunella hypoplecta			X	
	Rathbunella sp			X	
	Trachurus symmetricus		X	X	
	Alloclinus holderi	X	X	X	
	Clinidae	X	X	X	
	Gibbonsia elegans	X			
	Gibbonsia sp	X			
	Heterostichus rostratus	X	X	X	
	Neoclinus stephensae	X	X	X	
	Neoclinus uninotatus			X	
	Brachyistius frenatus	X	X		
	Embiotoca jacksoni	X	X	X	

Species	6M	12M	18M	24M
Hypsurus caryi	X	X	X	
Phanerodon furcatus			X	
Rhacochilus toxotes	X	X	X	
Rhacochilus vacca	X	X	X	
Zalembius rosaceus			X	
Coryphopterus nicholsi	X	X	X	
Lythrypnus dalli	X	X	X	
Lythrypnus zebra		X	X	
Anisotremus davidsoni			X	
Girella nigricans	X	X	X	X
Hermosilla azurea	X			
Medialuna californiensis	X	X	X	X
Halichoeres semicinctus	X	X	X	
Oxyjulis californica	X	X	X	X
Semicossyphus pulcher	X	X	X	
Caulolatilus princeps			X	X
Chromis punctipinnis	X	X	X	X
Hypsypops rubicundus	X	X	X	
Cheilotrema saturnum	X	X	X	X
Paralabrax clathratus	X	X	X	X
Paralabrax nebulifer	X	X	X	X
Sphyraena argentea		X		
Pleuronichthys coenosus	X	X	X	
Cottidae	X	X	X	X
Scorpaenichthys marmoratus	X	X	X	X
Ophiodon elongatus			X	
Oxylebius pictus	X	X	X	X
Scorpaena guttata	X	X	X	
Sebastes atrovirens	X	X	X	X
Sebastes auriculatus	X	X	X	X
Sebastes carnatus	X	X	X	
Sebastes caurinus	X	X	X	
Sebastes chrysomelas	X	X		
Sebastes constellatus			X	X
Sebastes dalii	X		X	
Sebastes miniatus			X	
Sebastes mystinus	X	X	X	
Sebastes paucispinis	X			
Sebastes rastrelliger	X	X	X	
Sebastes rosaceus			X	
Sebastes serranoides	X	X	X	
Sebastes serriceps	X	X	X	
Sebastes sp	X		X	
Myliobatis californica	X	X		
Torpedo californica			X	
Total Number of Taxa Per Station	174	186	190	72

15.9 Noise Data

Existing Conditions (2000):Palos Verdes Drive West-South of Palos Verdes Road

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**40**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**14**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**33**
			*** CNEL @ 100' **(SOFT)**	**63.57**
VOL			TOTAL Vehicle Volume (two-w	**20,900**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	ROW	RESULTS	DISTANCE FROM **Centerline**	**ROW**
467	427	**<-- hard 60 CNEL soft --->**	**185**	**145**
148	108	**65 CNEL**	**86**	**46**
47	7	**70 CNEL**	**40**	**0**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee observer and road (feet)	0
Cover	Percent view coverage betwee observer and road (0-100)	0
Rows	Building rows between observe and roadway (0-4).	0

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Existing Conditions (2000): Palos Verdes Drive West-North of Hawthorne Boulevard

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**39**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30.5**
			*** CNEL @ 100' **(SOFT)**	**61.53**
VOL			TOTAL Vehicle Volume (two-w	**8,600**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	ROW	RESULTS	DISTANCE FROM **Centerline**	**ROW**
338	290	**<-- hard 60 CNEL soft --->**	**149**	**101**
107	59	**65 CNEL**	**69**	**21**
34	-15	**70 CNEL**	**32**	**-16**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee observer and road (feet)	0
Cover	Percent view coverage betwee observer and road (0-100)	0
Rows	Building rows between observe and roadway (0-4).	0

Robert Bein, William Frost & Associates. 03-Oct-00 JN (NS)

Existing Conditions (2000): Palos Verdes Drive South-East of Hawthorne Boulevard

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE	
			VARIABLE INPUT (as desired)		
Speed			Vehicle Speed (mph, 0 to 100)	**50**	
Grad			Road Gradient (%, 0 to 6)	0	
Sep1			Centerline Separation (feet)	**27**	
	with	>>	(Usually 23' for 2-lane, 38'		
	median	>>	for 4-lane, 50' for 6-lane)		
Dist1			Distance from observer to the	100	
			nearest lane centerline (>50')		
			(used in calculations)		
Dist2			Dist. from ROW to NLC	**31.5**	
			*** CNEL @ 100' **(SOFT)**	**62.65**	
VOL			TOTAL Vehicle Volume (two-w	**10,400**	
ALPHA			Hard site=0, Soft site=0.5	0.5	

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
410	366	**<-- hard 60 CNEL soft --->**	**169**	**125**
130	86	**65 CNEL**	**79**	**34**
41	-3	**70 CNEL**	**36**	**-8**

View	View Angle of Observer (180)	180	
	SHIELDING (adjust output by hand)		
	~~		
Woods	Thickness of woodland betwee	0	
	observer and road (feet)		
Cover	Percent view coverage betwee	0	
	observer and road (0-100)		
Rows	Building rows between observe	0	
	and roadway (0-4).		

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Existing Conditions (2000):Palos Verdes Drive South-West of Palos Verdes Drive East

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE	
			VARIABLE INPUT (as desired)		
Speed			Vehicle Speed (mph, 0 to 100)	**40**	
Grad			Road Gradient (%, 0 to 6)	0	
Sep1			Centerline Separation (feet)	**31**	
	with	>>	(Usually 23' for 2-lane, 38'		
	median	>>	for 4-lane, 50' for 6-lane)		
Dist1			Distance from observer to the	100	
			nearest lane centerline (>50')		
			(used in calculations)		
Dist2			Dist. from ROW to NLC	**34.5**	
			*** CNEL @ 100' **(SOFT)**	**60.49**	
VOL			TOTAL Vehicle Volume (two-w	**11,400**	
ALPHA			Hard site=0, Soft site=0.5	0.5	

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
255	206	**<-- hard 60 CNEL soft --->**	**123**	**74**
81	32	**65 CNEL**	**57**	**8**
25	-23	**70 CNEL**	**27**	**-22**

View	View Angle of Observer (180)	180	
	SHIELDING (adjust output by hand)		
	~~		
Woods	Thickness of woodland betwee	0	
	observer and road (feet)		
Cover	Percent view coverage betwee	0	
	observer and road (0-100)		
Rows	Building rows between observe	0	
	and roadway (0-4).		

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Existing Conditions (2000):25th Street-East of Palos Verdes Drive East

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME	DESCRIPTION	VALUE
	VARIABLE INPUT (as desired)	
Speed	Vehicle Speed (mph, 0 to 100)	**40**
Grad	Road Gradient (%, 0 to 6)	0
Sep1	Centerline Separation (feet)	**31**
with >>	(Usually 23' for 2-lane, 38'	
median >>	for 4-lane, 50' for 6-lane)	
Dist1	Distance from observer to the	100
	nearest lane centerline (>50')	
	(used in calculations)	
Dist2	Dist. from ROW to NLC	**34.5**
	*** CNEL @ 100' **(SOFT)**	**62.04**
VOL	TOTAL Vehicle Volume (two-w	**16,300**
ALPHA	Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
364	316	**<-- hard 60 CNEL soft --->**	**157**	**108**
115	66	**65 CNEL**	**73**	**24**
36	-13	**70 CNEL**	**34**	**-15**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee	0
	observer and road (feet)	
Cover	Percent view coverage betwee	0
	observer and road (0-100)	
Rows	Building rows between observe	0
	and roadway (0-4).	

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Existing Conditions (2000):25th Street-West of Western Avenue

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME	DESCRIPTION	VALUE
	VARIABLE INPUT (as desired)	
Speed	Vehicle Speed (mph, 0 to 100)	**50**
Grad	Road Gradient (%, 0 to 6)	0
Sep1	Centerline Separation (feet)	**27**
with >>	(Usually 23' for 2-lane, 38'	
median >>	for 4-lane, 50' for 6-lane)	
Dist1	Distance from observer to the	100
	nearest lane centerline (>50')	
	(used in calculations)	
Dist2	Dist. from ROW to NLC	**31.5**
	*** CNEL @ 100' **(SOFT)**	**63.41**
VOL	TOTAL Vehicle Volume (two-w	**12,400**
ALPHA	Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
489	444	**<-- hard 60 CNEL soft --->**	**190**	**146**
155	110	**65 CNEL**	**88**	**44**
49	5	**70 CNEL**	**41**	**-3**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee	0
	observer and road (feet)	
Cover	Percent view coverage betwee	0
	observer and road (0-100)	
Rows	Building rows between observe	0
	and roadway (0-4).	

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Existing Conditions (2000):Hawthorne Boulevard-Palos Verdes Drive South to Crest Road

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**40**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30**
			*** CNEL @ 100' **(SOFT)**	**62.84**
VOL			TOTAL Vehicle Volume (two-w	**11,700**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
461	413	**<-- hard 60 CNEL soft --->**	**183**	**135**
146	98	**65 CNEL**	**85**	**37**
46	-2	**70 CNEL**	**39**	**-9**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee observer and road (feet)	0
Cover	Percent view coverage betwee observer and road (0-100)	0
Rows	Building rows between observe and roadway (0-4).	0

Robert Bein, William Frost & Associates. 03-Oct-00 JN (NS)

Existing Conditions: Hawthorn Boulevard-Crest Road South to Altamira

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**40**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30**
			*** CNEL @ 100' **(SOFT)**	**64.92**
VOL			TOTAL Vehicle Volume (two-w	**18,900**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
745	697	**<-- hard 60 CNEL soft --->**	**252**	**203**
236	187	**65 CNEL**	**117**	**69**
74	26	**70 CNEL**	**54**	**6**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee observer and road (feet)	0
Cover	Percent view coverage betwee observer and road (0-100)	0
Rows	Building rows between observe and roadway (0-4).	0

Robert Bein, William Frost & Associates. 31-Oct-00 JN (NS)

Existing Conditions (2000):Hawthorne Boulevard-Altamira to Grayslate Road

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	**0**
Sep1			Centerline Separation (feet)	**40**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30**
			*** CNEL @ 100' **(SOFT)**	**65.25**
VOL			TOTAL Vehicle Volume (two-w	**20,400**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
804	755	**<-- hard 60 CNEL soft --->**	**265**	**217**
254	206	**65 CNEL**	**123**	**75**
80	32	**70 CNEL**	**57**	**9**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee observer and road (feet)	0
Cover	Percent view coverage betwee observer and road (0-100)	0
Rows	Building rows between observe and roadway (0-4).	0

Robert Bein, William Frost & Associates. 03-Oct-00 JN (NS)

Existing Conditions (2000):Hawthorne Boulevard-Grayslate Road to Indian Peak

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**40**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30**
			*** CNEL @ 100' **(SOFT)**	**66.8**
VOL			TOTAL Vehicle Volume (two-w	**29,100**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
******	1097	**<-- hard 60 CNEL soft --->**	**336**	**288**
362	314	**65 CNEL**	**156**	**108**
115	66	**70 CNEL**	**72**	**24**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee observer and road (feet)	0
Cover	Percent view coverage betwee observer and road (0-100)	0
Rows	Building rows between observe and roadway (0-4).	0

Robert Bein, William Frost & Associates. 03-Oct-00 JN (NS)

Existing Conditions (2000):Hawthorne Boulevard- Indian Peak to Silver Spur

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME	DESCRIPTION	VALUE
	VARIABLE INPUT (as desired)	
Speed	Vehicle Speed (mph, 0 to 100)	**50**
Grad	Road Gradient (%, 0 to 6)	0
Sep1	Centerline Separation (feet)	**40**
with >>	(Usually 23' for 2-lane, 38'	
median >>	for 4-lane, 50' for 6-lane)	
Dist1	Distance from observer to the	100
	nearest lane centerline (>50')	
	(used in calculations)	
Dist2	Dist. from ROW to NLC	**30**
	*** CNEL @ 100' **(SOFT)**	**66.44**
VOL	TOTAL Vehicle Volume (two-w	**26,800**
ALPHA	Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
******	1006	**<-- hard 60 CNEL soft --->**	**318**	**270**
333	285	**65 CNEL**	**148**	**99**
105	57	**70 CNEL**	**69**	**20**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee observer and road (feet)	0
Cover	Percent view coverage betwee observer and road (0-100)	0
Rows	Building rows between observe and roadway (0-4).	0

Robert Bein, William Frost & Associates. 03-Oct-00 JN (NS)

Existing Conditions (2000):Hawthorne Boulevard-Silver Spur to Palos Verdes Drive North

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME	DESCRIPTION	VALUE
	VARIABLE INPUT (as desired)	
Speed	Vehicle Speed (mph, 0 to 100)	**50**
Grad	Road Gradient (%, 0 to 6)	0
Sep1	Centerline Separation (feet)	**40**
with >>	(Usually 23' for 2-lane, 38'	
median >>	for 4-lane, 50' for 6-lane)	
Dist1	Distance from observer to the	100
	nearest lane centerline (>50')	
	(used in calculations)	
Dist2	Dist. from ROW to NLC	**30**
	*** CNEL @ 100' **(SOFT)**	**65.72**
VOL	TOTAL Vehicle Volume (two-w	**22,700**
ALPHA	Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
893	845	**<-- hard 60 CNEL soft --->**	**285**	**236**
283	234	**65 CNEL**	**132**	**84**
89	41	**70 CNEL**	**61**	**13**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee observer and road (feet)	0
Cover	Percent view coverage betwee observer and road (0-100)	0
Rows	Building rows between observe and roadway (0-4).	0

Robert Bein, William Frost & Associates. 03-Oct-00 JN (NS)

Existing Plus Project Conditions: Palos Verdes Drive West-South of Palos Verdes Road

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**40**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**14**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**33**
			*** CNEL @ 100' **(SOFT)**	**63.69**
VOL			TOTAL Vehicle Volume (two-w	**21,500**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
481	442	**<-- hard 60 CNEL soft --->**	**188**	**148**
152	112	**65 CNEL**	**87**	**48**
48	8	**70 CNEL**	**41**	**1**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee observer and road (feet)	0
Cover	Percent view coverage betwee observer and road (0-100)	0
Rows	Building rows between observe and roadway (0-4).	0

Robert Bein, William Frost & Associates. 10-Oct-00 JN (NS)

Existing Plus Project Conditions: Palos Verdes Drive West-North of Hawthorne Boulevard

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**39**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30.5**
			*** CNEL @ 100' **(SOFT)**	**61.82**
VOL			TOTAL Vehicle Volume (two-w	**9,200**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
363	314	**<-- hard 60 CNEL soft --->**	**156**	**108**
115	66	**65 CNEL**	**72**	**24**
36	-12	**70 CNEL**	**34**	**-15**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee observer and road (feet)	0
Cover	Percent view coverage betwee observer and road (0-100)	0
Rows	Building rows between observe and roadway (0-4).	0

Robert Bein, William Frost & Associates. 10-Oct-00 JN (NS)

Existing Plus Project Conditions:Palos Verdes Drive South-East of Hawthorne Boulevard

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**27**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**31.5**
			*** CNEL @ 100' **(SOFT)**	**63.87**
VOL			TOTAL Vehicle Volume (two-w	**13,800**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
543	499	**<-- hard 60 CNEL soft --->**	**204**	**160**
172	128	**65 CNEL**	**95**	**51**
54	10	**70 CNEL**	**44**	**-0**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee	0
	observer and road (feet)	
Cover	Percent view coverage betwee	0
	observer and road (0-100)	
Rows	Building rows between observe	0
	and roadway (0-4).	

Robert Bein, William Frost & Associates. 10-Oct-00 JN (NS)

Existing Plus Project Conditions:Palos Verdes Drive South-West of Palos Verdes Drive East

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**40**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**31**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**34.5**
			*** CNEL @ 100' **(SOFT)**	**61.44**
VOL			TOTAL Vehicle Volume (two-w	**14,200**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
317	268	**<-- hard 60 CNEL soft --->**	**143**	**94**
100	51	**65 CNEL**	**66**	**17**
32	-17	**70 CNEL**	**31**	**-18**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee	0
	observer and road (feet)	
Cover	Percent view coverage betwee	0
	observer and road (0-100)	
Rows	Building rows between observe	0
	and roadway (0-4).	

Robert Bein, William Frost & Associates. 10-Oct-00 JN (NS)

Existing Plus Project Conditions:25th Street-East of Palos Verdes Drive East

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**40**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**31**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**34.5**
			*** CNEL @ 100' **(SOFT)**	**62.73**
VOL			TOTAL Vehicle Volume (two-w	**19,100**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
427	378	**<-- hard 60 CNEL soft --->**	**174**	**125**
135	86	**65 CNEL**	**81**	**32**
43	-6	**70 CNEL**	**38**	**-11**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee observer and road (feet)	0
Cover	Percent view coverage betwee observer and road (0-100)	0
Rows	Building rows between observe and roadway (0-4).	0

Robert Bein, William Frost & Associates. 10-Oct-00 JN (NS)

Existing Plus Project Conditions:25th Street-West of Western Avenue

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**27**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**31.5**
			*** CNEL @ 100' **(SOFT)**	**64.12**
VOL			TOTAL Vehicle Volume (two-w	**14,600**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
575	531	**<-- hard 60 CNEL soft --->**	**212**	**168**
182	138	**65 CNEL**	**98**	**54**
58	13	**70 CNEL**	**46**	**2**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee observer and road (feet)	0
Cover	Percent view coverage betwee observer and road (0-100)	0
Rows	Building rows between observe and roadway (0-4).	0

Robert Bein, William Frost & Associates. 10-Oct-00 JN (NS)

Existing Plus Project Conditions:Hawthorne Boulevard-Palos Verdes Drive North to Crest Road

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME	DESCRIPTION	VALUE
	VARIABLE INPUT (as desired)	
Speed	Vehicle Speed (mph, 0 to 100)	**50**
Grad	Road Gradient (%, 0 to 6)	0
Sep1	Centerline Separation (feet)	**40**
with >>	(Usually 23' for 2-lane, 38'	
median >>	for 4-lane, 50' for 6-lane)	
Dist1	Distance from observer to the	100
	nearest lane centerline (>50')	
	(used in calculations)	
Dist2	Dist. from ROW to NLC	**30**
	*** CNEL @ 100' **(SOFT)**	**63.77**
VOL	TOTAL Vehicle Volume (two-w	**14,500**
ALPHA	Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
572	523	**<-- hard 60 CNEL soft --->**	**211**	**163**
181	132	**65 CNEL**	**98**	**50**
57	9	**70 CNEL**	**45**	**-3**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee	0
	observer and road (feet)	
Cover	Percent view coverage betwee	0
	observer and road (0-100)	
Rows	Building rows between observe	0
	and roadway (0-4).	

Robert Bein, William Frost & Associates. 10-Oct-00 JN (NS)

Existing Plus Project Conditions: Hawthorne Boulevard-Crest Road South to Altamira

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME	DESCRIPTION	VALUE
	VARIABLE INPUT (as desired)	
Speed	Vehicle Speed (mph, 0 to 100)	**50**
Grad	Road Gradient (%, 0 to 6)	0
Sep1	Centerline Separation (feet)	**40**
with >>	(Usually 23' for 2-lane, 38'	
median >>	for 4-lane, 50' for 6-lane)	
Dist1	Distance from observer to the	100
	nearest lane centerline (>50')	
	(used in calculations)	
Dist2	Dist. from ROW to NLC	**30**
	*** CNEL @ 100' **(SOFT)**	**65.28**
VOL	TOTAL Vehicle Volume (two-w	**20,500**
ALPHA	Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
807	759	**<-- hard 60 CNEL soft --->**	**266**	**218**
255	207	**65 CNEL**	**124**	**75**
81	32	**70 CNEL**	**57**	**9**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee	0
	observer and road (feet)	
Cover	Percent view coverage betwee	0
	observer and road (0-100)	
Rows	Building rows between observe	0
	and roadway (0-4).	

Robert Bein, William Frost & Associates. 31-Oct-00 JN (NS)

Existing Plus Project Conditions:Hawthorne Boulevard-Altamira to Greyslate Road

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**40**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30**
			*** CNEL @ 100' **(SOFT)**	**65.58**
VOL			TOTAL Vehicle Volume (two-w	**22,000**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	ROW	RESULTS	DISTANCE FROM **Centerline**	**ROW**
867	819	**<-- hard 60 CNEL soft --->**	**279**	**230**
274	226	**65 CNEL**	**129**	**81**
87	38	**70 CNEL**	**60**	**12**

View		View Angle of Observer (180)	180
		SHIELDING (adjust output by hand)	
		~~	
Woods		Thickness of woodland betwee observer and road (feet)	0
Cover		Percent view coverage betwee observer and road (0-100)	0
Rows		Building rows between observe and roadway (0-4).	0

Robert Bein, William Frost & Associates. 10-Oct-00 JN (NS)

Existing Plus Project Conditions:Hawthorne Boulevard-Greyslate Road to Indian Peak Road

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**40**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30**
			*** CNEL @ 100' **(SOFT)**	**67.03**
VOL			TOTAL Vehicle Volume (two-w	**30,700**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	ROW	RESULTS	DISTANCE FROM **Centerline**	**ROW**
******	1160	**<-- hard 60 CNEL soft --->**	**348**	**300**
382	334	**65 CNEL**	**162**	**113**
121	72	**70 CNEL**	**75**	**27**

View		View Angle of Observer (180)	180
		SHIELDING (adjust output by hand)	
		~~	
Woods		Thickness of woodland betwee observer and road (feet)	0
Cover		Percent view coverage betwee observer and road (0-100)	0
Rows		Building rows between observe and roadway (0-4).	0

Robert Bein, William Frost & Associates. 10-Oct-00 JN (NS)

Existing Plus Project Conditions:Hawthorne Boulevard-Indian Peak Road to Silver Spur Road

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**40**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30**
			*** CNEL @ 100' **(SOFT)**	**66.69**
VOL			TOTAL Vehicle Volume (two-w	**28,400**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	ROW	RESULTS	DISTANCE FROM **Centerline**	**ROW**
******	1071	**<-- hard 60 CNEL soft --->**	**330**	**282**
354	306	**65 CNEL**	**153**	**105**
112	64	**70 CNEL**	**71**	**23**

View			View Angle of Observer (180)	180
			SHIELDING (adjust output by hand)	
			~~	
Woods			Thickness of woodland betwee	0
			observer and road (feet)	
Cover			Percent view coverage betwee	0
			observer and road (0-100)	
Rows			Building rows between observe	0
			and roadway (0-4).	

Robert Bein, William Frost & Associates. 10-Oct-00 JN (NS)

Existing Plus Project Conditions:Hawthorne Boulevard-Silver Spur Road to Palos Verdes Drive North

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**40**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30**
			*** CNEL @ 100' **(SOFT)**	**65.96**
VOL			TOTAL Vehicle Volume (two-w	**24,000**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	ROW	RESULTS	DISTANCE FROM **Centerline**	**ROW**
946	898	**<-- hard 60 CNEL soft --->**	**295**	**247**
299	251	**65 CNEL**	**137**	**89**
95	46	**70 CNEL**	**64**	**15**

View			View Angle of Observer (180)	180
			SHIELDING (adjust output by hand)	
			~~	
Woods			Thickness of woodland betwee	0
			observer and road (feet)	
Cover			Percent view coverage betwee	0
			observer and road (0-100)	
Rows			Building rows between observe	0
			and roadway (0-4).	

Robert Bein, William Frost & Associates. 10-Oct-00 JN (NS)

Future With Project Conditions (2010):Palos Verdes Drive West-South of Palos Verdes Road

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**40**
Grad			Road Gradient (%, 0 to 6)	**0**
Sep1			Centerline Separation (feet)	**14**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**33**
			*** CNEL @ 100' **(SOFT)**	**64.04**
VOL			TOTAL Vehicle Volume (two-w	**23,300**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
522	482	**<-- hard 60 CNEL soft --->**	**199**	**159**
165	125	**65 CNEL**	**92**	**52**
52	12	**70 CNEL**	**43**	**3**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee observer and road (feet)	0
Cover	Percent view coverage betwee observer and road (0-100)	0
Rows	Building rows between observe and roadway (0-4).	0

Robert Bein, William Frost & Associates. 03-Oct-00 JN (NS)

Future With Project Conditions (2010):Palos Verdes Drive West-North of Hawthorne Boulevard

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	**0**
Sep1			Centerline Separation (feet)	**39**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30.5**
			*** CNEL @ 100' **(SOFT)**	**62.35**
VOL			TOTAL Vehicle Volume (two-w	**10,400**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
410	361	**<-- hard 60 CNEL soft --->**	**169**	**121**
130	81	**65 CNEL**	**79**	**30**
41	-7	**70 CNEL**	**36**	**-12**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee observer and road (feet)	0
Cover	Percent view coverage betwee observer and road (0-100)	0
Rows	Building rows between observe and roadway (0-4).	0

Robert Bein, William Frost & Associates. 03-Oct-00 JN (NS)

Future With Project Conditions (2010):Palos Verdes Drive South-East of Hawthorne Boulevard

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**27**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**31.5**
			*** CNEL @ 100' **(SOFT)**	**64.49**
VOL			TOTAL Vehicle Volume (two-w	**15,900**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
627	582	**<-- hard 60 CNEL soft --->**	**225**	**180**
198	154	**65 CNEL**	**104**	**60**
63	18	**70 CNEL**	**48**	**4**

View			View Angle of Observer (180)	180
			SHIELDING (adjust output by hand)	
			~~	
Woods			Thickness of woodland betwee	0
			observer and road (feet)	
Cover			Percent view coverage betwee	0
			observer and road (0-100)	
Rows			Building rows between observe	0
			and roadway (0-4).	

Robert Bein, William Frost & Associates. 03-Oct-00 JN (NS)

Future With Project Conditions (2010):Palos Verdes Drive South-West of Palos Verdes Drive East

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**40**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**31**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**34.5**
			*** CNEL @ 100' **(SOFT)**	**62.27**
VOL			TOTAL Vehicle Volume (two-w	**17,200**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
385	336	**<-- hard 60 CNEL soft --->**	**162**	**113**
122	73	**65 CNEL**	**75**	**26**
39	-10	**70 CNEL**	**35**	**-14**

View			View Angle of Observer (180)	180
			SHIELDING (adjust output by hand)	
			~~	
Woods			Thickness of woodland betwee	0
			observer and road (feet)	
Cover			Percent view coverage betwee	0
			observer and road (0-100)	
Rows			Building rows between observe	0
			and roadway (0-4).	

Robert Bein, William Frost & Associates. 03-Oct-00 JN (NS)

Future With Project Conditions (2010):25th Street-East of Palos Verdes Drive East

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**40**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**31**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**34.5**
			*** CNEL @ 100' **(SOFT)**	**63.42**
VOL			TOTAL Vehicle Volume (two-w	**22,400**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
501	452	**<-- hard 60 CNEL soft --->**	**193**	**145**
158	109	**65 CNEL**	**90**	**41**
50	1	**70 CNEL**	**42**	**-7**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee observer and road (feet)	0
Cover	Percent view coverage betwee observer and road (0-100)	0
Rows	Building rows between observe and roadway (0-4).	0

Robert Bein, William Frost & Associates. 03-Oct-00 JN (NS)

Future With Project Conditions (2010):25th Street-West of Western Avenue

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**27**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**31.5**
			*** CNEL @ 100' **(SOFT)**	**64.88**
VOL			TOTAL Vehicle Volume (two-w	**17,400**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
685	641	**<-- hard 60 CNEL soft --->**	**238**	**194**
217	173	**65 CNEL**	**111**	**66**
69	24	**70 CNEL**	**51**	**7**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee observer and road (feet)	0
Cover	Percent view coverage betwee observer and road (0-100)	0
Rows	Building rows between observe and roadway (0-4).	0

Robert Bein, William Frost & Associates. 03-Oct-00 JN (NS)

Future With Project Conditions (2010):Hawthorne Boulevard-Palos Verdes Drive South to Crest Road

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**40**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30**
			*** CNEL @ 100' **(SOFT)**	**64.36**
VOL			TOTAL Vehicle Volume (two-w	**16,600**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
653	605	**<-- hard 60 CNEL soft --->**	**231**	**183**
207	158	**65 CNEL**	**107**	**59**
65	17	**70 CNEL**	**50**	**1**

View			View Angle of Observer (180)	180
			SHIELDING (adjust output by hand)	
			~~	
Woods			Thickness of woodland betwee	0
			observer and road (feet)	
Cover			Percent view coverage betwee	0
			observer and road (0-100)	
Rows			Building rows between observe	0
			and roadway (0-4).	

Robert Bein, William Frost & Associates. 03-Oct-00 JN (NS)

Future With Project Conditions (2010):Hawthorne Boulevard-North of Crest Road

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**40**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30**
			*** CNEL @ 100' **(SOFT)**	**65.6**
VOL			TOTAL Vehicle Volume (two-w	**22,100**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
871	823	**<-- hard 60 CNEL soft --->**	**280**	**231**
275	227	**65 CNEL**	**130**	**81**
87	39	**70 CNEL**	**60**	**12**

View			View Angle of Observer (180)	180
			SHIELDING (adjust output by hand)	
			~~	
Woods			Thickness of woodland betwee	0
			observer and road (feet)	
Cover			Percent view coverage betwee	0
			observer and road (0-100)	
Rows			Building rows between observe	0
			and roadway (0-4).	

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Future With Project Conditions (2010):Hawthorne Boulevard-Altamira to Grayslate Road

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**40**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30**
			*** CNEL @ 100' **(SOFT)**	**65.89**
VOL			TOTAL Vehicle Volume (two-w	**23,600**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
929	881	**<-- hard 60 CNEL soft --->**	**292**	**244**
294	245	**65 CNEL**	**136**	**87**
93	45	**70 CNEL**	**63**	**15**

View	View Angle of Observer (180)	180	
	SHIELDING (adjust output by hand)		
	~~		
Woods	Thickness of woodland betwee	0	
	observer and road (feet)		
Cover	Percent view coverage betwee	0	
	observer and road (0-100)		
Rows	Building rows between observe	0	
	and roadway (0-4).		

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Future With Project Conditions (2010):Hawthorne Boulevard-Grayslate Road to Indian Peak

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**40**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30**
			*** CNEL @ 100' **(SOFT)**	**67.32**
VOL			TOTAL Vehicle Volume (two-w	**32,800**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
******	1243	**<-- hard 60 CNEL soft --->**	**364**	**316**
408	360	**65 CNEL**	**169**	**121**
129	81	**70 CNEL**	**78**	**30**

View	View Angle of Observer (180)	180	
	SHIELDING (adjust output by hand)		
	~~		
Woods	Thickness of woodland betwee	0	
	observer and road (feet)		
Cover	Percent view coverage betwee	0	
	observer and road (0-100)		
Rows	Building rows between observe	0	
	and roadway (0-4).		

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Future With Project Conditions (2010):Hawthorne Boulevard-Indian Peak to Silver Spur Road

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**40**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30**
			*** CNEL @ 100' **(SOFT)**	**66.99**
VOL			TOTAL Vehicle Volume (two-w	**30,400**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	ROW	RESULTS	DISTANCE FROM **Centerline**	**ROW**
******	1149	**<-- hard 60 CNEL soft --->**	**346**	**298**
379	330	**65 CNEL**	**161**	**112**
120	71	**70 CNEL**	**75**	**26**

View		View Angle of Observer (180)	180	
		SHIELDING (adjust output by hand)		
		~~		
Woods		Thickness of woodland betwee	0	
		observer and road (feet)		
Cover		Percent view coverage betwee	0	
		observer and road (0-100)		
Rows		Building rows between observe	0	
		and roadway (0-4).		

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Future With Project Conditions (2010):Hawthorne Boulevard-Silver Spur Road to Palos Verdes Drive North

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**40**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30**
			*** CNEL @ 100' **(SOFT)**	**66.26**
VOL			TOTAL Vehicle Volume (two-w	**25,700**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	ROW	RESULTS	DISTANCE FROM **Centerline**	**ROW**
******	963	**<-- hard 60 CNEL soft --->**	**309**	**261**
320	272	**65 CNEL**	**144**	**95**
101	53	**70 CNEL**	**67**	**18**

View		View Angle of Observer (180)	180	
		SHIELDING (adjust output by hand)		
		~~		
Woods		Thickness of woodland betwee	0	
		observer and road (feet)		
Cover		Percent view coverage betwee	0	
		observer and road (0-100)		
Rows		Building rows between observe	0	
		and roadway (0-4).		

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Future Without Project Conditions (2010):Palos Verdes Drive West-South of Palos Verdes Road

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**40**
Grad			Road Gradient (%, 0 to 6)	**0**
Sep1			Centerline Separation (feet)	**14**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**33**
			*** CNEL @ 100' **(SOFT)**	**63.91**
VOL			TOTAL Vehicle Volume (two-w	**22,600**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
505	465	**<-- hard 60 CNEL soft --->**	**195**	**155**
160	120	**65 CNEL**	**90**	**51**
51	11	**70 CNEL**	**42**	**2**

View		View Angle of Observer (180)	180
		SHIELDING (adjust output by hand)	
		~~	
Woods		Thickness of woodland betwee	0
		observer and road (feet)	
Cover		Percent view coverage betwee	0
		observer and road (0-100)	
Rows		Building rows between observe	0
		and roadway (0-4).	

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Future Without Project Conditions (2010):Palos Verdes Drive West-North of Hawthorne Boulevard

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	**0**
Sep1			Centerline Separation (feet)	**39**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30.5**
			*** CNEL @ 100' **(SOFT)**	**62.09**
VOL			TOTAL Vehicle Volume (two-w	**9,800**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
386	338	**<-- hard 60 CNEL soft --->**	**163**	**114**
122	74	**65 CNEL**	**75**	**27**
39	-10	**70 CNEL**	**35**	**-13**

View		View Angle of Observer (180)	180
		SHIELDING (adjust output by hand)	
		~~	
Woods		Thickness of woodland betwee	0
		observer and road (feet)	
Cover		Percent view coverage betwee	0
		observer and road (0-100)	
Rows		Building rows between observe	0
		and roadway (0-4).	

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Future Without Project Conditions (2010):Palos Verdes Drive South-East of Hawthorne Boulevard

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**27**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**31.5**
			*** CNEL @ 100' **(SOFT)**	**63.41**
VOL			TOTAL Vehicle Volume (two-w	**12,400**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
489	444	**<-- hard 60 CNEL soft --->**	**190**	**146**
155	110	**65 CNEL**	**88**	**44**
49	5	**70 CNEL**	**41**	**-3**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee observer and road (feet)	0
Cover	Percent view coverage betwee observer and road (0-100)	0
Rows	Building rows between observe and roadway (0-4).	0

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Future Without Project Conditions (2010):Palos Verdes Drive South-West of Palos Verdes Drive East

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**40**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**31**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**34.5**
			*** CNEL @ 100' **(SOFT)**	**61.5**
VOL			TOTAL Vehicle Volume (two-w	**14,400**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
322	273	**<-- hard 60 CNEL soft --->**	**144**	**95**
102	53	**65 CNEL**	**67**	**18**
32	-17	**70 CNEL**	**31**	**-18**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee observer and road (feet)	0
Cover	Percent view coverage betwee observer and road (0-100)	0
Rows	Building rows between observe and roadway (0-4).	0

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Future Without Project Conditions (2010):25th Street East of Palos Verdes Drive East

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**40**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**31**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**34.5**
			*** CNEL @ 100' **(SOFT)**	**62.84**
VOL			TOTAL Vehicle Volume (two-w	**19,600**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
438	389	**<-- hard 60 CNEL soft --->**	**177**	**128**
139	90	**65 CNEL**	**82**	**33**
44	-5	**70 CNEL**	**38**	**-11**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee	0
	observer and road (feet)	
Cover	Percent view coverage betwee	0
	observer and road (0-100)	
Rows	Building rows between observe	0
	and roadway (0-4).	

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Future Without Project Conditions (2010):25th Street-West of Western Avenue

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**27**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**31.5**
			*** CNEL @ 100' **(SOFT)**	**64.29**
VOL			TOTAL Vehicle Volume (two-w	**15,200**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
598	554	**<-- hard 60 CNEL soft --->**	**218**	**174**
189	145	**65 CNEL**	**101**	**57**
60	16	**70 CNEL**	**47**	**3**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee	0
	observer and road (feet)	
Cover	Percent view coverage betwee	0
	observer and road (0-100)	
Rows	Building rows between observe	0
	and roadway (0-4).	

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Future Without Project Conditions (2010):Hawthorne Boulevard-Palos Verdes Drive South to Crest Road

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**40**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30**
			*** CNEL @ 100' **(SOFT)**	**63.53**
VOL			TOTAL Vehicle Volume (two-w	**13,700**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
540	491	**<-- hard 60 CNEL soft --->**	**203**	**155**
171	122	**65 CNEL**	**94**	**46**
54	6	**70 CNEL**	**44**	**-4**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee observer and road (feet)	0
Cover	Percent view coverage betwee observer and road (0-100)	0
Rows	Building rows between observe and roadway (0-4).	0

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Future Without Project Conditions (2010):Hawthorne Boulevard-North of Crest Road

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**40**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30**
			*** CNEL @ 100' **(SOFT)**	**65.28**
VOL			TOTAL Vehicle Volume (two-w	**20,500**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
807	759	**<-- hard 60 CNEL soft --->**	**266**	**218**
255	207	**65 CNEL**	**124**	**75**
81	32	**70 CNEL**	**57**	**9**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee observer and road (feet)	0
Cover	Percent view coverage betwee observer and road (0-100)	0
Rows	Building rows between observe and roadway (0-4).	0

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Future Without Project Conditions (2010):Hawthorne Boulevard-Altamira to Grayslate Road

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**40**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30**
			*** CNEL @ 100' **(SOFT)**	**65.58**
VOL			TOTAL Vehicle Volume (two-w	**22,000**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	ROW	RESULTS	DISTANCE FROM **Centerline**	**ROW**
867	819	**<-- hard 60 CNEL soft --->**	**279**	**230**
274	226	**65 CNEL**	**129**	**81**
87	38	**70 CNEL**	**60**	**12**

View		View Angle of Observer (180)	180
		SHIELDING (adjust output by hand)	
		~~	
Woods		Thickness of woodland betwee	0
		observer and road (feet)	
Cover		Percent view coverage betwee	0
		observer and road (0-100)	
Rows		Building rows between observe	0
		and roadway (0-4).	

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Future Without Project Conditions (2010):Hawthorne Boulevard-Grayslate Road to Indian Peak

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME			DESCRIPTION	VALUE
			VARIABLE INPUT (as desired)	
Speed			Vehicle Speed (mph, 0 to 100)	**50**
Grad			Road Gradient (%, 0 to 6)	0
Sep1			Centerline Separation (feet)	**40**
	with	>>	(Usually 23' for 2-lane, 38'	
	median	>>	for 4-lane, 50' for 6-lane)	
Dist1			Distance from observer to the	100
			nearest lane centerline (>50')	
			(used in calculations)	
Dist2			Dist. from ROW to NLC	**30**
			*** CNEL @ 100' **(SOFT)**	**67.11**
VOL			TOTAL Vehicle Volume (two-w	**31,300**
ALPHA			Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	ROW	RESULTS	DISTANCE FROM **Centerline**	**ROW**
******	1185	**<-- hard 60 CNEL soft --->**	**352**	**304**
390	342	**65 CNEL**	**164**	**115**
123	75	**70 CNEL**	**76**	**28**

View		View Angle of Observer (180)	180
		SHIELDING (adjust output by hand)	
		~~	
Woods		Thickness of woodland betwee	0
		observer and road (feet)	
Cover		Percent view coverage betwee	0
		observer and road (0-100)	
Rows		Building rows between observe	0
		and roadway (0-4).	

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Future Without Project Conditions (2010):Hawthorne Boulevard-Indian Peak to Silver Spur Road

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME	DESCRIPTION	VALUE
	VARIABLE INPUT (as desired)	
Speed	Vehicle Speed (mph, 0 to 100)	**50**
Grad	Road Gradient (%, 0 to 6)	0
Sep1	Centerline Separation (feet)	**40**
with >>	(Usually 23' for 2-lane, 38'	
median >>	for 4-lane, 50' for 6-lane)	
Dist1	Distance from observer to the	100
	nearest lane centerline (>50')	
	(used in calculations)	
Dist2	Dist. from ROW to NLC	**30**
	*** CNEL @ 100' **(SOFT)**	**66.77**
VOL	TOTAL Vehicle Volume (two-w	**28,900**
ALPHA	Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
******	1090	**<-- hard 60 CNEL soft --->**	**335**	**286**
360	312	**65 CNEL**	**155**	**107**
114	65	**70 CNEL**	**72**	**24**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee	0
	observer and road (feet)	
Cover	Percent view coverage betwee	0
	observer and road (0-100)	
Rows	Building rows between observe	0
	and roadway (0-4).	

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Future Without Project Conditions (2010):Hawthorne Boulevard-Silver Spur Road to Palos Verdes Drive North

ASSUMPTIONS

(Based on the Federal Highway Administration Traffic Noise Prediction Model)

VARIABLE NAME	DESCRIPTION	VALUE
	VARIABLE INPUT (as desired)	
Speed	Vehicle Speed (mph, 0 to 100)	**50**
Grad	Road Gradient (%, 0 to 6)	0
Sep1	Centerline Separation (feet)	**40**
with >>	(Usually 23' for 2-lane, 38'	
median >>	for 4-lane, 50' for 6-lane)	
Dist1	Distance from observer to the	100
	nearest lane centerline (>50')	
	(used in calculations)	
Dist2	Dist. from ROW to NLC	**30**
	*** CNEL @ 100' **(SOFT)**	**66.05**
VOL	TOTAL Vehicle Volume (two-w	**24,500**
ALPHA	Hard site=0, Soft site=0.5	0.5

DISTANCE FROM Cntrline	DISTANCE FROM ROW	RESULTS	DISTANCE FROM **Centerline**	DISTANCE FROM **ROW**
964	916	**<-- hard 60 CNEL soft --->**	**300**	**251**
305	257	**65 CNEL**	**139**	**91**
96	48	**70 CNEL**	**65**	**16**

View	View Angle of Observer (180)	180
	SHIELDING (adjust output by hand)	
	~~	
Woods	Thickness of woodland betwee	0
	observer and road (feet)	
Cover	Percent view coverage betwee	0
	observer and road (0-100)	
Rows	Building rows between observe	0
	and roadway (0-4).	

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15.10 Phase I Report

RBF CONSULTING

PLANNING ▮ DESIGN ▮ CONSTRUCTION

PHASE I
ENVIRONMENTAL SITE ASSESSMENT

168.40 Acres
Resort Hotel Area and Upper Point Vicente Area

City of Rancho Palos Verdes,
County of Los Angeles, State of California

Prepared For:

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Rancho Palos Verdes, California
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949/855-5718
Mr. Bruce R. Grove Jr., REA
949/855-3686

September 15, 2000

JN 10-034194.001

STATEMENT OF ENVIRONMENTAL PROFESSIONALS

Statement of Quality Assurance

I have performed this Assessment in accordance with generally accepted environmental practices and procedures, as of the date of this report. I have employed the degree of care and skill ordinarily exercised under similar circumstances by reputable environmental professionals practicing in this area. The conclusions contained with this Assessment are based upon site conditions I readily observed or were reasonably ascertainable and present at the time of the site inspection.

The conclusions and recommendations stated in this report are based upon personal observations made by employees of RBF Consulting and upon information provided by others. I have no reason to suspect or believe that the information provided is inaccurate.

Signature of RBF Consulting Environmental Assessor-*Bruce R. Grove Jr., REA #06865, CEI #14551*

Signature/Environmental Assessor

Statement of Quality Control

The objective of this Environmental Site Assessment was to ascertain the potential presence or absence of environmental releases or threatened releases that could impact the subject site, as delineated by the Scope-of-Work. The procedure was to perform reasonable steps in accordance with the existing regulations, currently available technology, and generally accepted engineering practices in order to accomplish the stated objective.

The Scope of this Assessment does not purport to encompass every report, record, or other form of documentation relevant to the subject site being evaluated. Additionally, this Assessment does not include or address reasonable ascertainable Environmental Liens currently recorded against the subject site. To the best of my knowledge, this Environmental Site Assessment has been performed in compliance with RBF Consulting Standard Operating procedures protocol for Phase I Environmental Site Assessments.

Signature of RBF Consulting Environmental Project Manager-*Trevor Smith, REA #06161*

Signature/Environmental Project Manager

RBF CONSULTING

September 15, 2000 JN 10-034194

Mr. David Snow
CITY OF RANCHO PALOS VERDES
30940 Hawthorne Boulevard
Rancho Palos Verdes, California

Subject: Phase I Environmental Site Assessment for 168.40-acres consisting of the former Marineland Aquatic Park (Resort Center Area) and the Upper Point Vicente Area (City Hall Property) located within the City of Rancho Palos Verdes, County of Los Angeles, California

Dear Mr. Snow:

RBF Consulting is pleased to submit this Phase I Environmental Site Assessment (ESA) for the above referenced property, herein referenced as the "subject site." This Phase I ESA has been prepared to evaluate the potential presence of hazardous materials and the expected nature of the materials that may be on the subject site addressed within this ESA. This ESA has been prepared for the sole use and benefit of the City of Rancho Palos Verdes and York Long Point Associates for the above referenced subject site. Neither this Phase I ESA, nor any of the information contained herein shall be used or relied upon for any purpose by any person or entity other than the City of Rancho Palos Verdes and York Long Point Associates.

This Phase I ESA contains information that was obtained for a Phase I ESA dated June 30, 1999. The June 1999 Phase I ESA was prepared for the subject properties as well as other parcels considered as part of the subject site at that time. This revised Phase I ESA has been prepared to include new information that was not known at the time the original Phase I ESA was prepared; to address the revised site plan which resulted in the elimination of some parcels; and to update the assessment in order to comply with current industry standards for the preparation of Environmental Site Assessments.

The Phase I ESA was performed in general accordance with ASTM Standard Practice E 1527-97, the scope-of-services and inherent limitations presented in our proposal. The Assessment is not intended to present specific quantitative information as to the actual presence of hazardous materials on or adjacent to the subject site, but is to identify the potential presence based on available information.

Should you or your staff have any questions after reviewing the attached report, please do not hesitate to contact me at 949/855-5718.

Sincerely,

Trevor Smith, REA
Environmental Assessor, Project Manager

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1.0

INTRODUCTION

The purpose of conducting this Phase I Environmental Site Assessment is to permit the use of this report to satisfy one of the requirements to qualify for the Innocent Landowner Defense to CERCLA (Superfund Law) liability, by providing an appropriate inquiry into the previous uses of the property in order to identify ***Recognized Environmental Conditions****. As defined in ASTM Standard Practice E 1527-97, a* ***Recognized Environmental Condition (REC)*** *is "the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property."*

1.1 SUBJECT SITE

The subject site is located on the Palos Verdes Peninsula which covers approximately 36 square miles in the southwestern tip of Los Angeles County. The subject site consists of a total of 168.40 acres of open space and partially developed land located on the Palos Verdes Peninsula, north and south of Palos Verdes Drive South, within the City of Rancho Palos Verdes, County of Los Angeles, California, herein referred to as the "subject site" within this assessment (refer to Exhibit 1, *Site Vicinity*).

The subject site consists of steep cliffs which border the Pacific Ocean and a natural terrace sloping to the south and west, towards the ocean (refer to Exhibit 1, *Site Vicinity*). The subject site is comprised of two separate geographical areas consisting of the following (refer to Exhibit 2, *Subject Site*):

Resort Hotel Area (former Marineland Aquatic Park). The Resort Hotel Area parcel consists of 103.50 acres of vacant and partially developed land located south of Palos Verdes Drive South. This area of the subject site is primarily comprised of vacant structures (including parking areas) associated with the former Marine Land Aquatic Park.

Upper Point Vicente Area. The Upper Point Vicente Area includes land owned by the City of Rancho Palos Verdes (City Hall) and Los Angeles County consisting of 64.90 acres of vacant and partially developed land on the north side of Palos Verdes Drive South. On-site structures include the Rancho Palos Verdes City Hall, a cable television service building, Point Vicente Bunker Battery #240 and two NIKE missile silos. Agricultural uses are located on the southeastern portion of the Upper Point Vicente Area.

Refer to Section 2.0, *Physical Setting*, for a complete description of on-site and off-site conditions.

Source: Redondo Beach Quadrangle, photo revised 1981.

Not to Scale

- Subject Site

1 - Resort Hotel Area
2 - Upper Point Vicente Area

CITY OF RANCHO PALOS VERDES
LONG POINT RESORT PHASE 1 ESA

Site Vicinity

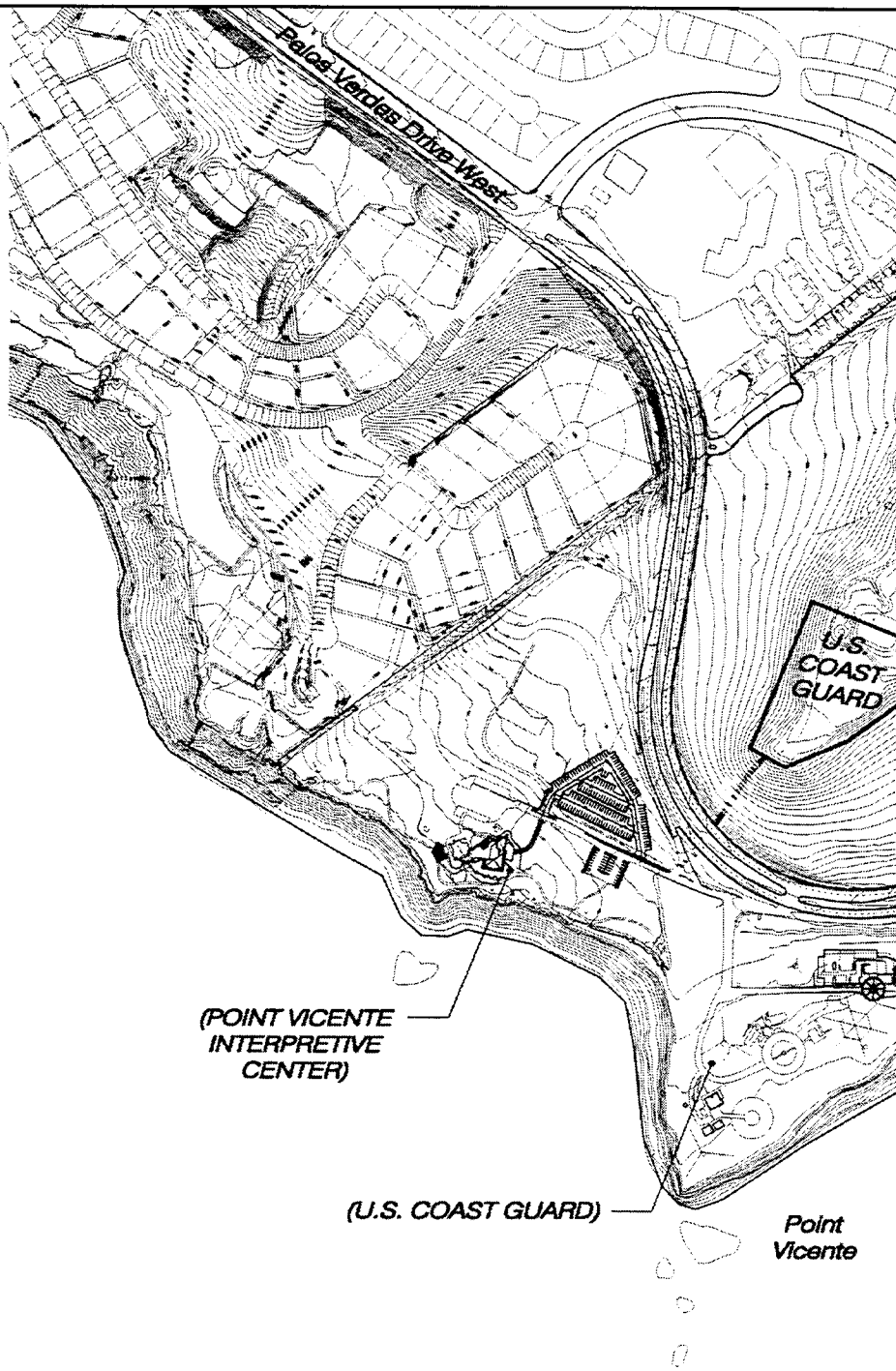
RBF CONSULTING

PLANNING ■ DESIGN ■ CONSTRUCTION

09/00

JN 10-034194

Exhibit 1



Not to Scale

RBF CONSULTING

PLANNING ■ DESIGN ■ CONSTRUCTION

09/00

JN 10-034194

1.1.1 Anticipated Future Uses

Based on discussions with the City of Rancho Palos Verdes the subject site is anticipated to be developed with resort and golf course uses.

1.2 EXECUTIVE SUMMARY

A partial summary of results of the Phase I Environmental Site Assessment is as follows (refer to Sections 2.0 through 5.0 of this Assessment for a complete discussion of our investigation and conclusions):

1.2.1 Site Inspection

Visible evidence of possible recognized environmental conditions within the subject site were identified during the March 2, 1998 and September 6, 2000 site inspections. In addition, review of available environmental documentation and interviews have indicated that previous uses within the subject site may have resulted in potential adverse environmental conditions (refer to Sections 4.0 and 5.0 for detailed discussions).

1.2.2 Asbestos

Based upon the year the existing structures located on the subject site were built (prior to 1978), the potential for asbestos containing material to be found on-site is considered likely. Due to the age of the Point Vicente Bunker, some asbestos containing material my exist in structural components, including the floor tile and acoustic insulation. Refer to Section 5.0, *Findings, Opinions and Recommendations*, for a complete discussion regarding asbestos containing materials.

1.2.3 Lead-Based Paints

Based on the presence of structures located on the subject site parcels that were built prior to 1978, the presence of lead-based paint materials is likely. Refer to Section 5.0, *Findings, Opinions and Recommendations*, for a complete discussion regarding lead-based paint materials.

1.2.4 Adjacent Properties

The presence of hazardous materials on the subject site that may have been generated from adjacent properties was not visible during the March 2, 1998 and September 6, 2000 site inspections.

RBF Consulting reviewed information regarding the discovery of lead contaminated soil from the Point Vicente Interpretive Center (PVIC) site. Historical records indicate that a portion of the site was a former rifle and small arms range which was used from the 1940's to the 1970's. Soil on the site contains lead from the rifle range activities. From 1983 to 1984, as part of the development of the park property, the soil mound used for the range was graded. Grading appears to have stayed within the boundaries of the Point Vicente Interpretive Center site. In July 1999, as part of a planned expansion, soil from this site was excavated and transported to property in San Pedro as fill material. Subsequent sampling of this transported soil indicated lead concentrations had the potential to exceed regulated levels. The soil was transported back to the PVIC site. Based on review of existing information and historical aerial photographs it does not appear that operations on the PVIC site would have impacted the Upper Point Vicente Area.

1.2.5 Public Records

Available public records were reviewed. The lists which were reviewed identified that two (2) listed regulatory sites are reported within the boundaries of the subject site.

These sites consist of former underground storage tanks (USTs) which have resulted in a subsurface release of petroleum products. Both sites are considered closed by the local regulatory agency. The lists identified no listed regulatory sites located within a one-mile radius of the subject site. Refer to Section 3.0, *Historical and Regulatory Information Searches*, for a detailed discussion.

1.2.6 Historical Use(s) Information

Review of available environmental documentation and interviews indicate that previous uses within the subject site may have resulted in potential adverse environmental conditions. Specific uses of concern include, but are not limited to the former military use of the Upper Point Vicente Area and some of the former structures in the Resort Hotel Area.

The potential that an environmental condition has been created by former agricultural uses on the subject site is likely. For discussions regarding the historic use of pesticides and other uses found throughout the subject site, refer to Section 4.0, *Potential Areas of Environmental Concern.*

1.2.7 Historic Recognized Environmental Condition

A ***"historic recognized environmental condition"*** (HREC) is defined as a condition which in the past would have been considered a REC, but which may or may not be considered a REC currently. HRECs are generally conditions which have in the past been remediated to the satisfaction of the responsible regulatory agency. Based on this definition, two HRECs were identified within the boundaries of the subject site. However, the sites were remediated and their case has been closed by the responsible regulatory agency.

1.2.8 Opinions/Recommendations

Based on the records and other data reviewed during the preparation of this Phase I Initial Site Assessment, in accordance with ASTM Standard Practice E 1527-97 and the scope-of-services, and subject to the limitations thereof, the following measures are recommended:

Asbestos Containing Materials and Lead-Based Paints

- If during demolition any of the structures, paint is separated from the building materials (e.g., chemically or physically), the paint waste should be evaluated independently from the building material to determine its proper management. According to the Department of Substances Control, if paint is not removed from the building material during demolition (and is not chipping or peeling), the material could be disposed of as construction debris (a non-hazardous waste). It is recommended that the landfill operator be contacted in advance to determine any specific requirements they may have regarding the disposal of lead-based paint materials.

- The National Emission Standards for Hazardous Air Pollutants (NESHAP) mandates that building owners conduct an asbestos survey to determine the presence of Asbestos Containing Materials (ACMs) prior to the commencement

of any remedial work. Prior to demolition work, it is recommended that areas be sampled as part of an asbestos survey.

- Any demolition of the existing building must comply with State law, which requires a contractor, where there is asbestos-related work involving 100 square feet or more of ACMs, to be certified and that certain procedures regarding the removal of asbestos be followed.

Resort Hotel Area

- A Phase II level investigation is recommended to determine the characteristics and extent of the potential contamination (i.e, soil and groundwater) associated with the concrete sump located in the former service station. Results of the sampling will indicate what level (if any) of disposal is needed and whether remediation efforts will be required.

- A Phase II level investigation is recommended to determine the characteristics and extent of the potential contamination (i.e, soil and groundwater) associated with the liquid contained within the vault of the former sky tower. Results of the sampling will indicate what level (if any) of disposal is needed and whether remediation efforts will be required.

- Prior to removal of all remaining structures, site specific investigations to determine the contents of the interior of all structures is recommended. In the event that hazardous materials are encountered, they should be properly tested and then properly disposed of prior to renovation/demolition activities.

Upper Point Vicente Area

- Soil sampling of the agricultural portion of the Upper Point Vicente Area is recommended to determine the presence or absence of banned agricultural pesticides.

- A Phase II level investigation is recommended to determine the level of potential contamination associated with the historic use of the Upper Point Vicente Area. The focus of the investigation should include, but not be limited to the following:

  1. Determine the actual absence or presence of the two suspected underground storage tanks located near the Point Vicente Bunker. If determined present, soil sampling and/or testing to determine the characteristics and extent of potential contaminants should be performed. Upon completion of soil testing and/or sampling, a Risk Assessment should be prepared to determine the appropriate measures for remediation of the tank sites.

  2. The 100-square foot area of distressed vegetation located adjacent to the abandoned concrete slab in the northern portion of the Upper Point Vicente Area should be examined to determine the potential for a release of hazardous materials. In addition, a subsurface investigation should be conducted to determine if any other structures or substances

are located below the concrete slab. Any stained soil should be tested to determine the absence or presence of hazardous materials.

- The project applicant should coordinate with the appropriate authorities from the United States Department of Interior, National Park Service regarding any proposed modifications to the NIKE missile silos.

- Prior to removal and/or modification to the Point Vicente Bunker, a site specific investigation to determine the contents of the interior is recommended. In the event that hazardous materials are encountered, they should be properly tested and then properly disposed of prior to modification/demolition activities.

1.2.9 Limiting Conditions

The performance of this Phase I Environmental Site Assessment was restricted by limited access into several structures on the subject site.

1.3 Scope of Services

The objectives of the Phase I Environmental Site Assessment contained herein are as follows:

- Evaluate the potential for hazardous materials on the subject site based upon readily discernible and/or documented present and historic uses of the property and uses immediately adjacent to the site; and

- Generally characterize the expected nature of hazardous materials that may be present as a result of such uses, within the limits imposed by the scope of this Assessment.

This Assessment is not intended to provide specific qualitative or quantitative information as to the actual presence of hazardous materials at the site, merely to identify the potential presence based on available information. To achieve the objectives of this Assessment, RBF Consulting conducted a Phase I Environmental Site Assessment of the subject site to provide preliminary conclusions relative to site conditions. The Assessment included the following:

- RBF Consulting performed site visits on March 2, 1998 and September 6, 2000 consisting of a visual examination to identify areas of potential contamination on and immediately adjacent to the subject site. RBF Consulting observed the physical characteristics of the property (e.g., apparent runoff directions, location of paved areas, etc...) and the potential for soil contamination from hazardous materials (e.g., soil staining, distressed vegetation, etc...). It should be noted that the site visit specifically excluded any subsurface investigation including, but not limited to, sampling and/or laboratory analysis.

- During the site visit, RBF Consulting conducted a preliminary visual examination of immediately adjacent property conditions and their general nature.

- RBF Consulting reviewed available aerial photographs (including historical aerial photos), historical topographic maps, soil, geologic and hydrogeologic data.
- RBF Consulting interviewed various agencies with jurisdiction over the subject site.
- RBF Consulting reviewed information obtained by VISTA Information Solutions Inc., regarding public agency records.
- RBF Consulting reviewed available property data for the subject site.
- RBF Consulting reviewed available physical setting data for the subject site.
- RBF Consulting compiled the data reviewed, discussed findings, formulated conclusions and recommendations, and prepared this written report presenting the findings of the Phase I Environmental Site Assessment.

1.4 LIMITATIONS

The findings and professional opinions of RBF Consulting are based on the information made available to RBF Consulting from public records, and should be understood to be preliminary only. Property conditions, as well as local, state, and federal regulations can change significantly over time. Therefore, the recommendations and conclusions presented as a result of this Phase I ESA apply strictly to the environmental regulations and property conditions existing at the time the Assessment was performed. RBF Consulting makes no warranties either expressed or implied, concerning the completeness of the data made available to us for this study and withholds certification of any type concerning the presence or absence of contamination of the subject site. The report states our conclusion based on the limitations of our Scope-of-Services, in accordance with generally accepted standards for a Phase I Environmental Site Assessment.

Subsurface exploration, geologic mapping, laboratory testing of soil or water samples, lead and asbestos sampling, and operations/inventory review of adjacent uses were not performed in connection with this Assessment. The report represents our professional judgement, based on the level of effort described above, as to the present potential for hazardous materials at the site.

Subsurface exploration, sampling and laboratory testing should be performed if it is deemed necessary or required to quantify the actual absence or presence of hazardous materials and recommend possible remediation measures for such hazardous materials (a "Phase II" investigation).

2.0

PHYSICAL SETTING

Physical setting sources typically provide information regarding geologic, hydrogeologic, hydrologic, or topographic characteristics of a property. The following information is based on review of the USGS Redondo Beach Quadrangle, California, 1981; Rancho Palos Verdes Coastal Specific Plan, dated December 1978; Draft Environmental Impact Report of the Long Point Master Plan Development, dated June 1989; Draft Environmental Impact Report No. 35 for Vesting Tentative Tract 46628, dated September 6, 1991; Phase I Environmental Site Assessment Rancho Palos Verdes Resorts, dated October 30, 1992, prepared by Michael Brandman Associates and site inspections conducted by RBF Consulting on March 2, 1998 and September 6, 2000. Other miscellaneous resources utilized within this section and throughout the Assessment are referenced in Section 6.0, REFERENCES.

2.1 SUBJECT SITE DESCRIPTION

The following discussions provide a detailed description of the subject site:

2.1.1 Location

The subject site consists of two separate parcels comprised of 168.40 acres of vacant and partially undeveloped land located north and south of Palos Verdes Drive South in the City of Rancho Palos Verdes, County of Los Angeles, California (refer to Exhibit 1, *Site Vicinity*). The following is a description of the two separate geographical areas which comprise the subject site. Refer to Exhibit 1, *Site Vicinity* for an illustration of the location of each area.

Resort Hotel Area. This area consists of 103.50 acres of vacant and partially developed land located south of Palos Verdes Drive South. The site is located on a bluff approximately 125 feet above the Pacific Ocean.

Upper Point Vicente Area. Land owned by the City of Rancho Palos Verdes consists of 64.90 acres of vacant and partially developed land on the north side of Palos Verdes Drive South. A portion of the area consists of the Rancho Palos Verdes City Corporate Yard which is located on a bluff overlooking Palos Verdes Drive South north of the former Marineland Aquatic Park, west of the Western Regional Headquarters for the Salvation Army and south of Hawthorne Boulevard.

2.1.2 Description of Current On-Site Structures, Roads and Improvements

On March 2, 1998 and September 6, 2000, RBF Consulting conducted site inspections of the subject site, which indicated that the subject property has the following structures, roads, and improvements:

Resort Hotel Area. This area consists of numerous abandoned structures and facilities associated with the former Marineland Aquatic Park, constructed in 1953. The facilities

included aquariums, water tanks, and animal handling/storage areas. Additional structures include theaters and restaurant/snack bars. A 300-foot hydraulic operated sky tower was centrally located within the park, however, has been removed in recent years and all that remains is the associated subsurface vault. The remainder of the parcel includes two paved asphalt parking areas, a former visitor information/service station located at the entrance to the Marineland facility, the former Marineland Inn Motel and vacant undeveloped land.

The Resort Hotel Area is currently utilized for several uses including a helicopter landing/maintenance warehouse, a reception hall (Catalina Room) and an agricultural field. In addition, a sewage pump facility (currently inoperable) is located on the southern portion of the site. All of the existing buildings associated with the Marineland Park were boarded up, (with the exception of the Catalina Room), and access to the existing on-site structures was restricted during the March 2, 1998 site inspection. Mr. Jim York with York Long Point Developers indicated that the buildings are believed to be empty.

Approximately 15.6 acres of undeveloped land is utilized for agriculture along the northeast boundary of the site. The agricultural fields were not under cultivation during the March 2, 1998 site investigation. Several storage sheds, equipment and trucks were observed stored on the north end of the agricultural field.

The former visitor information center/service station is located at the main entrance to the Resort Hotel Area along Palos Verdes Drive South. The building is currently abandoned and in disrepair. The interior of the building includes three (3) empty auto service bays. A concrete sump with a metal cover was observed in one of the service bays which was filled with a dark unknown liquid (refer to Section 4.0, *Potential Areas of Environmental Concern).*

Upper Point Vicente Area. Portions of this area consists of a city park, vacant land, agricultural land, a corporate yard (former United States Army NIKE missile site) and a subsurface concrete bunker (Point Vicente Bunker Battery #240). The Point Vicente Bunker Battery #240, which is currently owned by the United States Coast Guard, is located on a 4-acre parcel surrounded by the City property and is not part of the future improvements.

The following is a detailed description of the various on-site conditions observed during the March 2, 1998 and September 6, 2000 site inspections of the Upper Point Vicente Area:

- **City Park (including vacant land):** A city maintained park is located directly east of the City Hall structures consisting of manufactured turf areas and a tennis court. On-site, vacant land surrounds the City Hall structures and city park to the north, east, south and west. A subsurface bunker (Point Vicente Bunker Batter #240) and two (2) concrete gun emplacement pads are located west of the City Hall structures within the vacant land area. The Point Vicente Bunker is a buried, single concrete bunker which is not occupied. The United States Coast Guard is currently utilizing one small room of the bunker to house communications equipment. Access to the interior of the bunker was restricted during the site inspections. Two large antennas associated with the communication system within the bunker are located atop the bunker site. In addition, a cellular tower is also located on the Coast Guard property.

- **Agricultural Land:** Currently the southeast corner of the Upper Point Vicente Area is under agricultural production.

- **Corporate Yard (former NIKE missile site):** The City Corporate (maintenance) Yard is located south of the city park and City Hall structures. The corporate yard consists of a paved area which is currently utilized as a storage area for construction and maintenance materials. Construction materials observed consist of wood, piping, sandbags, dumpsters, concrete piping and landscape debris piles. In addition, a Cox Cable building is also located at the entrance to the corporate yard. A storage area consisting of large spools of cable wire was observed located adjacent to the Cox Cable building. Two abandoned NIKE missile silos are located beneath the corporate yard which consist of two large concrete underground vaults, two hydraulic lift elevators and two sound proof control rooms.

2.2 TOPOGRAPHY

The United States Geological Survey (USGS) maps show geological formations and their characteristics, describing the physical setting of an area through contour lines and major surface features including lakes, rivers, streams, buildings, landmarks, and other factors that impact the spread of contamination. Additionally, the maps depict topography through color and contour lines and are helpful in determining elevations and site latitude and longitude. Based on the USGS Redondo Beach Quadrangle, the subject site consists of the following:

The subject site is located on the Palos Verdes Peninsula. The peninsula covers approximately 36 square miles with elevations ranging from 1,480 feet mean sea level (MSL) to sea level. The subject site consists of steep cliffs along the coastline and a natural terrace sloping to the south and west towards the Pacific Ocean (refer to Exhibit 1, *Site Vicinity*).

Resort Hotel Area. This geographical area generally slopes to the south towards the Pacific Ocean. On-site elevations range from approximately 210 feet above mean sea level (MSL) to 15 feet above MSL. The ocean bluffs ranging in height from 135 feet above MSL to 90 feet above MSL define the site at its western and southern boundaries.

Upper Point Vicente Area. This area consists of a hilly terrace which slopes to the south and west. On-site elevation ranges from approximately 380 feet above MSL to approximately 200 feet above MSL.

2.3 CURRENT USES OF ADJOINING PROPERTIES

For the Scope of this Assessment, properties are defined and categorized based upon their physical proximity to the subject site. An adjoining property is considered any real property or properties the border of which is contiguous or partially contiguous with that of the subject site, or that would be contiguous or partially contiguous with that of the subject site but for a street, road, or other public thoroughfare separating them. An adjacent property is any real property located within 0.25 miles of the subject site's border. The following is a detailed description of each adjoining land use observed on March 2, 1998 and September 6, 2000.

North

Resort Center: Palos Verdes Drive South borders the Resort Hotel Area to the north. The Western Regional Headquarters of the Salvation Army is located on the north side of Palos Verdes Drive South.

Upper Point: The Rancho Palos Verdes City Hall consists of three administration buildings located on the northeastern portion of the Upper Point Vicente Area. A cellular tower and a concrete mounted transformer was observed next to the northern administrative building. Ornamental landscaping and a paved parking area comprise the remainder of this portion of the Upper Point Vicente Area. Single-family residential units and a church are located north of the Upper Point Vicente Area. Northeast of Hawthorne Boulevard, additional residential units are situated on a high bluff. Subregion 1, consisting of a residential development currently under construction is located northwest of the Upper Point Vicente Area.

West

Resort Center: Vacant land and the Pacific Ocean are located to the west of the Resort Hotel Area.

Upper Point: Palos Verdes Drive South borders the Upper Point Vicente Area to the west. West of Palos Verdes Drive South is the Point Vicente Interpretive Center and the U.S. Coast Guard Reservation.

South

Resort Center: The Pacific Ocean borders this area to the south.

Upper Point: Palos Verdes Drive South borders the Upper Point Vicente Area to the south. South of Palos Verdes Drive South is open space and the Resort Hotel Area.

East

Resort Center: Single-family residential units and an apartment complex are located to the east of this area.

Upper Point: Vacant land and the Western Regional Headquarters of the Salvation Army are located to the east of the Upper Point Vicente Area.

2.4 Geologic Conditions

2.4.1 Geology

The United States Geological Survey (USGS) Geological Map Index was searched by VISTA Information Solutions, Inc. for available Geological Maps which cover the subject site and surrounding areas. These Geological Maps indicate geological formations which are overlaid on a topographic map. Some maps focus on specific issues (i.e., bedrock, sedimentary rocks, etc.) while others may identify artificial fills (including landfills). Geological maps can be effective in estimating permeability and other factors that influence the spread of contamination.

The region of the subject site is characterized by tertiary intrusive rocks, mostly shallow plugs and dikes related to volcanic rocks. The region is also characterized by large landslides related to marine sedimentary rocks.

The Palos Verdes Peninsula is a rugged area primarily underlain by folded sedimentary rocks of the Miocene Monterey Formation. The Monterey Formation is more than 2000 feet thick and has been divided into three members on the basis of rock type: the Altamira Shale, the Valmonte Diatomite, and the Malaga Mudstone. Sedimentary rock types within the subject site consist of shale, siltstone, carbonate rocks, chert, sandstone, and rocks containing sediments and air-fall deposits of volcanic origin.

2.4.2 Radon

Radon is an invisible, odorless, inert gas which emits alpha particles, known to cause lung cancer. Radon levels are highest in basements (areas in close proximity to the soil) that are poorly ventilated. According to the "U.S. EPA Map of Radon Zones," the County of Los Angeles is located within Zone 2 which has a predicted average indoor screening level of ≥2.0 Picocuries per liter (pCi/L) but ≤ 4.0 pCi/L for the first floor living area. EPA recommends remedial actions when radon levels are greater than 4.0 pCi/L.

2.5 Biological Setting

Four natural vegetative communities are indigenous to the Palos Verdes Peninsula, the Rocky Coastal, Chaparral, Grassland, and Coastal Sage Scrub. Human activity on the peninsula has been intensive and very little undisturbed natural vegetation remains (refer to Exhibit 3, *On-Site Photographs*).

Resort Hotel Area. This area was heavily graded and altered for the development of the former Marineland Aquatic Park. This development resulted in the removal of a majority of the natural vegetation and fauna. However, landscaping planted as part of the Marineland facility has reached maturity.

Upper Point Vicente Area. The plant community within this parcel is best characterized as Coastal Sage Scrub. In addition, grassland varieties consisting of bunch grasses, flowering annuals and introduced weedy grasses also comprise the vegetative community of this parcel. Although there is nothing distinctive or significant about the native or exotic species contained within this parcel, large portions of the area have been designated as Natural Vegetation Preservation Areas within city-wide documents.

2.6 Drainage/Hydrology

2.6.1 Drainage

Drainage of the subject site is accomplished by downward surface percolation and overland sheet flow which is generally in a south-southwest direction towards the Pacific Ocean.

2.6.2 Flood Hazards

RBF Consulting reviewed a National Flood Insurance Program (NFIP) Flood Insurance Rate Map (FIRM) for the subject site and surrounding areas published by the FEMA to further confirm the subject site's location with respect to the 100 year flood zone. FIRM maps indicate where flood risks are based on local hydrology, topology, precipitation, flood protection measures, such as levees, and other scientific data. According to FIRM map the subject site is not located within a 100-year flood zone.

2.7 GROUNDWATER AND WATER WELLS

No technical groundwater or water well data was readily available during the preparation of this Assessment. As a result, RBF Consulting assumes groundwater flow would follow the slope of the ground surface elevations towards the nearest open body of water or intermittent stream. Based on surface topography and drainage patterns within the vicinity of the subject site, the regional groundwater flow direction can be assumed to flow south-southwest towards the Pacific Ocean. Actual local groundwater flow direction can be influenced by factors such as surface topography, perched aquifers, soil and bedrock geology, seasonal fluctuations, and production wells. RBF interviewed California Water Service Company (CWS) staff which indicated that there are no potable groundwater wells located on the Palos Verdes peninsula and all potable water is provided by CWS.

Resort Hotel Area. Groundwater within this area is restricted to fractures in the bedrock material and sedimentary terrace and beach deposits. Water levels in the terrace deposits are assumed to be at or near sea level due to the parcel being bounded by the Pacific Ocean to the south (Draft EIR for the Long Point Master Plan Development).

Upper Point Vicente Area. Core samples to a depth of 30 feet below ground surface (bgs) have been examined by the Army Corps of Engineers and show negative groundwater results (City of Rancho Palos Verdes). No springs or seepages have been reported within the Upper Point Vicente Area.

3.0

HISTORICAL AND REGULATORY INFORMATION SEARCHES

The ASTM Phase I Standard (E1527-97) allows discretion in choosing from among eight standard sources, plus "other" non-specific sources (other non-specific sources can include newspaper archives and records in the files and/or personal knowledge of the property owner and/or occupants). The standard sources are fire insurance maps, historical topographic maps, street directories, aerial photographs, property tax files, building department records, planning department records, and a chain-of-title. The focus is on usage rather than ownership, which is why a chain-of-title is not required and not sufficient by itself.

The ASTM historical research requirements require identifying the use of the subject site back to either 1940 or first use (including agriculture), whichever is ***earlier****. If this proves difficult, the ASTM "data failure" clause allows research to stop after reviewing the standard sources that are reasonably ascertainable and likely to be useful. RBF Consulting's historical search went back to 1944 using the standard sources mentioned above.*

3.1 HISTORICAL SITE USAGE

The following historical information is based upon review of available historical maps and documents, available public information, interviews, and a review of a series of historical aerial photographs dating from 1953 to 1995.

3.1.1 Interviews

3.1.1.1 Los Angeles Air Force Base

RBF interviewed Mr. John Ryan, Public Affairs Specialist with the Los Angeles Air Force Base, concerning historic uses associated with the NIKE missile silo sites within the Upper Point Vicente Area, on March 9, 1998. Refer to Section 4.0, *Potential Areas of Environmental Concern*, as well as documentation contained within Appendix B, for a detailed discussion regarding the NIKE missile silos.

3.1.1.2 United States Coast Guard ISC San Pedro Facilities Engineering

RBF interviewed Mr. Jim Heinz, Facilities Engineer with the United States Coast Guard at San Pedro, on March 9, 1998. Mr. Heinz indicated that two leaking underground storage tanks (LUSTs) encased in two separate concrete vaults were removed directly adjacent to the Point Vicente Bunker located in the Upper Point Vicente Area in approximately 1996. Remedial corrective measures were performed and the site was fully remediated (refer to Section 4.0, *Potential Areas of Environmental Concern).*

3.1.1.3 California Water Service Company

RBF interviewed California Water Service (CWS) staff which indicated that there are no potable groundwater wells located on the Palos Verdes peninsula. All potable water service is provided by CWS through purchases from the Metropolitan Water District.

3.2.1 Documentation

3.2.1.1 Historical Documentation (Former U.S. Army Property)

Mr. David Snow, Senior Planner for the City of Rancho Palos Verdes, provided two untitled historical information packets regarding the Upper Point Vicente Area which was formerly owned and operated by the United States Army as a missile (NIKE) site and gunnery range until 1974. According to the documentation the site was acquired in 1942 for the purpose of the construction of Battery #240. During the 1950's and 1960's, the site was home to the administration and launch facilities for both the Nike Ajax and Nike Hercules anti-aircraft missiles. It was designated as LADA (Los Angeles Defense Area) #55, a part of the air defense system of Los Angeles. By the early 1970's the Nike defense system was obsolete.

Several (remediation) projects were identified by the military as part of the abandonment of Battery #240 and Nike Battery #55 on the Upper Point Vicente Area. They included the following:

A) The removal of two 500-gallon underground storage tanks and associated piping was identified for Point Vicente Bunker Battery #240.

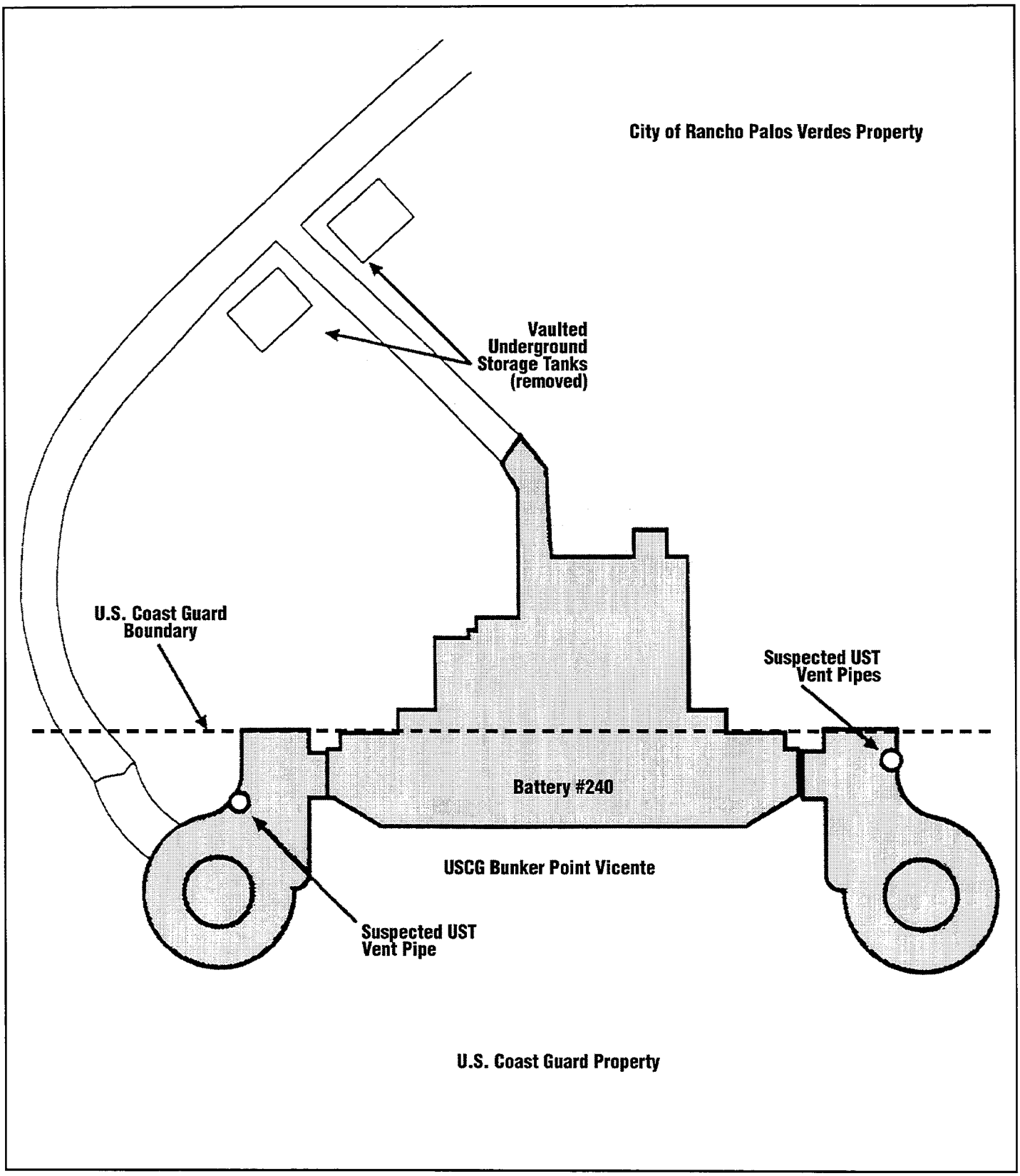
B) The removal of three abandoned fuel storage tanks and sampling and disposal of seven 55-gallon drums were projects identified for the Nike facilities. Soil sampling was also to be included around these identified areas as well as in the area of the former paint storage shed, acid storage and fueling facilities.

3.2.1.2 Federal Facility PA Review-Point Vicente Bunker

RBF reviewed a Federal Facility PA Review (refer to Appendix B, *Documentation*) for the Point Vicente Bunker dated March 25, 1996. This report documented the potential threat associated with two (2) suspected underground storage tanks located adjacent to the bunker as well as asbestos containing material (ACM) and lead-based paints (LBPs) associated with structural components of the bunker. These two suspect USTs are in addition to the two LUSTs which were removed from the northern entrance to the Point Vicente Bunker in 1996. Refer to Exhibit 3, *Areas of Concern-Point Vicente Bunker.*

3.2.1.3 Battery 240 General Plan Map

According to the Battery 240 General Plan Map, dated January 14,1944, two USTs are located along the access road to Battery 240. These two tanks are believed to be the two LUSTs which were removed and the area remediated in 1996.



Source: Earth Tech, 1995. Revised by RBF Consulting, June 1999.

- Bunker

Not to Scale

RBF CONSULTING PLANNING ■ DESIGN ■ CONSTRUCTION

09/00 JN 10-034194

CITY OF RANCHO PALOS VERDES
LONG POINT RESORT PHASE 1 ESA

Areas of Concern-Point Vicente Bunker

Exhibit 3

3.2.1.4 *Environmental Site Assessment-Rancho Palos Verdes Resort Assessment #6150000195*

The Phase I Environmental Site Assessment (ESA) dated October 1992 identifies the Resort Hotel Area's past land uses as the Marineland Aquatic Park. This document provides a detailed regulatory database review and inventory of existing and past structures located within this parcel. In addition, this document identifies the former visitor information center as a service station.

3.2.1.5 *Building Department Records*

Building Department Records are those records of the local government in which the subject site is located indicating permission of the local government to construct alter, or demolish improvements on the property. The purpose of the records review was to obtain and review building permit records which would help to evaluate potentially recognizable environmental condition(s) which could be connected with the subject site. Although information concerning tenant improvements/alterations and other miscellaneous modifications were located during the research, this information did not contain information relevant to this Assessment.

Resort Hotel Area. Review of available building permits (as contained within Environmental Site Assessment Rancho Palos Verdes Resort Asset #6150000195) provided a history of structural improvements within this area. No adverse environmental conditions were noted during review of available building and use permits. For this area, numerous building, grading, electrical, plumbing, special use and construction permits were issued for the subject site related to the original construction of Marineland. A summary of building records indicated the following:

- Building Permit #69712 issued on July 24, 1953 authorized the construction of an oceanarium and a second structure to include indoor aquariums and offices for Marineland.

- A building permit was receded December 24, 1953 for the construction of the motel and a clarifier to the oceanarium.

- A building permit was recorded December 21, 1963 for the addition of 1,800 square feet to an existing water filtration system.

- A building permit was issued August 22, 1967 for the modification of a saltwater pump station.

- In 1975, Marineland began an improvement program which focused on the operation, maintenance and repair of major facilities. The permits reviewed indicated that the improvement program did not involve any major grading or the installation of underground storage tanks. The descriptions of the structural improvements and additional facilities included in the improvement program did not indicate the presence of hazardous materials/waste stored on-site.

- A building permit was recorded May 30, 1978 for construction of a 130 square foot transformer (Building 872).

- A Coastal Development Permit (#5-83-572) was issued during September 1983 for the installation of saltwater piping spools with associated valves and appurtenances, and an enclosure wall.

- On November 12, 1986 Grading Permit #949, Coastal Zone Permit #25, Variance #148 and Conditional Use Permit #37 were issued for the remodeling and expansion of the marine stadium.

- Permit #5873 was issued on January 22, 1988 for the demolition of 28 structures, including aquariums and other water attractions. The demolition began on February 15, 1988 and was completed April 21, 1989. Prior to the commencement of demolition activities, the City of Rancho Palos Verdes issued a series of recommendations to the contractor (Cleveland Wrecking Company). The memorandum indicated that any underground storage tanks associated with the former gas station shall be removed. No other materials were found related to the demolition in regards to the removal or installation of underground storage tanks at the former service station.

- Special Use Permit #53 was issued March 15, 1990 and allowed the conversion of the service station, located at the entrance of the parcel, to a temporary information center for Long Point Resorts. This permit allowed only internal non-structural improvements to the existing building.

- Several special use permits were issued from 1988 through 1991 for temporary events.

- Special Construction Permits #8 and #19 were issued in 1985 and 1990 for the filming of two feature length major motion pictures.

Upper Point Vicente Area. Due to the previous ownership by the Federal government, no building permits were available for review at the Rancho Palos Verdes City Hall.

3.2.1.6 Recorded Land Title Records

Recorded land titles are records usually maintained by the municipal clerk or county recorder of deeds which detail ownership fees, leases, land contracts, easements, liens, deficiencies, and other encumbrances attached to or recorded against the subject site within the local jurisdiction having control for or reporting responsibility to the subject site. Due to state land trust regulations and laws, land title records will often only provide trust names, bank trust numbers, owner's names, or easement holders, and not information concerning previous uses or occupants of the subject site. Additionally, environmental liens recorded against the subject site are, at times, considered outside the scope of recorded land title records. For these reasons, this Assessment has relied upon other standard historical information sources assumed to be either more accurate or informative than recorded land titles.

3.2.1.7 City Directory Searches

City Directories, published by private companies (or sometimes the government), provide a chronological sequence of past site ownership, occupancy, and/or uses for a property by reference of an address. This type of search is particularly effective and

primarily used to determine the past uses of commercial properties. As such, this Assessment has relied upon other standard historical information sources assumed to be either more accurate or informative than City Directory Searches.

3.2.1.8 Sanborn Fire Insurance Maps

Sanborn Maps contain detailed drawings which indicate the location and use of structures on a given property during specific years. These maps were originally produced to show buildings in sufficient detail for insurance underwriters to evaluate fire risks and establish premiums, but now are utilized as a valuable source of historical and environmental risk information. RBF Consulting requested available historical Sanborn Fire Insurance Maps for the subject site from VISTA Information Solutions, Inc. At the time of this Assessment, no Sanborn Maps had been published for the subject site vicinity (refer to Appendix B, *Documentation*).

3.2.1.9 Historical County Planning Maps

Beginning in the 1930's, historical county planning maps were used by highway departments to disburse federal funding based on each county's road system. Some states just mapped roads, but many added cultural features such as farms and factories. These features were usually shown everywhere except within city limits. These maps are especially useful in conjunction with historical topographic maps. The topographical map can indicate the size, shape, and location of structures, while the historical county planning map can identify their use. RBF Consulting requested available historical county planning maps for the subject site from VISTA Information Solutions, Inc. At the time of this Assessment, no historical county planning maps had been published for the project site vicinity.

3.2.1.10 California Department of Oil, Gas, and Geothermal Resources

RBF Consulting reviewed a Wildcat Map provided by the California Department of Oil, Gas, and Geothermal Resources (DOGGR). These maps indicate existing and historical oil and gas wells within the immediate vicinity of the subject site. Current well status for any well indicated on the Wildcat Maps should be confirmed at the appropriate Division of Oil and Gas District Office. According to the Wildcat Map W1-6, dated February 6, 1999, one (1) plugged and abandoned dry hole is identified adjacent to the western cliff within the Marineland portion of the subject site. This hole was dug in 1941 to a depth of 4,500 feet below ground surface (bgs). In addition, according to the *1995 Oil, Gas, and Geothermal Fields in California Map*, published by DOGGR, the subject site is situated in a sedimentary basin with oil, gas, or geothermal production.

3.1.3 Aerial Photographs

RBF Consulting reviewed available aerial photographs for the subject site and immediately adjacent areas to assist in the identification of development activities that have historically occurred on-site. Review of available historical aerial photographs dated 1952 through 1995 provided the following chronological sequence of site history. The aerial photographs were reviewed at Continental Aerial, located in the City of Alamitos, California, and are listed in Section 6.0, *References*.

1952: **Resort Hotel Area.** In an aerial photograph dated November 4, 1952, this area was occupied primarily by undeveloped land including an agricultural portion

located on the northeast portion of the site. Two small structures were visible on-site. Surrounding land uses were primarily undeveloped land and agriculture with a few scattered residences.

Upper Point Vicente Area. This area consisted of numerous buildings associated with the military use of the property. Surrounding land uses were primarily undeveloped land and agriculture.

1953: **Resort Hotel Area.** In an aerial photograph dated November 19, 1953, this area appears to be disturbed from construction activities associated with the Marineland Aquatic Park facilities. The central portion of the site has been graded with pads and undeveloped roads. Surrounding land uses are similar to those identified in the 1952 aerial photograph.

Upper Point Vicente Area. On-site and surrounding land uses appear to be similar to those identified in the 1952 aerial photograph.

1968: **Resort Hotel Area.** In an aerial photograph dated January 18, 1968, this area is occupied by the Marineland Aquatic Park facilities. The agricultural field on the northeast portion of the property appears to be cultivated. Surrounding land uses are undeveloped land and residential. In addition, the former Marymount College campus is visible to the north and includes buildings and dormitory housing.

Upper Point Vicente Area. Four small structures appear to be located north of the main structures within the vacant portions of this area. The NIKE missile silos appear to be present at this time. In addition, the Point Vicente Bunker and gunnery range are well defined. A small shopping center is visible north of this area at the intersection of Hawthorne Boulevard and Palos Verdes Drive West. The numerous structures previously identified in this area have been replaced with two large buildings.

1970: **Resort Hotel Area.** In an aerial photograph dated January 31, 1970, on-site and surrounding land uses appear to be similar to the 1968 aerial photograph.

Upper Point Vicente Area. On-site and surrounding land uses appear to be similar to the 1968 aerial photograph.

1979: **Resort Hotel Area.** In an aerial photograph dated May 12, 1979, the Marineland Aquatic Park is visible on-site with the agricultural field visible in the northeast portion of the property. Surrounding land uses are predominantly residential and additional residential communities and densities are visible to the east and north of Marineland.

Upper Point Vicente Area. On-site and surrounding land uses appear to be similar to the 1970 photograph. The gunnery range appears to be vacant and overgrown with vegetation. Portions of the Upper Point Vicente Area appears to be under cultivation.

1986: **Resort Hotel Area.** In an aerial photograph dated January 27, 1986, on-site land uses seem to be similar to those identified in the 1979 photograph. Residential development is visible along the eastern boundary of the site.

Upper Point Vicente Area. On-site and surrounding land uses seem to be similar to those identified in the 1979 photograph.

1988-1993: **Resort Hotel Area.** In the aerial photographs dated 1988 to 1993, the Marineland Aquatic Park is visible on-site but appears to be closed to the public. Surrounding land uses are predominantly residential as additional residential development are visible to the east and north of the site. Disturbance due to the removal of the stadium aquarium tanks were visible in the 1992 aerial photograph.

Upper Point Vicente Area. On-site and similar land uses appear to be similar to those identified in the 1986 photograph.

1995: **Resort Hotel Area.** In an aerial photograph dated January 28, 1995 the Marineland facility appears similar to the 1988-1993 photographs. The 300-foot sky tower is in place and the agricultural field is visible in the northeast portion of the site.

Upper Point Vicente Area. On-site land uses are similar to the 1988-1993 photographs. Surrounding uses include the Western Regional Headquarters of the Salvation Army (former Marymount College campus) to the east and residential uses to the north.

Based on review of the above referenced historical aerial photographs, the subject site appears to have consisted of an aquatic park and agricultural uses within the Resort Hotel Area. The Upper Point Vicente Area has been utilized as a military installation and a small portion used for agricultural purposes.

3.1.4 Other Historical Sources

Other historical sources include miscellaneous maps, newspaper archives, and records in the files and/or personal knowledge of the property owner and/or occupants. No other historical sources beyond those previously identified within this Assessment were utilized during the historical investigation.

3.2 REGULATORY SOURCES

The governmental sources have been searched by VISTA Information Solutions, Inc. (at the request of RBF Consulting), for sites within the subject site and within an approximate one-mile radius of the subject property boundaries. Upon completion of their search, VISTA provided RBF Consulting with their findings dated August 25, 2000 (refer to Appendix A, *VISTA Search*). RBF Consulting makes no claims as to the completeness or accuracy of the referenced sources. Our review of VISTA's findings can only be as current as their listings and may not represent all known or potential hazardous waste or contaminated sites. To reduce the potential for omitting possible hazardous material sites on the subject property and within the surrounding area, sites may be listed in this report if there is any doubt as to the location because of discrepancies in map location, zip code, address, or other information.

3.2.1 Federal Sources

The following databases may be included in the Federal sources search:

- RCRA — Resource Conservation and Recovery Act
- NPL LIENS — Federal Superfund Liens
- NPL — National Priority List
- DELISTED NPL — NPL Deletions
- CERCLIS — Comprehensive Environmental Response, Compensation and Liability Act
- ERNS — Emergency Response Notification System
- FINDS — Facility Index System
- PADS — PCB Activity Database System
- RAATS RCRA — Administrative Action Tracking System
- TRIS — Toxic Chemical Release Inventory System
- TSCA — Toxic Substances Control Act
- HMIRS — Hazardous Materials Information Reporting System
- CORRACTS — Corrective Action Report
- ROD — Records of Decision
- RCRIS-TSD — Resource Conservation & Recovery Information System
- CONSENT — Superfund (CERCLA) Consent Decrees
- MLTS — Material Licensing Tracking System

3.2.2 State Sources

The following State databases may be included in this search:

- CAL-SITES (AWP) — Annual Work Plan
- CAL-SITES (ASPIS) — Cal-sites
- CHMIRS — California Hazardous Materials Incident Report System
- CORTESE — Cortese (Identified Hazardous Waste and Substance Sites)
- LUST — Leaking Underground Storage Tank Information System
- NOTIFY 65 — Proposition 65 Notification Records
- SWAT — Solid Waste Assessment Test Program
- SWF/LS (SWIS) — Solid Waste Information System
- TOXIC PITS — Toxic Pits
- IND SITES — List of Industrial Site Cleanups
- UST — Hazardous Substance Storage Container Database (Registered Underground Storage Tanks)
- BEP — Bond Expenditure Plan
- HWIS — Hazardous Waste Information System
- AST — Aboveground Petroleum Storage Tank Facilities

3.2.3 Standard Environmental Record Searches

3.2.3.1 Subject Site

Available public records were reviewed. The lists which were reviewed identified that two (2) listed regulatory site is reported within the boundaries of the subject site. These sites consist of a former leaking underground storage tank (LUST) which have resulted in a subsurface release of petroleum products. Both sites only impacted soils and are considered closed by the local regulatory agency.

3.2.3.2 All Regulatory Listed Sites Within a One-Mile Radius of the Subject Site

No listed regulatory sites are located within a one-mile radius of the subject site.

3.2.4 Additional Environmental Record Searches

No additional environmental records searches were performed during the preparation of this Assessment.

Table 1
IDENTIFIED SITES WITHIN THE SUBJECT SITE
(Were Identified in the Regulatory Database)

Vista Map ID#	Site Name/Address	Regulatory List	Site Status	Potential for an Environmental Condition on the Subject Site
1	Marineland 6600 S. Palos Verdes Dr RPV, CA 90275	LUST	Case Closed. Soil Only.	Low - See Site Status
1	Chevron USA 6560 S. Palos Verdes Dr RPV, CA 90275	LUST	Case Closed. Soil Only.	Low - See Site Status

Notes: Map ID numbers match the site numbers indicated on the map of sites within one-mile contained within Appendix A, *VISTA Search*.

POTENTIAL FOR ENVIRONMENTAL CONDITION KEY:

Low Potential = Potential to create environmental condition on subject site is considered to be low for one or several factors including, but not limited to, the following:

direction of groundwater flow is away from the subject site (down gradient); remedial action is underway or completed at off-site location; distance from subject site is considered great enough to not allow the creation of a potential environment condition; only soil was affected by the occurrence; and/ or reporting agency has determined no further action is necessary.

Moderate Potential = Potential to create environmental condition on subject site is considered to be moderate and further investigation may be necessary due to one or several factors including, but not limited to, the following:

occurrence reported but remedial status unknown; unable to confirm remedial action completed; proximity to subject site; groundwater flow is towards the subject site (up gradient).

High Potential = Potential to create environmental condition on subject site is considered to be high and further investigation necessary due to one or several factors including the following:

occurrence noted on-site and status if remedial action unknown; occurrence affected groundwater and is located up gradient from subject site.

4.0

POTENTIAL AREAS OF ENVIRONMENTAL CONCERN

The following section documents the results of the visual site inspections conducted by RBF Consulting on March 2, 1998 and September 6, 2000 and identifies potential areas in which an environmental condition could arise. Refer to Exhibit 4, AREAS OF POTENTIAL CONCERN and Exhibits 5 through 6 containing on and off-site photographs taken on March 2, 1998 and September 6, 2000 at the end of this section as a visual reference. For information regarding results of the historical and governmental records searches, refer to Section 3.0, HISTORICAL AND REGULATORY INFORMATION SEARCHES.

4.1 ON-SITE OBSERVATIONS

4.1.1 Methodology and Limiting Conditions

During the March 2, 1998 and September 6, 2000 site inspections, RBF Consulting performed a visual observation of readily accessible areas of the subject site and immediately adjoining properties. RBF Consulting encountered conditions which limited the performance of this Assessment. Access to the Point Vicente Bunker Battery #240 and structures within the Resort Hotel Area were restricted. The U.S. Coast Guard would not allow entry into the Bunker and the entrance to some structures within the Resort Hotel Area were blocked with plywood.

4.1.2 Description of On-Site Structures and/or Uses

Resort Hotel Area. This area consists of numerous abandoned structures and facilities associated with the former Marineland Aquatic Park, constructed in 1953. The facilities included aquariums, water tanks, and animal handling/storage areas. Additional structures include theaters and restaurant/snack bars. A 300-foot hydraulic operated sky tower was centrally located within the park, however, has been removed in recent years and all that remains is the associated subsurface vault. The remainder of the parcel includes two paved asphalt parking areas, a former visitor information/service station located at the entrance to the Marineland facility, the former Marineland Inn Motel and vacant undeveloped land.

This Resort Hotel Area is currently utilized for several uses including a helicopter landing/maintenance warehouse, a reception hall (Catalina Room) and an agricultural field (currently fallow). In addition, a sewage pump facility (currently inoperable) is located on the southern portion of the site. All of the existing buildings associated with the Marineland park were boarded up (with the exception of the Catalina Room), and access to the existing on-site structures was restricted during the March 2, 1998 site inspection.

Approximately 15.6 acres of undeveloped land is utilized for agriculture along the northeast boundary of the site. The agricultural fields were not under cultivation during the March 2, 1998 site investigation. Several storage sheds, equipment and trucks were observed stored on the north end of the agricultural field.

The former visitor information center/service station is located at the main entrance to this area along Palos Verdes Drive South. The building is currently abandoned and in disrepair. The interior of the building includes three (3) empty auto service bays.

Upper Point Vicente Area

- **City Park (including vacant land):** A city maintained park is located directly south of the City Hall structures consisting of manufactured turf areas and a tennis court. On-site, vacant land surrounds the City Hall structures and city park to the north, east, south and west. A subsurface bunker (Point Vicente Bunker Battery #240) and two (2) concrete gun emplacement pads are located west of the City Hall structures within the vacant land area. The Point Vicente Bunker is a buried, single concrete bunker which is not occupied. The United States Coast Guard is currently utilizing one small room of the bunker to house communications equipment. Access to the interior of the bunker was restricted during the March 2, 1998 and September 6, 2000 site inspections. Two large antennas associated with the communication system within the bunker are located atop the bunker site. In addition, a cellular tower is also located on the Coast Guard property.

- **Agricultural Land:** The southeastern corner of the Upper Point Vicente Area is currently under agricultural production.

- **Corporate Yard (former NIKE missile site):** The City Corporate Yard is located south of the city park and City Hall structures. The corporate yard consists of a paved area which is currently utilized as a storage area for construction and maintenance materials. Construction materials observed consist of wood, piping, sandbags, dumpsters, concrete piping and landscape debris piles. In addition, a Cox Cable building is also located at the entrance to the corporate yard. A storage area consisting of large spools of cable wire was observed located adjacent to the Cox Cable building. Two abandoned NIKE missile silos are located beneath the corporate yard which consist of two large concrete underground vaults, two hydraulic lift elevators and two sound proof control rooms.

4.1.3 Asbestos Containing Material

Asbestos is a strong, incombustible, and corrosion resistant material which was used in many commercial products since prior to the 1940's and up until the early 1970's. If inhaled, asbestos fibers can result in serious health problems. Asbestos Containing Materials (ACMs) are building materials containing more than one percent (1%) asbestos (some state and regional regulators impose a one tenth of one percent (0.1%) threshold).

Resort Hotel Area. Several abandoned structures, in which access was restricted, were noted during the site inspection. Due to the age of the on-site structures, asbestos

containing materials may be present (refer to Section 5.0, *Findings, Opinions and Recommendations,* for information regarding asbestos containing materials).

Upper Point Vicente Area. The structural components of the NIKE silos and Point Vicente Bunker may potentially contain asbestos containing material (ACM), lead-based paints and PCBs.

A March 25, 1996 Federal Facility PA Review identified the Point Vicente Bunker as potentially containing asbestos containing material within the structural components of the facility.

4.1.4 Lead-Based Paints

Until 1978, when the U.S. Consumer Product Safety Commission (CPSC) phased out the sale and distribution of residential paint containing lead. The mere presence of lead in paint may not constitute a material to be considered hazardous. In fact, if in good condition (no flaking or pealing), most intact LBP is not considered to be a hazardous material. In poor condition LBPs can create a potential health hazard for building occupants.

Resort Hotel Area. Due to the age of the structures located on the site, the presence of lead-based paint materials is considered likely.

Upper Point Vicente Area. Due to the age of the structures located on the site including the bunker and silos, the presence of lead-based paint materials is considered likely.

4.1.5 Chemical Storage Tanks

During the March 2, 1998 and September 6, 2000 site inspections, the subject site was inspected for fill pipes, vent pipes, areas of abnormal or heavy staining, manways, manholes, access covers, concrete pads not homogenous with surrounding surfaces, concrete build-up areas potentially indicating pump islands, abandoned pumping equipment, or fuel pumps.

Resort Hotel Area. No evidence of chemical storage tanks were observed during the March 2, 1998 site inspection. However, a concrete sump with a metal cover located in one of the out service bays of the former service station consisting of an unknown dark liquid was observed during the site inspection (refer to Section 5.0, *Findings, Opinions and Recommendations*).

Upper Point Vicente Area. Mr. Jim Heinz, Facility Engineer with the United States Coast Guard at San Pedro, indicated that two leaking underground storage tanks (LUSTs) consisting of Number 1 stove oil adjacent to the Point Vicente Bunker northern entrance were removed in approximately 1996. Mr. Heinz also indicated that remedial activities in the form of soil removal was performed on the two underground storage tank sites. The two LUSTs were removed and remedial action was completed. However, according to the Federal Facility PA Review for the Point Vicente Bunker provided by Mr. Heinz, two additional underground storage tanks are suspected to be located adjacent to the bunker. Ventilation pipes protruding from the ground has lead to speculation that two USTs may be associated with the piping (refer to Section 5.0, *Conclusions and Recommendations* and Exhibit 2, *Potential Areas of Concern Point Vicente Bunker*).

4.1.6 Chemical Storage Areas

Resort Hotel Area. A storage room was located adjacent to one of the former restaurant areas. According to the previous Phase I ESA conducted for the Long Point parcel, small quantities of maintenance supplies, including paint and paint thinners, were observed on wooden shelves. No stains or leaks were observed surrounding the base of the containers. Visual inspection revealed that the paint was fairly old, as it had completely dried in the containers.

A steel-constructed warehouse and helicopter landing pad is located near the former main entrance to Marineland. The building was previously used for equipment maintenance and graphics production for the operating Marineland park. The warehouse interior is currently used to store equipment and vehicles associated with the maintenance and use of the Marineland park for filming. The building includes a conference room and offices. Dumpsters containing landscaping debris, construction materials, and large spools of cable were observed adjacent to the helicopter pad. No environmental condition associated with the stockpiling of these materials was noted. The previous Phase I ESA conducted for the Marineland facility indicated the presence of small quantities of cleaners, paints and thinners placed on shelves. No leaking or staining was observed on the concrete floor surrounding the materials.

Upper Point Vicente Area. No significant environmental condition associated with the stockpiling of material such as yardwaste and other non-hazardous materials was noted.

RBF was unable to gain access to the Point Vicente Bunker located southwest of City Hall. However, a concrete vault adjacent to the north entrance of the bunker was observed to contain wood and paint debris. No staining was noted.

4.1.7 Spills

Resort Hotel Area. No evidence of a spill was observed on this area during the March 2, 1998 site inspection. According to Mr. Jim York of York Long Point Developers, liquid consisting of unknown contents and quantities have been observed within the sealed base vault of the former 300-feet sky tower prior to being sealed. Also, as noted above, a concrete sump with a metal cover located in one of the out service bays of the former service station contained an unknown dark liquid.

Upper Point Vicente Area. Evidence of a possible spill was observed during the September 6, 2000 site inspection. A 100 square foot area of distressed vegetation was observed to the north of the City Hall structures near a concrete slab partially covered with ice plant.

An unknown liquid (possibly rain water) was observed pooling in the lower portion of the concrete floor inside the NIKE facilities.

A previous inspection in 1994, by others, of the interior of the Point Vicente Bunker revealed no visible signs of spills or releases.

4.1.8 Polychlorinated Biphenyls (PCBs)

Resort Hotel Area. No evidence of PCB's was observed during the March 2, 1998 site inspection.

Upper Point Vicente Area. The hydraulic systems associated with the missile elevators in the two NIKE silos are known to contain PCBs. An unknown liquid (possibly rain

water) was observed pooling in the lower portion of the concrete floor inside the NIKE facilities.

4.1.9 Utilities

Resort Hotel Area. Overhead electrical lines were observed within the parking areas located on the east and west portion of this area during the March 2, 1998 site inspection. A concrete mounted transformer was noted adjacent to the southeast corner of the west parking area. A second concrete mounted transformer was noted immediately adjacent to the former sky tower. Piping associated with the sprinkler and fire hydrant system was noted throughout this area. In addition, a sewage pump facility and associated piping, currently inoperable, was observed near the southern border of this area. No environmental condition associated with these utilities was observed.

Upper Point Vicente Area. A cellular tower and concrete mounted transformer was observed adjacent to the northern most City Hall administration building. An electrical vault was noted in the city park area adjacent to the tennis court. A sewage "manhole" was observed in the vacant southern portion of the site within the open space area. Above ground electrical lines containing two pole mounted transformers traverse the northern portion of this area. No leaking or staining associated with the transformers were observed. Air vents and electrical cables (including abandoned electric cables) and abandoned piping associated with Point Vicente Bunker were observed during the site inspection. As noted previously in this assessment, the piping extending from the ground surrounding the bunker may potentially be associated with two underground storage tanks. Above ground irrigation pipes were noted throughout the agricultural portion of this area. No environmental conditions associated with the above mentioned on-site utilities, except for the piping associated with the Point Vicente Bunker, were observed during the March 2, 1998 and September 6, 2000 site inspection.

4.2 OFF-SITE OBSERVATIONS

As previously stated in Section 2.0, *Physical Setting*, an adjoining property is considered any real property or properties that the border of which is contiguous or partially contiguous with that of the subject site, or that would be contiguous or partially contiguous with that of the subject site but for a street, road, or other public thoroughfare separating them. An adjacent property is any real property located within 0.25 miles of the subject site's border. Visual observations of the publicly accessible portions of adjoining properties were conducted on March 2, 1998 and September 6, 2000 as part of this Assessment and are described below.

4.2.1 Utilities

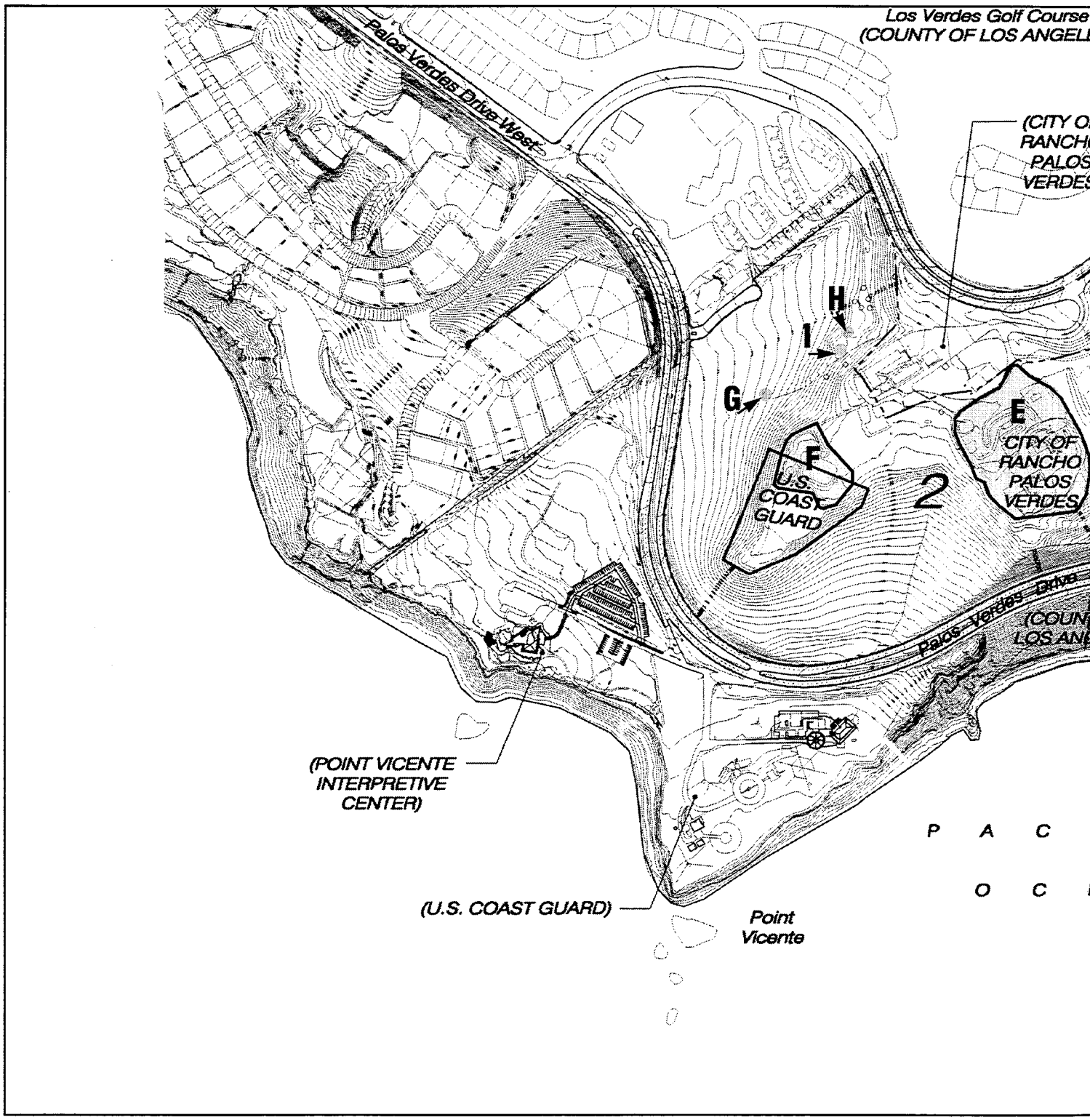
Typical utilities were observed along Palos Verdes Drive South and Hawthorne Boulevard during the March 2, 1998 and September 6, 2000 site inspections.

4.2.2 Tanks

A Unocal Service Station was observed on the east side of Palos Verdes Drive South, east of Subregion 1. No significant environmental condition associated with the service station was noted.

4.2.3 Hazardous Materials

During a preliminary observation of accessible adjoining properties on March 2, 1998 and September 6, 2000, no visible or physical evidence was observed to suggest that a surface release of petroleum based material has recently occurred. No unusual or suspicious materials handling or storage practices were observed with respect to adjacent properties.

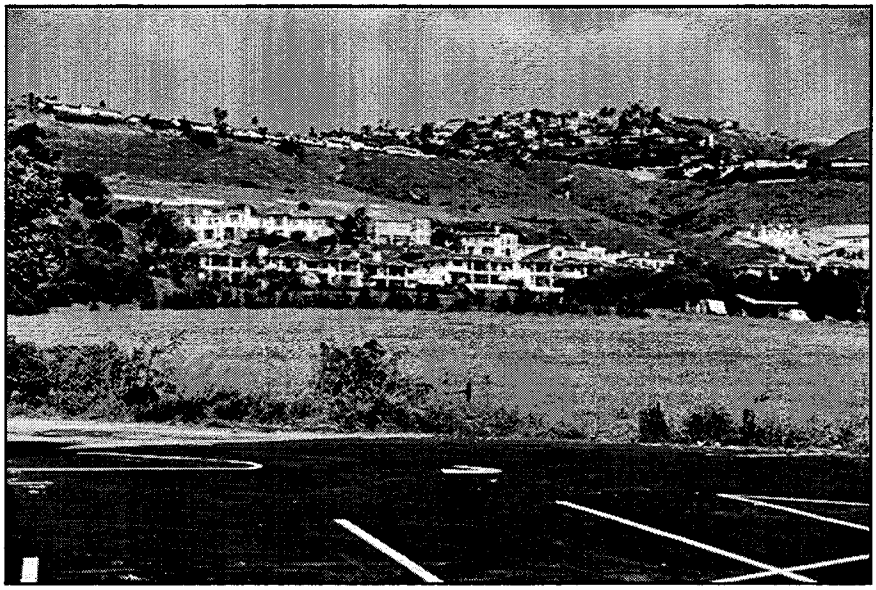


Not to Scale

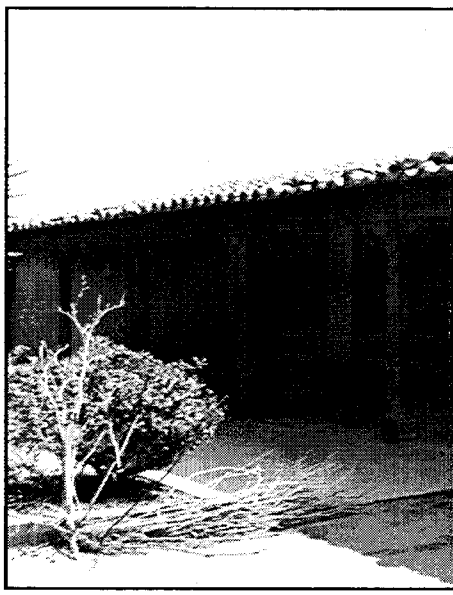
RBF CONSULTING

PLANNING ■ DESIGN ■ CONSTRUCTION

09/00 JN 10-034194

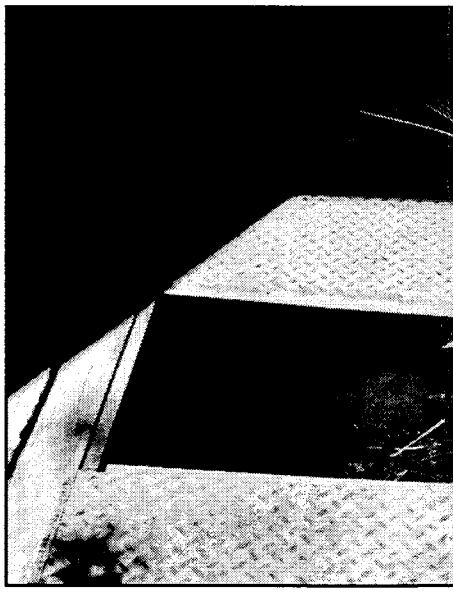


A View looking northeast across the agricultural field located on the northeast boundary of the Resort Hotel Area.



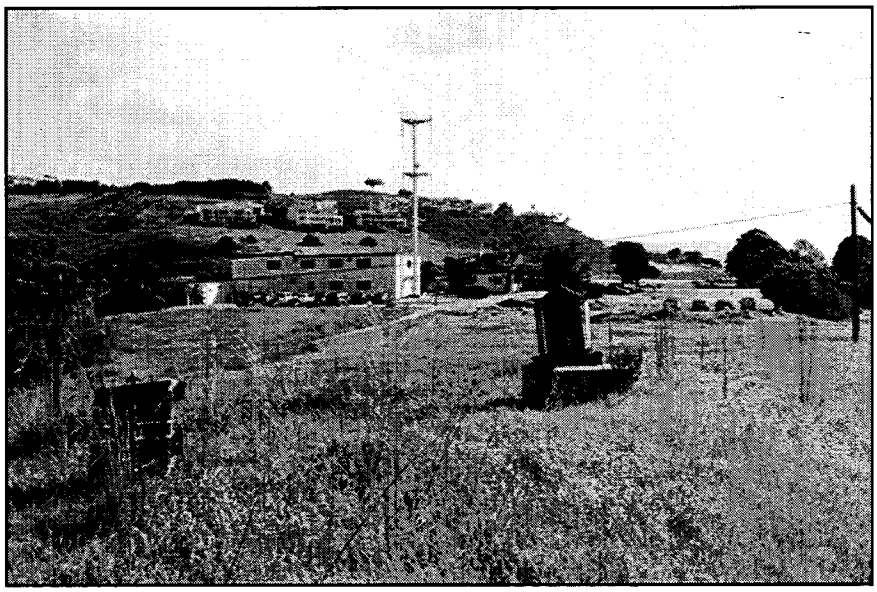
B View of an existing abandoned Resort Hotel Area.

D View of the sewage pump facility located on the southern portion of the Resort Hotel Area.

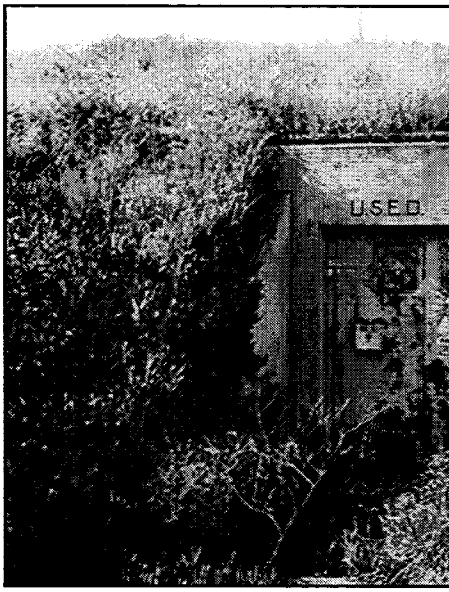


E View of the concrete sump loc service bays of the former ser liquid contained within the sum

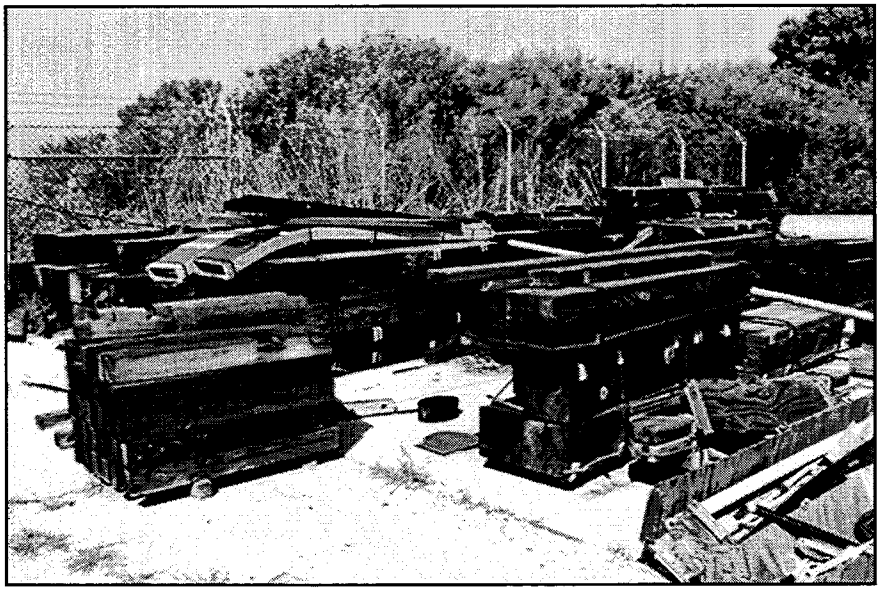
Photos taken on March 2, 1998.



A View looking east across the Upper Point Vicente Area at the Rancho Palos Verdes City Hall. Note the air vent associated with the subsurface bunker (Point Vicente Battery #240).



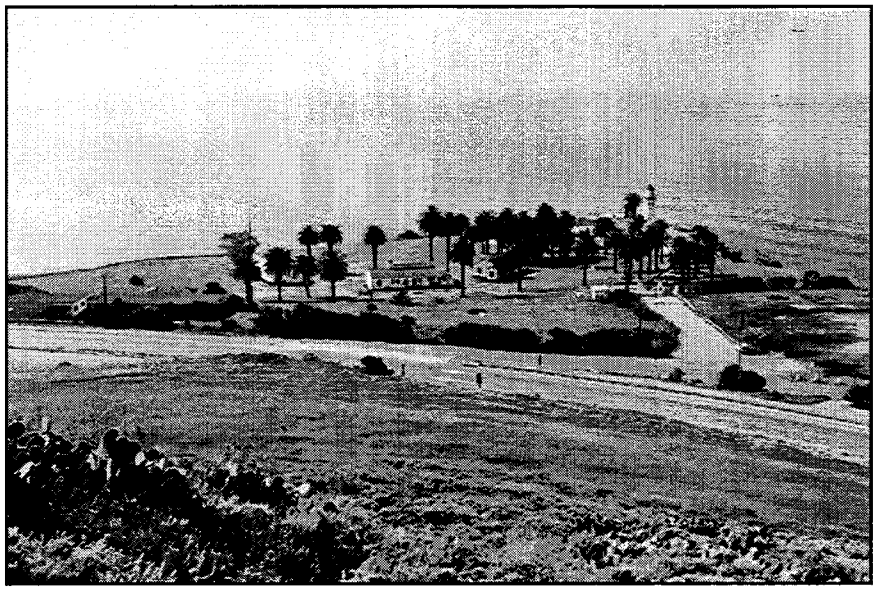
B View of the north entrance to t



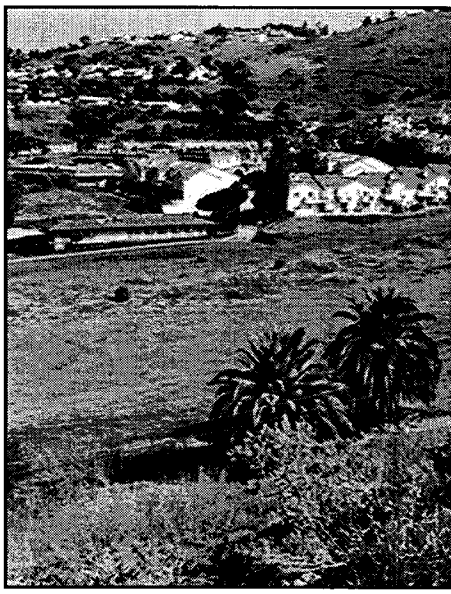
D View of construction materials stored in the corporate yard.

E View of 100-square foot area concrete slab.

Photos taken on March 2, 1998.



A View looking west from the Upper Point Vicente Area at the U.S. Coast Guard Reservation.



B View looking northwest across at single-family residential unit northern boundary.

D View of single-family residential units located north of the Upper Point Vicente Area.

E View looking west along Palos parallels the Resort Hotel Area

Photos taken on March 2, 1998.

5.0

FINDINGS AND RECOMMENDATIONS

RBF Consulting has performed a Phase I Environmental Site Assessment in conformance with the Scope-of-Services and limitations of ASTM Standard Practice E 1527 for the Resort Center and Upper Point Vicente Areas; also known as the subject site within this Assessment. Any exceptions to, or deletions from, this practice are described in Section 1.0, INTRODUCTION, of this report. This Assessment has revealed the following recognized environmental conditions in connection with the subject site:

5.1 FINDINGS

5.1.1 Site Conditions

The following areas of concern were documented during the site inspections on March 2, 1998 and September 6, 2000.

Resort Hotel Area

- A sump within the concrete floor of the former service station was noted containing an unidentified liquid.
- The sealed subsurface vault associated with the former 300-foot sky tower has been reported to contain an undetermined quantity of an unknown liquid with an oily sheen (possibly as a result of the former operation of the hydraulic system associated with the sky tower).
- Numerous abandoned structures associated with the former Marineland Aquatic Park were noted. These structures may potentially contain asbestos containing material (ACM) and lead-based paints.

Upper Point Vicente Area

- Piping, potentially associated with two suspected underground storage tanks were observed adjacent to the Point Vicente Bunker site.
- The structural components of the NIKE silos and Point Vicente Bunker may potentially contain asbestos containing material (ACM), lead-based paints and PCBs.
- A 100 square foot area of stressed vegetation near a concrete slab was observed to the north of the City Hall structures, halfway down the adjacent slope. The purpose/use of the concrete slab which was breaking apart could not be determined. One pipe partially extending out of the concrete slab was

observed near the center of the slab. No staining of the observable portions of the slab was noted.

- A pipe and wood structure was observed to the west of the concrete slab at the end of an abandoned asphalt roadway in the northern portion of the Upper Point Vicente Area. The purpose/use of these noted objects could not be determined. It should be noted that no staining in the area of these objects was noted.

5.1.2 Public Records

Available public records were reviewed by VISTA Information Solutions, Inc. on August 25, 2000 (refer to Section 3.0, *Historical and Regulatory Information Searches*). The purpose of this research was to verify if there are sites located within the subject site boundaries or within a 1-mile radius of the subject site, which have been reported as contaminated or that generate hazardous materials. The lists which were reviewed identified that two (2) sites are reported within the boundaries of the subject site and no listed regulatory sites are within a one-mile radius of the subject site. As documented in Section 3.0, *Historical and Regulatory Information Searches*, none of the identified sites appear to be a potential environmental concern with regards to the subject site due to their status.

5.1.3 Historical Use(s) Information

Review of available environmental documentation and interviews indicate that previous uses within the subject site may have resulted in potential adverse environmental conditions. Specific uses include the military use of the Upper Point Vicente Area and some of the former structures within the Resort Hotel Area, as well as the agricultural operations found in both areas.

Historical operations within the Upper Point Vicente Area are not well documented. It is believed that the types of materials used and types of wastes generated from past operations would include pesticides, polychlorinated bipheyls (PCBs), petroleum products, organic solvents, explosive ordnance and NIKE missile propellants. Surveys conducted by the military indicated that the risk associated with explosive ordnance and missile propellants is low as these materials have been removed from the area. Pesticides are associated with agricultural uses (refer to the discussion below). PCBs could be found in the transformers and the hydraulic lifts within the NIKE facilities. Petroleum products would have been stored in the known and suspected underground storage tanks associated with Battery #240. Organic solvents would include degreasing solvents, paint thinners/paint removers.

Based upon the site inspection, review of available historical aerial photographs, and interviews, portions of the subject site were historically used for agricultural purposes for several decades. Therefore, a combination of several commonly used pesticides (i.e., DDD, DDT, DDE), which are now banned may have been used throughout the subject site. It should be noted that the historical use of agricultural pesticides may have resulted in pesticide residues of certain persistent in soil at concentrations that are considered to be hazardous according to established Federal regulatory levels. The primary concern with historical pesticide residues is human health risk from inadvertent ingestion of contaminated soil, particularly by children. The presence of moderately elevated pesticide residuals in soil present potential health and marketplace concerns. While there is no requirement that agricultural soil be tested prior to development,

many developers and lenders throughout the states are requiring that sites proposed for development undergo an evaluation of environmental conditions. Thus, with this information disclosed, it is concluded that the client must determine if they wish to pursue additional environmental review (i.e., Phase II) to determine the absence or presence of pesticide residues, and if present, how this soils would be handled (i.e., Risk Assessment).

5.1.4 Other Potential Sources of Hazardous Material

The presence of hazardous materials on the subject site that may have been generated from adjacent properties was not visually or physically evident.

RBF Consulting reviewed information regarding the discovery of lead contaminated soil from the Point Vicente Interpretive Center (PVIC) site. Historical records indicate that a portion of the site was a former rifle and small arms range which was used from the 1940's to the 1970's. Soil on the site contains lead from the rifle range activities. From 1983 to 1984, as part of the development of the park property, the soil mound used for the range was graded. Grading appears to have stayed within the boundaries of the Point Vicente Interpretive Center site. In July 1999, as part of a planned expansion, soil from this site was excavated and transported to property in San Pedro as fill material. Subsequent sampling of this transported soil indicated lead concentrations had the potential to exceed regulated levels. The soil was transported back to the PVIC site. Based on review of existing information and historical aerial photographs it does not appear that operations on the PVIC site would have impacted the Upper Point Vicente Area.

5.2 RECOMMENDATIONS

Based on the records and other data reviewed during the preparation of this Phase I Environmental Site Assessment, in accordance with ASTM Standard Practice E 1527-97 and the scope-of-services, and subject to the limitations thereof, the following measures are recommended:

5.2.1 Asbestos Containing Materials and Lead-Based Paints

- If during demolition any of the structures, paint is separated from the building materials (e.g., chemically or physically), the paint waste should be evaluated independently from the building material to determine its proper management. According to the Department of Substances Control, if paint is not removed from the building material during demolition (and is not chipping or peeling), the material could be disposed of as construction debris (a non-hazardous waste). It is recommended that the landfill operator be contacted in advance to determine any specific requirements they may have regarding the disposal of lead-based paint materials.

- The National Emission Standards for Hazardous Air Pollutants (NESHAP) mandates that building owners conduct an asbestos survey to determine the presence of Asbestos Containing Materials (ACMs) prior to the commencement of any remedial work. Prior to demolition work, it is recommended that areas be sampled as part of an asbestos survey.

- Any demolition of the existing building must comply with State law, which requires a contractor, where there is asbestos-related work involving 100 square feet or more of ACMs, to be certified and that certain procedures regarding the removal of asbestos be followed.

5.2.2 Resort Hotel Area

- A Phase II level investigation is recommended to determine the characteristics and extent of the potential contamination (i.e, soil and groundwater) associated with the concrete sump located in the former service station. Results of the sampling will indicate what level (if any) of disposal is needed and whether remediation efforts will be required.

- A Phase II level investigation is recommended to determine the characteristics and extent of the potential contamination (i.e, soil and groundwater) associated with the liquid contained within the vault of the former sky tower. Results of the sampling will indicate what level (if any) of disposal is needed and whether remediation efforts will be required.

- Prior to removal of all remaining structures, site specific investigations to determine the contents of the interior of all structures is recommended. In the event that hazardous materials are encountered, they should be properly tested and then properly disposed of prior to renovation/demolition activities.

5.2.3 Upper Point Vicente Area

- Soil sampling of the agricultural portion of the Upper Point Vicente Area is recommended to determine the presence or absence of banned agricultural pesticides.

- A Phase II level investigation is recommended to determine the level of potential contamination associated with the historic use of the Upper Point Vicente Area. The focus of the investigation should include, but not be limited to the following:

  - Determine the actual absence or presence of the suspected underground storage tanks located near the Point Vicente Bunker. If determined present, soil sampling and/or testing to determine the characteristics and extent of potential contaminants should be performed. Upon completion of soil testing and/or sampling, a Risk Assessment should be prepared to determine the appropriate measures for remediation of the tank sites.

  - The 100-square foot area of distressed vegetation located adjacent to the abandoned concrete slab in the northern portion of the Upper Point Vicente Area should be examined to determine the potential for a release of hazardous materials. In addition, a subsurface investigation should be conducted to determine if any other structures or substances are located below the concrete slab. Any stained soil should be tested to determine the absence or presence of hazardous materials.

- The project applicant should coordinate with the appropriate authorities from the United States Department of Interior, National Park Service regarding any proposed modifications to the NIKE missile silos.

- Prior to removal and/or modification to the Point Vicente Bunker, a site specific investigation to determine the contents of the interior is recommended. In the event that hazardous materials are encountered, they should be properly tested and then properly disposed of prior to modification/demolition activities.

6.0

REFERENCES

1952 - 1995 Aerial Photographs Reviewed at Continental Aerial, Los Alamitos, CA

Date	Approximate Scale	Reference #
1/28/95	2000'	C102-37-1/2
5/14/93	2000'	C91-11-125
1/24/92	2000'	C85-9-37/38
7/7/88	2200'	AF-19311
1/27/86	2800'	F-365
5/12/79	2800'	FCLA-12-141/142
1/31/70	4000'	61-9-184
1/18/68	1000'	Roll 8-63/62/64
11/4/52	1667'	AX5-4K-124/125
11/19/53	1667'	AX5-14K-87/88

Battery 240 General Plan Map, U.S. Engineers Office, Los Angles, Revised January 14, 1944.

Department of Oil, Gas, and Geothermal Resources, Oil, Gas, and Geothermal Fields of California, 1995.

Department of Oil, Gas, and Geothermal Resources, Wildcat Map W1-6, February 6, 1999.

Draft Environmental Impact Report of the Long Point Master Plan Development, dated June 1989.

Draft Environmental Impact Report No. 35 for Vesting Tentative Tract 46628, dated September 6, 1991.

Environmental Site Assessment Rancho Palos Verdes Resorts Asset. # 6150000195, October 1992.

EPA Map of Radon Zones, U.S. EPA, 1993.

Federal Facility PA Review Point Vicente and Point Fermin Bunkers, March 25, 1996.

Flood Insurance Rate Map, Federal Emergency Management Agency.

Governmental Records, VISTA Information Solutions, Inc., August 25, 2000.

Interview with staff from California Water Service Company, February 23, 1998.

Interview with staff from Facility Engineering, United States Coast Guard San Pedro, March 9, 1998.

Interview will Public Affairs staff with the Los Angeles Air Force Base, March 2, 1998.

Los Angeles Air Force Base Restoration Advisory Board Meeting Minutes, December 10, 1997.

Rancho Palos Verdes Coastal Specific Plan, dated December 1978.
Geologic Map of California, Los Angeles County.

Sanborn Fire Insurance Maps.

Thomas Brothers Map, Los Angeles and Orange Counties, 2000.

USGS Historical Topographical Maps

USGS Topographic Quadrangle, Redondo Beach Quadrangle, California, Photorevised 1981.

APPENDIX

A. VISTA Search

SITE ASSESSMENT PLUS REPORT

PROPERTY INFORMATION	CLIENT INFORMATION
Project Name/Ref #: 10-034194 Long Point Ranch Palos Verdes, CA 90275 Latitude/Longitude: (33.740568, 118.396507)	Bruce Grove RBF Associates 14725 Alton Parkway Irvine, CA 92618

Site Distribution Summary Agency / Database - Type of Records			within 1/8 mile	1/8 to 1/4 mile	1/4 to 1/2 mile	1/2 to 1 mile
A) Databases searched to 1 mile:						
US EPA	NPL	National Priority List	0	0	0	0
US EPA	CORRACTS	RCRA Corrective Actions	0	0	0	0
STATE	SPL	State equivalent priority list	0	0	0	0
B) Databases searched to 1/2 mile:						
STATE	SCL	State equivalent CERCLIS list	0	0	0	-
US EPA	CERCLIS / NFRAP	Sites currently or formerly under review by US EPA	0	0	0	-
US EPA	TSD	RCRA permitted treatment, storage, disposal facilities	0	0	0	-
STATE REG CO	LUST	Leaking Underground Storage Tanks	0	0	2	-
STATE/ REG/CO	SWLF	Permitted as solid waste landfills, incinerators, or transfer stations	0	0	0	-
STATE	DEED RSTR	Sites with deed restrictions	0	0	0	-
STATE	CORTESE	State index of properties with hazardous waste	0	0	0	-
STATE	TOXIC PITS	Toxic Pits cleanup facilities	0	0	0	-
USGS/STATE	WATER WELLS	Federal and State Drinking Water Sources	0	0	0	-
C) Databases searched to 1/4 mile:						
US EPA	RCRA Viol	RCRA violations/enforcement actions	0	0	-	-
US EPA	TRIS	Toxic Release Inventory database	0	0	-	-
STATE	UST/AST	Registered underground or aboveground storage tanks	0	0	-	-
COUNTY	UNIQUE CO	Unique county databases	0	0	-	-

Site Distribution Summary Agency / Database - Type of Records			within 1/8 mile	1/8 to 1/4 mile	1/4 to 1/2 mile	1/2 to 1 mile
D) Databases searched to 1/8 mile:						
US EPA	ERNS	Emergency Response Notification System of spills	**0**	-	-	-
US EPA	GNRTR	RCRA registered small or large generators of hazardous waste	**0**	-	-	-
STATE	SPILLS	State spills list	**0**	-	-	-

This report meets the ASTM standard E-1527 for standard federal and state government database research in a Phase I environmental site assessment. A (-) indicates a distance not searched because it exceeds these ASTM search parameters.

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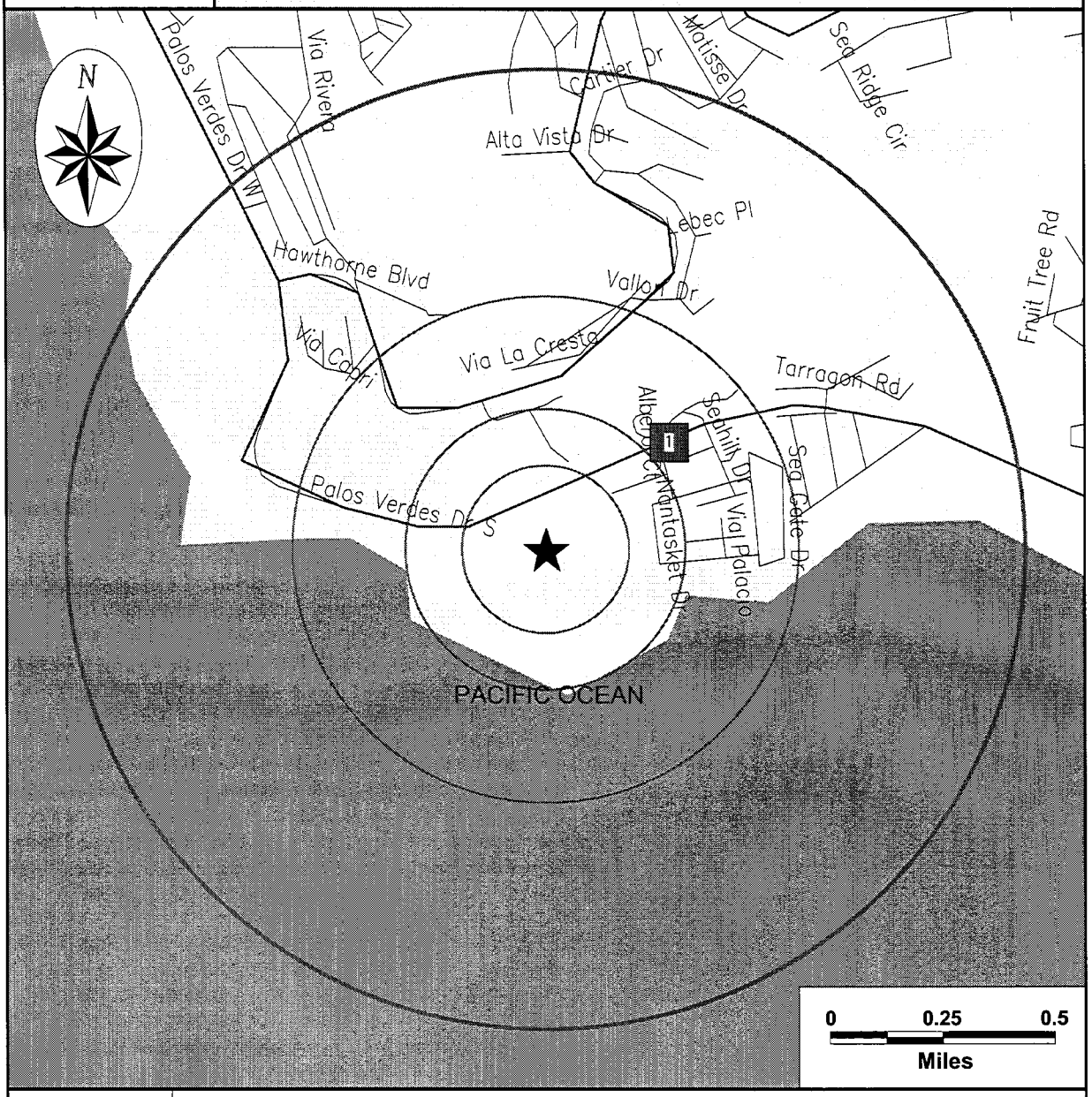
NOTES

SITE ASSESSMENT PLUS REPORT

Map of Sites within One Mile



Subject Site	Category:	A	B	C	D
★	Databases Searched to:	1 mi.	1/2 mi.	1/4 mi.	1/8 mi.
	Single Sites	◆	■	△	○
	Multiple Sites	◆	■	△	○
		NPL, SPL, CORRACTS (TSD)	CERCLIS\ NFRAP, TSD, LUST, SWLF, SCL	RCRA VIOL, TRIS, UST	ERNS, GENERATORS

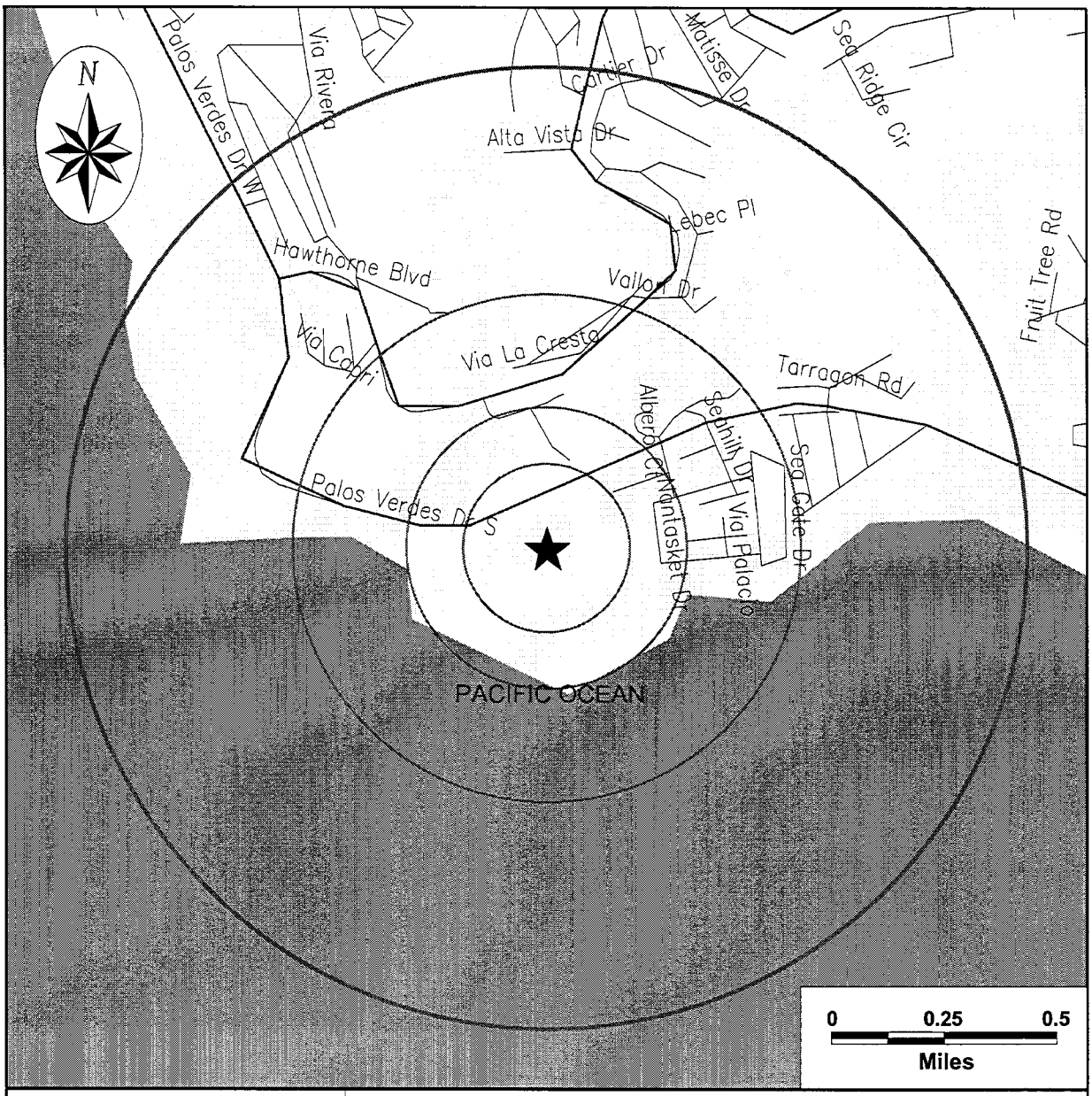
Highways and Major Roads
Roads
Railroads
Rivers or Water Bodies
Utilities

If additional databases are listed in the cover page of the report they are also displayed on this map. The map symbol used corresponds to the database category letter A,B,C,D.

For More Information Call VISTA Information Solutions, Inc. at **1 - 800 - 767 - 0403**
Report ID: **114901901**
Date of Report: **August 25, 2000**

SITE ASSESSMENT PLUS REPORT

Street Map



Subject Site ★

Highways and Major Roads
Roads
Railroads
Rivers or Water Bodies
Utilities

SITE ASSESSMENT PLUS REPORT

SITE INVENTORY

MAP ID	PROPERTY AND THE ADJACENT AREA (within 1/8 mile)	A			B									C				D		
	VISTA ID / DISTANCE / DIRECTION	NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	DEED RSTR	CORTESE	TOXIC PITS	WATER WELLS	RCRA VIOL	TRIS	UST/AST	UNIQUE CO	ERNS	GNRTR	SPILLS

No Records Found

MAP ID	SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)	A			B									C				D		
	VISTA ID / DISTANCE / DIRECTION	NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	DEED RSTR	CORTESE	TOXIC PITS	WATER WELLS	RCRA VIOL	TRIS	UST/AST	UNIQUE CO	ERNS	GNRTR	SPILLS

No Records Found

MAP ID	SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)	A			B									C				D		
	VISTA ID / DISTANCE / DIRECTION	NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	DEED RSTR	CORTESE	TOXIC PITS	WATER WELLS	RCRA VIOL	TRIS	UST/AST	UNIQUE CO	ERNS	GNRTR	SPILLS
1	MARINELAND 6600 S. PALOS VERDES DR RANCHO PALOS VERDES, CA 90275 — *1587436, 0.28 MI, NE*							X												
1	CHEVRON USA 6560 S PALOS VERDES RANCHO PALOS VERDES, CA 90275 — *1194618, 0.32 MI, NE*							X								•				

MAP ID	SITES IN THE SURROUNDING AREA (within 1/2 - 1 mile)	A			B									C				D		
	VISTA ID / DISTANCE / DIRECTION	NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	DEED RSTR	CORTESE	TOXIC PITS	WATER WELLS	RCRA VIOL	TRIS	UST/AST	UNIQUE CO	ERNS	GNRTR	SPILLS

No Records Found

UNMAPPED SITES	A			B									C				D		
VISTA ID	NPL	CORRACTS	SPL	SCL	CERCLIS/NFRAP	TSD	LUST	SWLF	DEED RSTR	CORTESE	TOXIC PITS	WATER WELLS	RCRA VIOL	TRIS	UST/AST	UNIQUE CO	ERNS	GNRTR	SPILLS
No Records Found																			

SITE ASSESSMENT PLUS REPORT

DETAILS

PROPERTY AND THE ADJACENT AREA (within 1/8 mile)

No Records Found

SITES IN THE SURROUNDING AREA (within 1/8 - 1/4 mile)

No Records Found

SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile)

VISTA Address*:	**MARINELAND** **6600 S. PALOS VERDES DR** **RANCHO PALOS VERDES, CA 90275**	VISTA ID#: Distance/Direction: Plotted as:	1587436 0.28 MI / NE Point	Map ID **1**
Regional LUST - Regional Leaking Underground Storage Tank / SRC# 121		EPA/Agency ID:	N/A	

Agency Address:	*MARINELAND* *6600 PALOS VERDES DR S* *ROLLING HILLS ESTATES, CA 90274*
Facility ID:	*R-01409*
Date Discovered:	*10/30/89*
Leak Report Date:	*02/23/90*
Who Reported:	*ESFANDI, DAVID*
Case Closed Date:	*10/30/89*
Leak Detection Method:	*TANK CLOSURE*
Leak Cause:	*UNKNOWN*
Leak Source:	*UNKNOWN*
Substance:	*DIESEL*
Remediation Event:	*STOP DATE: 10/30/89*
Remediation Event:	*LEAK STOPPED BY: CLOSE TANK*
Remediation Status:	*CASE CLOSED*
Media Affected:	*SOIL ONLY*
Lead Agency:	*LOCAL AGENCY*
Region / District:	*LOS ANGELES REGION*
Contact:	*GRAUHMAN, LARRY*
Responsible Party:	*HANNA BARBENA MARINEL LAND*
Funding:	*FEDERAL*
Description / Comment:	*PROP65MAIL: Y, EMERGENCY: N, FACPHONE :(213)269-0633RESPADDR: LADPW, 900 FREMONT AVE., S., ALHAMBRA, 91803, RESPPHONE: (213)269-0633FACCNTY: LOS ANGELES, CROSS STREET: MARINELAND DR.*

SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile) CONT.

STATE LUST - State Leaking Underground Storage Tank / SRC# 164	Agency ID:	R-01409
Agency Address:	*MARINELAND 6600 PALOS VERDES DR S ROLLING HILLS ESTATES, CA 90274*	
Facility ID:	*R-01409*	
Leak Report Date:	*2/23/1990*	
Case Closed Date:	*10/30/1989*	
Substance:	*DIESEL*	
Remediation Status:	*CASE CLOSED*	
Media Affected:	*SOIL ONLY*	
Lead Agency:	*LOCAL AGENCY*	
Region / District:	*LOS ANGELES REGION*	
Description / Comment:	*COUNTY: LOS ANGELES XSTREET: MARINELAND DR. REVIEW DATE: 9/10/1990*	

VISTA Address*:	**CHEVRON USA 6560 S PALOS VERDES RANCHO PALOS VERDES, CA 90275**	VISTA ID#:	1194618	Map ID
		Distance/Direction:	0.32 MI / NE	**1**
		Plotted as:	Point	

Regional LUST - Regional Leaking Underground Storage Tank / SRC# 121	EPA/Agency ID:	N/A
Agency Address:	*CHEVRON 6560 PALOS VERDES DR S ROLLING HILLS ESTATES, CA 90274*	
Facility ID:	*R-14832*	
Date Discovered:	*11/28/88*	
Leak Report Date:	*03/05/90*	
Who Reported:	*TIDEMANSON, T. A.*	
Case Closed Date:	*10/12/95*	
Leak Detection Method:	*SUBSURFACE MONITORING*	
Leak Cause:	*UNKNOWN*	
Leak Source:	*UNKNOWN*	
Substance:	*GASOLINE*	
Remediation Event:	*STOP DATE: 11/28/88*	
Remediation Event:	*LEAK STOPPED BY: CLOSE TANK*	
Remediation Status:	*CASE CLOSED*	
Media Affected:	*SOIL ONLY*	
Lead Agency:	*LOCAL AGENCY*	
Region / District:	*LOS ANGELES REGION*	
Contact:	*WISEMAN, KIM*	
Responsible Party:	*CHEVRON U.S.A.*	
Description / Comment:	*PROP65MAIL: Y, EMERGENCY: N, FACPHONE :RESPADDR: LADPW, 900 FREMONT AVENUE, S., ALHAMBRA, 91803, RESPPHONE:FACCNTY: LOS ANGELES,CROSS STREET:*	

STATE LUST - State Leaking Underground Storage Tank / SRC# 164	Agency ID:	R-14832
Agency Address:	*CHEVRON 6560 PALOS VERDES DR S ROLLING HILLS ESTATES, CA 90274*	
Facility ID:	*R-14832*	
Leak Report Date:	*3/5/1990*	
Case Closed Date:	*10/12/1995*	

SITES IN THE SURROUNDING AREA (within 1/4 - 1/2 mile) CONT.

Substance:	*GASOLINE*
Remediation Status:	*CASE CLOSED*
Media Affected:	*SOIL ONLY*
Lead Agency:	*LOCAL AGENCY*
Region / District:	*LOS ANGELES REGION*
Description / Comment:	*COUNTY: LOS ANGELES XSTREET: REVIEW DATE: 10/12/1995*

SITES IN THE SURROUNDING AREA (within 1/2 - 1 mile)

No Records Found

UNMAPPED SITES

No Records Found

SITE ASSESSMENT PLUS REPORT

DESCRIPTION OF DATABASES SEARCHED

A) DATABASES SEARCHED TO 1 MILE

NPL
SRC#: 19

VISTA conducts a database search to identify all sites within 1 mile of your property.
The agency release date for National Priorities List was April, 2000.

The NPL Report is the US EPA's registry of the nation's worst uncontrolled or abandoned hazardous waste sites. NPL sites are targeted for possible long-term remedial action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980.

SPL
SRC#: 113

VISTA conducts a database search to identify all sites within 1 mile of your property.
The agency release date for CalSites Database was January, 2000.

This database is provided by the Cal. Environmental Protection Agency, Dept. of Toxic Substances Control. The agency may be contacted at: 916-323-3400.

CORRACTS
SRC#: 14

VISTA conducts a database search to identify all sites within 1 mile of your property.
The agency release date for RCRIS Corrective Action Sites was December, 1999.

The CORRACTS database contains information concerning RCRA facilities that have conducted, or are currently conducting a corrective action. A Corrective Action Order is issued pursuant to RCRA Section 3008 (h) when there has been a release of hazardous waste or constituents into the environment from a RCRA facility. Corrective actions may also be imposed as a requirement of receiving and maintaining a TSDF permit.

RCRIS-TSDC
SRC#: 556

VISTA conducts a database search to identify all sites within 1 mile of your property.
The agency release date for RCRIS TSDs Subject to Corrective Action was December, 1999.

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA TSDCs are treatment, storage and/or disposal facilities that are subject to corrective action under RCRA.

B) DATABASES SEARCHED TO 1/2 MILE

CERCLIS
SRC#: 17

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Comprehensive Environmental Response, Compensation and Liability Information Sys was April, 2000.**

The CERCLIS database is a comprehensive listing of known or suspected uncontrolled or abandoned hazardous waste sites. These sites have either been investigated, or are currently under investigation by the U.S. EPA for the release, or threatened release of hazardous substances. Once a site is placed in CERCLIS, it may be subjected to several levels of review and evaluation, and ultimately placed on the National Priorities List (NPL).

NFRAP
SRC#: 18

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for No Further Remedial Action Planned was April, 2000.**

The No Further Remedial Action Planned Report (NFRAP), also known as the CERCLIS Archive, contains information pertaining to sites which have been removed from the U.S. EPA's CERCLIS database. NFRAP sites may be sites where, following an initial investigation, either no contamination was found, contamination was removed quickly without need for the site to be placed on the NPL, or the contamination was not serious enough to require federal Superfund action or NPL consideration.

SCL
SRC#: 112

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for CalSites Database was January, 2000.**

This database is provided by the Department of Toxic Substances Control. Two- thirds of these sites have been classified, based on available information, as needing "No Further Action" (NFA) by the Department of Toxic Substances Control. The remaining sites are in various stages of review and remediation to determine if a problem exists at the site. Several hundred sites have been remediated and are considered certified. Some of these sites may be in long term operation and maintenance.

RCRIS-TSD
SRC#: 12

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for RCRIS Treatment, Storage and Disposal Facilities was December, 1999.**

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA TSDs are facilities which treat, store and/or dispose of hazardous waste.

SWLF
SRC#: 23

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for USGS Solid Waste Landfills was December, 1991.**

This database is provided by the United States Geological Survey. The agency may be contacted at: 703-648-5613.

SWLF
SRC#: 163

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Solid Waste Inventory System was November, 1999.

This database is provided by the Integrated Waste Management Board. The agency may be contacted at: 916-255-4021.

SWLF-CO
SRC#: 51

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Los Angeles County Soild Waste Landfills Transfer Stations was February, 1998.

This database is provided by the Public Health Invesitgations, Hazardous Material Control Program. The agency may be contacted at: 323-881-4151.

SWLF-CO
SRC#: 70

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for City of Los Angeles Landfills Transfer Stations was April, 1999.

This database is provided by the City of Los Angeles, Environmental Affais Department. The agency may be contacted at: 213-580-1070.

WMUDS
SRC#: 68

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Waste Management Unit Data System was February, 1999.

This database is provided by the State Water Resources Control Board. The agency may be contacted at: 530-892-0323. This is used for program tracking and inventory of waste management units. This system contains information from: Facility, Waste Management Unit, SWAT Program and Report Summary Information, Chapter 15 (formerly Subchapter 15), TPCA and RCRA Program Information, Closure Information; also some information from the WDS (Waste Discharge System).

LUST
SRC#: 164

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Leaking Underground Storage Tank Information System was January, 2000.

This database is provided by the California Environmental Protection Agency. The agency may be contacted at: 916-445-6532.

LUST-REG
SRC#: 108

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Region 6 Leaking Underground Storage Tanks was August, 1999.

This database is provided by the Lahontan Region Six South Lake Tahoe. The agency may be contacted at: 530-542-5400.

LUST-REG
SRC#: 121

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Region 4 Leaking Underground Storage Tank was August, 1999.**

This database is provided by the Regional Water Quality Control Board, Region #4. The agency may be contacted at: 323-266-7582.

LUST-REG
SRC#: 128

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Region 6 Leaking Underground Storage Tanks was February, 2000.**

This database is provided by the Regional Water Quality Control Board, Region #6. The agency may be contacted at: 760-241-7365.

CORTESE
SRC#: 53

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Cortese List - Hazardous Waste Substance Site List was April, 1998.**

This database is provided by the Office of Environmental Protection, Office of Hazardous Materials. The agency may be contacted at: 916-445-6532. The California Governor's Office of Planning and Research annually publishes a listing of potential and confirmed hazardous waste sites throughout the State of California under Government Code Section 65962.5. This database (CORTESE) is based on input from the following: (1)CALSITES-Department of Toxic Substances Control, Abandoned Sites Program Information Systems; (2)SARA Title III Section III Toxic Chemicals Release Inventory for 1987, 1988, 1989, and 1990; (3)FINDS; (4)HWIS-Department of Toxic Substances Control, Hazardous Waste Information System. Vista has not included one time generator facilities from Cortese in our database.; (5)SWRCB-State Water Resources Control Board; (6)SWIS-Integrated Waste Management Control Board (solid waste facilities); (7)AGT25-Air Resources Board, dischargers of greater than 25 tons of criteria pollutants to the air; (8)A1025-Air Resources Board, dischargers of greater than 10 and less than 25 tons of criteria pollutants to the air; (9)LTANK-SWRCB Leaking Underground Storage Tanks; (10)UTANK-SWRCB Underground tanks reported to the SWEEPS systems; (11)IUR-Inventory Update Rule (Chemical Manufacturers); (12)WB-LF- Waste Board - Leaking Facility, site has known migration; (13)WDSE-Waste Discharge System - Enforcement Action; (14)DTSCD-Department of Toxic Substance Control Docket.

BORDER-ZON
SRC#: 46

VISTA conducts a database search to identify all sites within 1/2 mile of your property. **The agency release date for Deed Restriction Properties Report was April, 1994.**

The Deeds Restrictions list, also known as the Border Zone Property List, contains information concerning voluntary deed restriction. These agreements are made with owners of property who propose building residences, schools, hospitals, or day care centers on property that is on or within 2,000 feet of potentially hazardous waste site.

TOXICPITS
SRC#: 49

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for Toxic Pits was February, 1995.

This database is provided by the Water Quality Control Board, Division of Loans Grants. The agency may be contacted at: 916-227-4396.

USGS-WELLS
SRC#: 3

VISTA conducts a database search to identify all sites within 1/2 mile of your property.
The agency release date for USGS Water Wells was March, 1998.

The Ground Water Site Inventory (GWSI) database was provided by the United States Geological Survey (USGS). The database contains information for over 1,000,000 wells and other sources of groundwater which the USGS has studied, used or documented during research.

C) DATABASES SEARCHED TO 1/4 MILE

RCRIS-VIOL
SRC#: 11

VISTA conducts a database search to identify all sites within 1/4 mile of your property.
The agency release date for RCRIS Facilities with Violations was December, 1999.

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. The RCRIS Other report contains information concerning facilities that are "unclassified" within the RCRIS database (not classified as a Large Quantity Generator, Transporter, etc.).

UST
SRC#: 45

VISTA conducts a database search to identify all sites within 1/4 mile of your property.
The agency release date for Underground Storage Tanks was January, 1994.

This database is provided by the State Water Resources Control Board, Office of Underground Storage Tanks. The agency may be contacted at: 916-227-4364. Be advised that some states do not require registration of heating oil tanks, especially those used for residential purposes.

UST-CO-LB
SRC#: 56

VISTA conducts a database search to identify all sites within 1/4 mile of your property.
The agency release date for City of Long Beach Underground Storage Tanks was March, 1998.

This database is provided by the City of Long Beach Fire Department. The agency may be contacted at: 562-570-2560. Be advised: Many states do not require registration of heating oil tanks, especially those used for residential purposes.

UST-ELSE
SRC#: 86

VISTA conducts a database search to identify all sites within 1/4 mile of your property. **The agency release date for City of El Segundo Underground Storage Tanks was November, 1999.**

This database is provided by the City of El Segundo Fire Department. The agency may be contacted at: 310-607-2239. Be advised: Many states do not require registration of heating oil tanks, especially those used for residential purposes.

UST-TORR
SRC#: 101

VISTA conducts a database search to identify all sites within 1/4 mile of your property. **The agency release date for City of Torrance Underground Storage Tanks was September, 1999.**

This database is provided by the City of Torrance Fire Prevention Division. The agency may be contacted at: 310-618-2973. Be advised: Many states do not require registration of heating oil tanks, especially those used for residential purposes.

UST-CO-LA
SRC#: 142

VISTA conducts a database search to identify all sites within 1/4 mile of your property. **The agency release date for Los Angeles County UST Street Number Book was January, 2000.**

This database is provided by the Los Angeles County Department of Public Works, Environmental Programs. The agency may be contacted at: 626-458-4125. Be advised: Many states do not require registration of heating oil tanks, especially those used for residential purposes.

AST
SRC#: 60

VISTA conducts a database search to identify all sites within 1/4 mile of your property. **The agency release date for Aboveground Storage Tanks was December, 1999.**

This database is provided by the State Water Resources Control Board. The agency may be contacted at: 916-227-4364.

LACO-SITE-
SRC#: 111

VISTA conducts a database search to identify all sites within 1/4 mile of your property. **The agency release date for Los Angeles County Site Mitigation Complaint Control Log was August, 1999.**

This database is provided by the Department of Health Services, LA County Public Health Investigations. The agency may be contacted at: 323-890-7806.

TRIS
SRC#: 2

VISTA conducts a database search to identify all sites within 1/4 mile of your property. **The agency release date for Toxic Release Inventory System was January, 1998.**

All facilities that manufacture, process, or import toxic chemicals in quantities in excess of 25,000 pounds per year are required to register with the EPA under Section 313 of the Superfund Amendments and Reauthorization Act (SARA Title III) of 1986. Data contained in the TRIS system covers approximately 20,000 sites and 75,000 chemical releases.

D) DATABASES SEARCHED TO 1/8 MILE

ERNS
SRC#: 8

VISTA conducts a database search to identify all sites within 1/8 mile of your property.
The agency release date for Emergency Response Notification System was August, 1999.

ERNS is a national computer database system that is used to store information on the sudden and/or accidental release of hazardous substances, including petroleum, into the environment. The ERNS reporting system contains preliminary information on specific releases, including the spill location, the substance released, and the responsible party.

RCRA-LQG
SRC#: 16

VISTA conducts a database search to identify all sites within 1/8 mile of your property.
The agency release date for RCRIS Large Quantity Generators was December, 1999.

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA Large Generators are facilities which generate at least 1000 kg./month of non-acutely hazardous waste (or 1 kg./month of acutely hazardous waste).

RCRIS-SQG
SRC#: 15

VISTA conducts a database search to identify all sites within 1/8 mile of your property.
The agency release date for RCRIS Small Quantity Generators was December, 1999.

The EPA's Resource Conservation and Recovery Act (RCRA) Program identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Facilities database is a compilation by the EPA of facilities which report generation, storage, transportation, treatment or disposal of hazardous waste. RCRA Small Quantity Generators are facilities which generate less than 1000 kg./month of non-acutely hazardous waste.

SPILLS
SRC#: 107

VISTA conducts a database search to identify all sites within 1/8 mile of your property.
The agency release date for Region 4 SLIC Site List was August, 1999.

This database is provided by the Regional Water Quality Control Board, Region #4. The agency may be contacted at: 323-266-7576.

End of Report

B. Documentation

11-180

DEPARTMENT OF THE ARMY
SOUTH PACIFIC DIVISION, CORPS OF ENGINEERS
630 Sansome Street, Room 720
San Francisco, California 94111-2206

REPLY TO
ATTENTION OF:

CESPD-ED-G (200-1c)

10 NOV '94

MEMORANDUM FOR

Commander, U.S. Army Corps of Engineers, 20 Massachusetts Avenue, N.W., Washington, DC 20314-1000

Commander, U.S. Army Engineer Division, Huntsville, P.O. Box 1600, Huntsville, AL 35807-4301

SUBJECT: Defense Environmental Restoration Program For Formerly Used Defense Sites (DERP-FUDS), Inventory Project Report (INPR) for Point Vicente Military Reservation and Fire Control Sites, Rancho Palos Verdes, California, Site No. J09CA0558000

1. I am forwarding the INPR for Point Vicente Military Reservation and Fire Control Sites for appropriate action. The site is eligible for DERP-FUDS.

2. I recommend that:

a. CEMP-R approve the proposed CON/HTRW project and assign it through this headquarters to CESPL for RD/RA.

b. CEHND determine the need for further investigation and action at this site regarding a potential project. Los Angeles District has estimated an RAC 3 on this project.

Encl

for DEPutt COL
BRUCE K. SCOTT
Brigadier General, U.S. Army
Commanding

CF:
CESPL-ED-MI (HTRW)

1994 NOV 14 AM 9:18

DEFENSE ENVIRONMENTAL RESTORATION PROGRAM
FORMERLY USED DEFENSE SITES
FINDINGS AND DETERMINATION OF ELIGIBILITY
POINT VICENTE MILITARY RESERVATION AND FIRE CONTROL SITES
RANCHO PALOS VERDES, CALIFORNIA
SITE NO. J09CA055800

FINDINGS OF FACT

1. The Point Vicente Military Reservation and Fire Control Sites were located adjacent to Fort MacArthur, 13 miles west of Long Beach, California and consisted of 280.77 acres acquired by the U.S. Army as part of the harbor defenses of Los Angeles. The Military Reservation subsequently was designated as NIKE Battery 55, J09CA015500, a duplicate of this site. The Point Vicente Military Reservation consisted of two (2) tracts totalling 107.77 acres. Of the 107.77 acres, 107.55 acres were purchased from the Palos Verdes Corporation in January 1942, and 0.22 acres were acquired by oral permit from the U.S. Coast Guard. The date of acquisition of the property by the U.S. Coast Guard could not be determined. The Fire Control Sites consisted of seventeen (17) tracts totalling 173.00 acres. Of the 173.00 acres, 6.24 acres were acquired by use permit from the Palos Verdes Corporation, 157.55 acres were leased from the Palos Verdes Corporation, and 9.21 acres were leased from the Filiorium Corporation.

2. Improvements on the 107.77 acre Point Vicente Military Reservation included the gun mounts and concrete/steel bunker comprising Battery No. 240 and twenty-four (24) supporting buildings or structures near Hawthorne Boulevard. Battery No. 240 contained two underground storage tanks (USTs) enclosed in concrete vaults. An Administrative/Launcher area for NIKE Battery 55 was also constructed on the Point Vicente Military Reservation at a later date. The NIKE Battery contained two underground missile storage compartments, missile elevators and launch pads, and at least one UST. The gun mounts, bunker, underground missile compartments, missile elevators, missile launch pads, and at least two USTs still exist at the site.

For the seventeen (17) Fire Control Sites, improvements on six (6) of these tracts, comprising 72.99 of the 173.00 acres, included three (3) Signal Corps Radio (SCR) sites, two (2) fire control sites, and Panama gun mounts with a searchlight. Buildings and structures included an observation tower, a transmitter building, two (2) power buildings, and two (2) two-level dug-ins. Other improvements included electricity via engine generators, telephone, and two above-ground storage tanks. The remaining eleven (11) tracts were either developed as access roads or were undeveloped.

3. The property comprising the Point Vicente Military Reservation was disposed in six transactions. The 0.22 acres were returned to the U.S. Coast Guard in August 1947 and were incorporated into the Point Vicente Lighthouse Reservation. In July 1950, 0.28 acres were transferred to the U.S. Coast Guard, and on October 1959, 4.67 acres were transferred to the U.S. Coast Guard for incorporation into the Point Vicente Lighthouse Reservation. An additional 16.54 acres were transferred (transaction date unknown) to the U.S. Coast Guard and were converted into a radio antenna station. In March 1957, 10.53 acres were transferred to the County of Los Angeles via quitclaim deed and were developed as the Point Vicente County Park. In October 1979, 75.53 acres were transferred to the City of Rancho Palos Verdes via quitclaim deed and were converted into the site of the Rancho Palos Verdes City Hall.

The six (6) tracts upon which fire control sites were constructed were disposed in five separate transactions. The lease for 13.86 acres comprising Fire Control Site No. 4 and Searchlight No. 10 site was terminated in September 1944. The lease for 25.77 acres comprising Panama Gun Mounts site was terminated in October 1944. The lease for 7.00 acres comprising SCR 682 Site A was terminated in February 1947. The lease for 2.34 acres comprising Fire Control Site No. 3 was terminated in June 1950. The leases for 4.36 acres comprising SCR 296 Site No. 3-B and 19.66 acres comprising SCR 296 Site No. 1 were terminated in June 1952. The sites are currently private residences, recreational facilities, or roadways.

Leases for the remaining ten (10) leased tracts were terminated as follows: 5.85 acres in October 1944, 0.11 acres in June 1946, 3.54 acres in August 1946, 17.66 acres in November 1946, 26.36 acres in July 1947, 0.52 acres in August 1947, 39.73 acres in June 1952. The tracts are currently private residences, recreational facilities, or roadways. The remaining 6.24 acres tract, which was used with the permission of Palos Verdes Corporation, was returned and is presently Hawthorne Boulevard immediately prior to Rancho Palos Verdes Drive.

DETERMINATION

Based on the foregoing findings of fact, the site has been determined to be formerly used by DOD. It is therefore eligible for the Defense Environmental Restoration Program - Formerly Used Defense Sites established under 10 USC 2701 et seq.

9 Nov 94
DATE

BRUCE K. SCOTT
Brigadier General, U.S. Army
Commanding

SITE SURVEY SUMMARY SHEET
FOR
DERP-FUDS SITE NO. J09CA055800
POINT VICENTE MILITARY RESERVATION AND FIRE CONTROL SITES
RANCHO PALOS VERDES, CALIFORNIA
15 OCTOBER 1993

SITE NAME(S): Point Vicente Military Reservation and Fire Control Sites

LOCATION: The Point Vicente Military Reservation straddled Palos Verdes Drive and Hawthorne Boulevard at Point Vicente in Rancho Palos Verdes, California, 13 miles west of Long Beach, California. The Fire Control Sites were spread across the southern portion of the Palos Verdes peninsula.

SITE HISTORY: The Point Vicente Military Reservation and Fire Control Sites were established by the U.S. Army as part of the harbor defenses of Los Angeles between 1942 and 1945. The site consisted of nineteen (19) tracts distributed over a 10 square mile area. The Military Reservation was subsequently incorporated into the Los Angeles Defense Area as NIKE Battery 55, J09CA015500, a duplicate of this site.

Point Vicente Military Reservation

The Point Vicente Military Reservation consisted of two (2) tracts: 107.55 acres purchased from the Palos Verdes Corporation and 0.22 acres used with the permission of the United States Coast Guard (USCG). The Military Reservation was initially developed with the construction of a 6-inch coastal defense gun battery (Battery No. 240) and a searchlight (Searchlight No. 8). Twenty-four (24) buildings or structures were constructed near Hawthorne Boulevard. Two (2) underground storage tanks (USTs) were located on the 107.55 acre parcel. An Administrative/Launcher area for NIKE Battery 55 was constructed on the Military Reservation in the early 1950s. One (1) other UST was located at the NIKE Battery Administrative/Launcher area and was previously removed by the City of Rancho Palos Verdes.

The property comprising the Point Vicente Military Reservation was disposed in six transactions. The 0.22 acres were returned to the U.S. Coast Guard in August 1947 and were incorporated into the Point Vicente Lighthouse Reservation. In July 1950, 0.28 acres were transferred to the U.S. Coast Guard, and on October 1959, 4.67 acres were transferred to the U.S. Coast Guard for incorporation into the Point Vicente Lighthouse Reservation. An additional 16.54 acres were transferred (transaction date unknown) to the U.S. Coast Guard and were converted into a radio antenna station. In March 1957, 10.53 acres were transferred to the County of Los Angeles via quitclaim deed and were developed as the Point Vicente County Park. In October 1979 75.53 acres were transferred to the City of Rancho Palos Verdes

via quitclaim deed and were converted into the site of the Rancho Palos Verdes City Hall.

Fire Control Sites

The remaining seventeen (17) tracts, comprising 173 acres, were leased from (166.76 acres), or used with the permission of (6.24 acres), the Palos Verdes Corporation (16 tracts) and the Filiorium Corporation (1 tract) for potential use as fire control sites. Of these 17 tracts, coastal defense installations were developed on only six (6) tracts. These installations consisted of three (3) Signal Corps Radio (SCR) sites, two (2) fire control sites, and Panama gun mounts with a searchlight. Buildings and structures included an observation tower, a transmitter building, two (2) power buildings, and two (2) two-level dug-ins.

The six (6) tracts upon which fire control sites were constructed were disposed in five separate transactions. The lease for 13.86 acres comprising Fire Control Site No. 4 and Searchlight No. 10 site was terminated in September 1944. The lease for 25.77 acres comprising Panama Gun Mounts site was terminated in October 1944. The lease for 7.00 acres comprising SCR 682 Site A was terminated in February 1947. The lease for 2.34 acres comprising Fire Control Site No. 3 was terminated in June 1950. The leases for 4.36 acres comprising SCR 296 Site No. 3-B and 19.66 acres comprising SCR 296 Site No. 1 were terminated in June 1952. The sites are currently private residences, recreational facilities, or roadways.

Ten (10) leased tracts, comprising 93.77 acres, were either developed as access roads or were undeveloped. Leases for these tracts were terminated between March 1945 and June 1952. The sites are currently private residences, recreational facilities, or roadways. The remaining tract, which was used with the permission of the Palos Verdes Corporation, was returned and is presently Hawthorne Boulevard.

SITE VISIT: A site visit was performed by Rita H. Neill and Daniel K. Welch of Malcolm Pirnie, Inc. on 19 June 1992.

CATEGORY OF HAZARD: BD/DR (NOFA), CON/HTRW, OEW

DESCRIPTION:

a. BD/DR (NOFA). The Nike missile structures have been beneficially used and maintained by the City of Rancho Palos Verdes since 1979. Therefore, no further action is required at this time.

b. CON/HTRW. Remove and dispose of two underground fuel storage tanks and all associated piping. Sample tank contents and soils in containment vault for contamination. There are two hydraulic fluid tanks with associated lines

and piping located within the underground NIKE missile chambers. Because the hydraulic lifts have been beneficially used in conjunction with the chambers by the City of Palos Verdes since 1979, the lift systems are not suggested as part of the CON/HTRW project.

c. OEW. Recommend the Mandatory Center of Expertise (MCX) for OEW at Corps of Engineers Huntsville Division (CEHND) make a determination regarding further investigation at this site.

AVAILABLE STUDIES AND REPORTS: A real estate file, which contains acquisition and disposal records is maintained by the Real Estate Division, Los Angeles District, Corps of Engineers. The Fort McArthur Military Museum provided a Reference Manual for the Harbor Defenses of Los Angeles, Reports of Completed Work (RCWs) for SCR 296 Site No. 3 and Fire Control Site No. 3, and location maps for the harbor defenses of Los Angeles and NIKE Battery 55. The National Archives at Laguna Niguel, California provided general plans for Battery No. 240 and FCS No. 3.

PA POC: Jatin Desai at (213) 894-6266, Los Angeles District

PROJECT SUMMARY SHEET
FOR
DERP-FUDS CON/HTRW PROJECT NO. J09CA055801
PT. VICENTE MILITARY RESERVATION AND FIRE CONTROL SITES
RANCHO PALOS VERDES, CALIFORNIA
SITE NO. J09CA055800
15 OCTOBER 1993

PROJECT DESCRIPTION: There are two (2) approximately 500 gallon underground storage tanks (USTs) and approximately 220 feet of double 2½ inch piping located at the Battery No. 240 site. The USTs were reportedly used for fuel oil storage and were contained in concrete vaults. During the site visit one of the tanks was located and the floor of the containment vault was observed to be soil. The other UST was not field located.

PROJECT ELIGIBILITY: Records indicate that the USTs were installed for and used by the US Army.

POLICY CONSIDERATIONS: The USTs were used only by the US Army.

PROPOSED PROJECT: Remove and dispose of two underground fuel storage tanks and all associated piping. Sample tank contents and soils in containment vault for contamination. Backfill to grade.

DD FORM 1391: Attached.

DISTRICT POC: Jatin Desai at (213) 894-6266, Los Angeles District

PROJECT SUMMARY SHEET
FOR
DERP-FUDS OEW PROJECT NO. J09CA055802
PT. VICENTE MILITARY RESERVATION AND FIRE CONTROL SITES
RANCHO PALOS VERDES, CALIFORNIA
SITE NO. J09CA055800
15 OCTOBER 1993

PROJECT DESCRIPTION: NIKE missiles, includes anti-vessel and anti-aircraft ordnance, and Panama guns were located on the site. Evidence of these facilities remain on-site. Additionally, as the site was a military reservation for the defense of Los Angeles, small arms were carried and potentially used on-site. The Reference Manual by the Fort MacArthur Military Museum Association reported 6" M1903A2 guns and SBCM1 carriages.

PROJECT ELIGIBILITY: The property was formerly used by the United States Army. Any ordnance found may be the result of past War Department/Defense Department activity.

POLICY CONSIDERATIONS: There does not appear to be any policy which limits eligibility or precludes proposal of a project at this site.

PROPOSED PROJECT: Recommend the Corps' MCX for OEW at the Huntsville Division make a determination if further action is appropriate.

RAC FORM: Attached.

DISTRICT POC: Request CEHND inform Mr. Jatin Desai at (213) 894-6266 when a determination is made regarding project status.

10 Jul 1992

Previous editions obsolete

RISK ASSESSMENT PROCEDURES FOR ORDNANCE AND EXPLOSIVE WASTE (OEW) SITES

Site Name Point Vicente Military Reservation & Fire Control Sites
Site Location Ranchos Palos Verdes, CA
DERP Project # J09CA055800

Rater's Name Rita Neill
Organization Malcolm Pirnie
RAC 3

OEW RISK ASSESSMENT:

This risk assessment procedure was developed in accordance with MIL-STD 882B and AR 385-10.

The OEW risk assessment is based upon documented evidence consisting of records searches, reports of Explosive Ordnance Disposal (EOD) detachment actions, and field observations, interviews, and measurements. These data are used to assess the risk involved based upon the hazards identified at the site. The risk assessment is composed of two factors, hazard severity and hazard probability.

Any field activities should be made with the assistance of qualified EOD personnel.

Part I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible mishap resulting from personnel exposure to various types and quantities of unexploded ordnance items.

TYPE OF ORDNANCE

A. Conventional Ordnance and Ammunition

	YES VALUE	NO VALUE	VALUE
Small Arms (.22 cal - .50 cal)	1	0	1
Medium/Large Caliber (20 mm and larger)	10	0	10
Bombs, Explosive	10	0	0
Bombs, Practice (w/spotting charges)	6	0	0
Grenades, Hand and Rifle, Explosive	10	0	0
Grenades, Practice (w/spotting charges)	4	0	0
Landmines, Explosive	10	0	0
Landmines, Practice (w/spotting charges)	4	0	0
Rockets, Guided Missiles, Explosive	10	0	10
Detonators, Blasting Caps	6	0	0

Conventional Ordnance and Ammunition Value (Maximum of 10). 10

B. Pyrotechnics. [illegible] munitions not described above.

	YES VALUE	NO VALUE	VALUE
Munition (Container) Containing White Phosphorus or other Pyrophoric Material (i.e., Spontaneously Flammable)	10	0	0
Munition Containing A Flame or Incendiary Material (i.e., Napalm, Triethlaluminum Metal Incendiaries)	6	0	0
Flares, Signals, Simulators	4	0	0

Pyrotechnics Value (Maximum of 10). 0

C. Bulk High Explosives (Bulk explosives not an integral part of conventional ordnance; uncontainerized.)

	YES VALUE	NO VALUE	VALUE
Primary or Initiating Explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10	0	0
Demolition Charges	10	0	0
Booster, Bursting or Fuze Explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8	0	0
Military Dynamite	6	0	0
Less Sensitive Explosives (Ammonium Nitrate, Explosive D, etc.)	3	0	0

High Explosives Value (Maximum Value of 10) 0

D. Propellants

	YES VALUE	NO VALUE	VALUE	
Solid or Liquid Propellants	6	0	6	6

E. Radiological/Chemical Agent/Weapons

	YES VALUE	NO VALUE	VALUE
Toxic Chemical Agents (Choking, Nerve, Blood, Blister)	25	0	0
Radiological	15	0	0
Riot Control and Miscellaneous (Vomiting, Tear, etc.)	5	0	0

Radiological. mical Agent/Weapons Value (Ma. .um 25). 0

Total Ordnance and Explosive Waste Characteristics Value (Total = A + B + C + D + E with a Maximum value of 61). 16

Apply this value to Table 1 to determine Hazard Severity Category.

TABLE 1

HAZARD SEVERITY

Description	Category	Value
CATASTROPHIC	I	≥21
CRITICAL	II	≥13 <21
MARGINAL	III	≥5 <13
NEGLIGIBLE	IV	≥1 <5
NONE		0

* Apply Hazard Severity Category to Table 3.

Part II. Hazard bability. The probability tha a hazard has been or will be created due to the presence and other rated factors of unexploded ordnance or explosive materials on a formerly used DOD site.

AREA, EXTENT, ACCESSIBILITY OF CONTAMINATION

A. Locations of Contamination

	YES VALUE	NO VALUE	VALUE
On the surface	5	0	0
Within Tanks, Pipes, Vessels or Other confined locations.	4	0	0
Inside walls, ceilings, or other parts of Buildings or Structures.	3	0	0
Subsurface	2	0	2

Value for location of UXO. (Maximum Value of 5). 2

B. Distance to nearest inhabited locations or structures likely to be at risk from OEW site (roads, parks, playgrounds, and buildings).

Distance to Nearest Target	VALUE
Less than 1250 feet	5
1250 feet to 0.5 miles	4
0.5 miles to 1.0 mile	3
1.0 mile to 2.0 miles	2
Over 2 miles	1

Distance to Persons Value (Maximum Value of 5). 5

C. Numbers and types of Buildings within a 2 mile radius measured from the hazardous area, not the installation boundary.

Number of Buildings	VALUE
0	0
1 to 5	1
6 to 10	2
11 to 15	3
16 to 25	4
26 and over	5

Number of Buildings Value (Maximum Value of 5). 5

D. Types of Buil gs (within a 2 mile radius)

	VALUE
Educational, Child Care, etc.	5
Residential, Hospitals, Hotels, etc.	5
Commercial, Shopping Centers, etc.	5
Industrial Warehouse, etc.	4
Agricultural, Forestry, etc.	3
Detention, Correctional	2
Military	1
No Buildings	0

Types of Buildings Value (Maximum Value of 5). 5

E. Accessibility to site refers to access by humans to ordnance and explosive wastes. Use the following guidance:

Barrier	Assigned Value
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry onto the facility;	0

or

Barrier	Assigned Value
An artificial or natural barrier (e.g., a fence combined with a cliff), which completely surrounds the facility; and a means to control entry, at all times, through the gates or other entrances to the facility (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the facility).	0
Isolated site	1
Security guard, but no barrier	2
A barrier, (any kind of fence) but no separate means to control entry	3
Barriers do not completely surround the facility	3
No barrier or security system	5

Accessibility Value (Maximum Value of 5). 3

F. Site Dynamics This deals with site conditions chat are subject to change in the future, but may be stable at the present. Examples would be excessive soil errosion by beaches or streams, increasing land development that could reduce distances from the site to inhabitated areas or otherwise increase accessability.

	VALUE
None Anticipated	0
Expected	5

(Maximum Value of 5) 0

Total value for hazard probability.
Sum of Values A through F.
(Not to exceed 30). 20

Apply this value to Hazard Probability Table 2 to determine Hazard Probability Level.

TABLE 2

HAZARD PROBABILITY

Description	Level	Value
FREQUENT	A	≥27
PROBABLE	B	≥21 <27
OCCASIONAL	C	≥15 <21
REMOTE	D	≥ 8 <15
IMPROBABLE	E	<8

* Apply Hazard Probability Level to Table 3.

Part III. Risk A ssment. The risk assessment v..ue for this site is determined using the following Table 3. Enter with the results of the hazard probability and hazard severity values.

TABLE 3

Probability Level		FREQUENT A	PROBABLE B	OCCASIONAL C	REMOTE D	IMPROBABLE E
Severity Category:						
CATASTROPHIC	I	1	1	2	3	4
CRITICAL	II	1	2	(3)	4	5
MARGINAL	III	2	3	4	4	5
NEGLIGIBLE	IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC)

RAC 1 Imminent Hazard - Emergency action required to mitigate the hazard or protect personnel (i.e., Fencing, physical barrier, guards, etc.).

RAC 2 Action required to mitigate hazard or protect personnel. Initial project phase--phased EECA.

RAC 3 Action required to evaluate potential threat to personnel. Initial project phase--Archives search and site investigation.

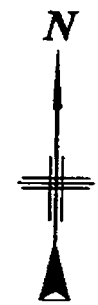
RAC 4 Action required to evaluate potential threat to personnel. Initial project phase--Archives search.

RAC 5 No action required.

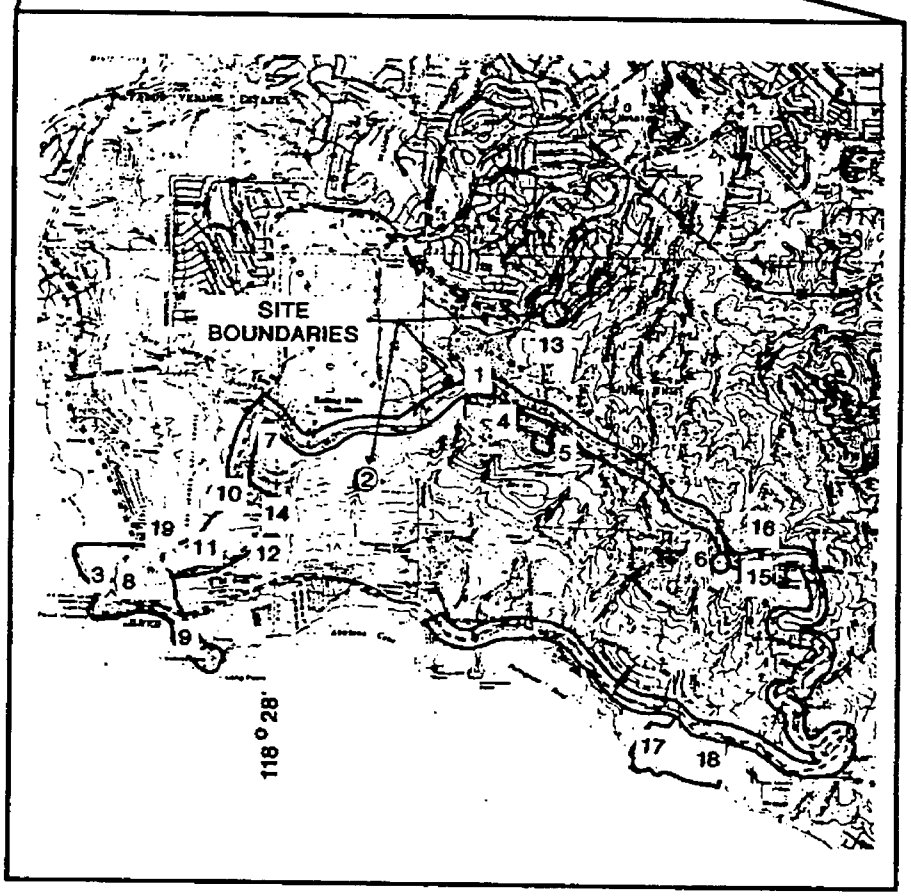
NOTE: Other phases may be considered depending on individual site conditions.

Justification. In narrative form, summarize the documented evidence that supports this risk assessment.

We concur with the risk assessment findings. Gun batteries were located on the site prior to, and during World War II. Evidence of these gun batteries still remains.



NOT TO SCALE



SOURCE: REDONDO BEACH, CA
USGS QUAD MAP, 1963
PHOTOREVISED 1981

TORRANCE, CA
USGS QUAD MAP, 1964
PHOTOREVISED 1981

SAN PEDRO, CA
USGS QUAD MAP, 1964
PHOTOREVISED 1981

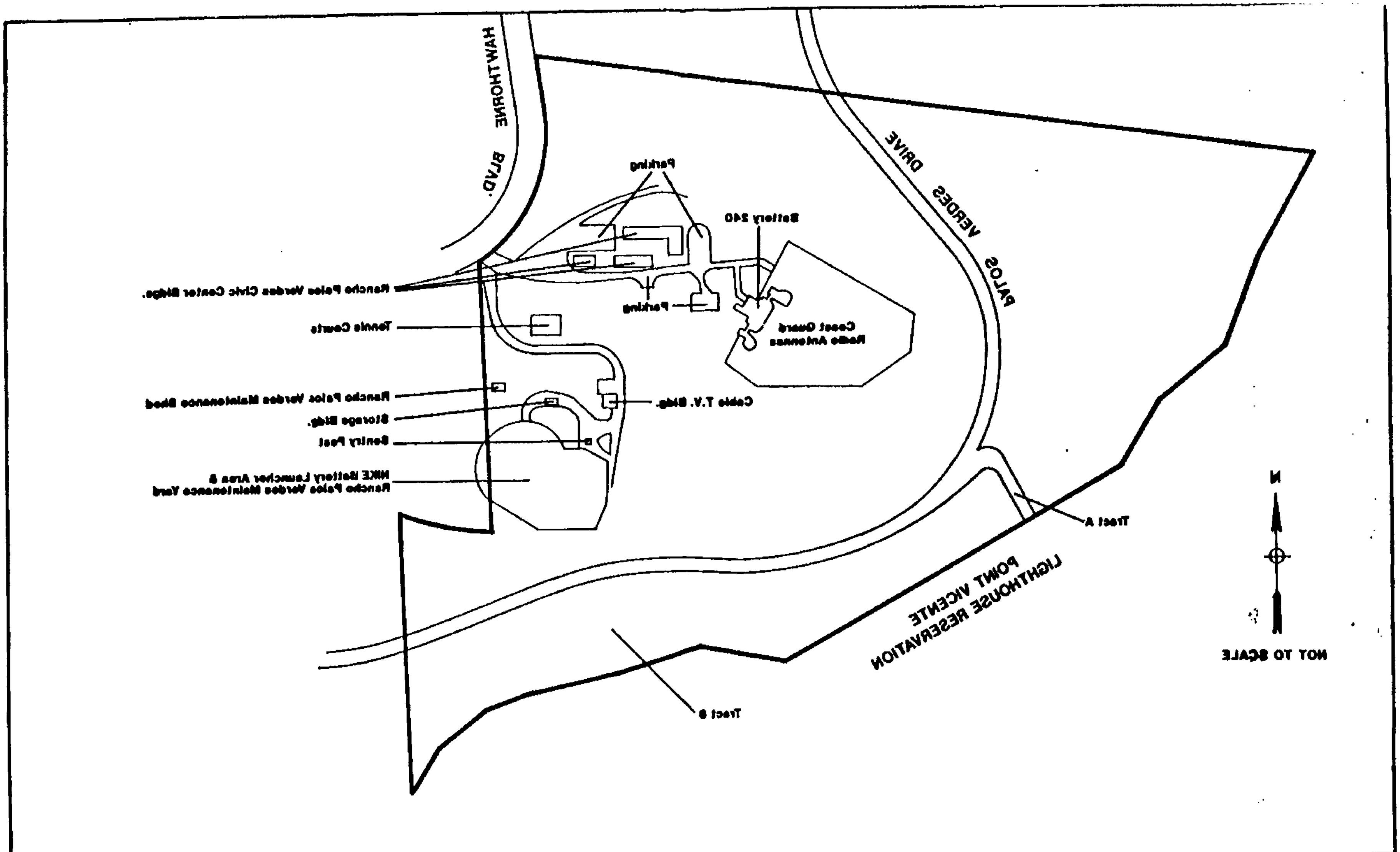
SEE LIST OF TRACTS

MALCOLM PIRNIE

DERP-FUDS
PT VICENTE MIL RES & FC SITES
LOCATION MAP

MALCOLM PIRNIE, INC.

FIGURE 1
J09CA055800



MALCOLM PIRNIE

SITE MAP
POINT VICENTE MILITARY RESERVATION AND FIRE CONTROL SITES
DERP-FUDS

SITE No. 8

J09CA055800

FIGURE 2

18 Apr 94
Previous editions obsolete

RISK ASSESSMENT PROCEDURES FOR
ORDNANCE AND EXPLOSIVE WASTE (OEW) SITES

Site Name Point Vicente military Reservation
Site Location Long Beach CA.
DERP Project # J09CA055800
Date Completed November 22, 1994

Rater's Name Gregory S. Parsons
Phone No. (205) 955-5858
Organization CEHND-PM-SO
RAC Score 2

OEW RISK ASSESSMENT:

This risk assessment procedure was developed in accordance with MIL-STD 882C and AR 385-10. The RAC score will be used by CEHND to prioritize the remedial action at Formerly Used Defense Sites. The OEW risk assessment should be based upon best available information resulting from records searches, reports of Explosive Ordnance Disposal (EOD) detachment actions, and field observations, interviews, and measurements. This information is used to assess the risk involved based upon the potential OEW hazards identified at the site. The risk assessment is composed of two factors, **hazard severity and hazard probability**. Personnel involved in visits to potential OEW sites should view the CEHND videotape entitled "A Life Threatening Encounter: OEW."

Part I. Hazard Severity. Hazard severity categories are defined to provide a qualitative measure of the worst credible mishap resulting from personnel exposure to various types and quantities of unexploded ordnance items.

TYPE OF ORDNANCE
(Circle all values that apply)

A. Conventional Ordnance and Ammunition	VALUE
Medium/Large Caliber (20 mm and larger)	**(10)**
Bombs, Explosive	10
Grenades, Hand and Rifle, Explosive	10
Landmines, Explosive	10
Rockets, Guided Missiles, Explosive	**(10)**
Detonators, Blasting Caps, Fuzes, Boosters, Bursters	6
Bombs, Practice (w/spotting charges)	6
Grenades, Practice (w/spotting charges)	4
Landmines, Practice (w/spotting charges)	4
Small Arms (.22 cal - .50 cal)	**(1)**

Conventional Ordnance and Ammunition (Select the largest single value) **10**

What evidence do you have regarding conventional OEW? Coastal Defence Site

B. Pyrotechnics (For munitions not described above.)

VALUE

Munition (Container) Containing White Phosphorus or other Pyrophoric Material (i.e., Spontaneously Flammable)	10
Munition Containing A Flame or Incendiary Material (i.e., Napalm, Triethlaluminum Metal Incendiaries)	6
Flares,Signals, Simulators	4

Pyrotechnics (Select the largest single value) **0**

What evidence do you have regarding pyrotechnics? _____

C. Bulk High Explosives (Not an integral part of conventional ordnance; uncontainerized.)

	VALUE
Primary or Initiating Explosives (Lead Styphnate, Lead Azide, Nitroglycerin, Mercury Azide, Mercury Fulminate, Tetracene, etc.)	10
Demolition Charges	10
Secondary Explosives (PETN, Compositions A, B, C, Tetryl, TNT, RDX, HMX, HBX, Black Powder, etc.)	8
Military Dynamite	6
Less Sensitive Explosives (Ammonium Nitrate, Explosive D, etc.)	3

High Explosives (Select the largest single value) **0**

What evidence do you have regarding bulk explosives?

D. Bulk Propellants (Not an integral part of rockets, guided missiles, or other conventional ordnance; uncontainerized)

	VALUE
Solid or Liquid Propellants	6

Propellants **0**

What evidence do you have regarding bulk propellants?_____

E. Chemical Warfare Material and Radiological Weapons

	VALUE
Toxic Chemical Agents (Choking, Nerve, Blood, Blister)	25
War Gas Identification Sets	20
Radiological	15
Riot Control and Miscellaneous (Vomiting, Tear, incendiary and smoke)	5

Chemical and Radiological (Select the largest single value) **0**

What evidence do you have of chemical/radiological OEW?_____

TOTAL HAZARD SEVERITY VALUE **10**
(Sum of Largest Values for A through E--Maximum of 61)
Apply this value to Table 1 to determine Hazard Severity Category.

TABLE 1

HAZARD SEVERITY*

Description	Category	Hazard Severity Value
CATASTROPHIC	I	21 and greater
CRITICAL	**(II)**	**10 to 20**
MARGINAL	III	5 to 9
NEGLIGIBLE	IV	1 to 4
**NONE		0

Apply Hazard Severity Category to Table 3.

**If Hazard Severity Value is 0, you do not need to complete Part II. Proceed to Part III and use a RAC Score of 5 to determine your appropriate action.

Part II. Hazard Probability. The probability that a hazard has been or will be created due to the presence and other rated factors of unexploded ordnance or explosive materials on a formerly used DOD site.

AREA, EXTENT, ACCESSIBILITY OF OEW HAZARD
(Circle all values that apply)

A. Locations of OEW Hazards

	VALUE
On the surface	5
Within Tanks, Pipes, Vessels or Other confined locations.	4
Inside walls, ceilings, or other parts of Buildings or Structures.	3
Subsurface	**(2)**

Location (Select the single largest value) **2**

What evidence do you have regarding location of OEW? Attached RAC

B. Distance to nearest inhabited locations or structures likely to be at risk from OEW hazard (roads, parks, playgrounds, and buildings).

	VALUE
Less than 1250 feet	**(5)**
1250 feet to 0.5 miles	4
0.5 miles to 1.0 mile	3
1.0 mile to 2.0 miles	2
Over 2 miles	1

Distance (Select the single largest value) **5**

What are the nearest inhabited structures? Attached RAC

C. Number of buildings within a 2 mile radius measured from the OEW hazard area, not the installation boundary.

	VALUE
26 and over	**(5)**
16 to 25	4
11 to 15	3
6 to 10	2
1 to 5	1
0	0

Number of Buildings (Select the single largest value) **5**

Narrative Attached RAC

D. Types of Buildings (within a 2 mile radius)

	VALUE
Educational, Child Care, Residential, Hospitals, Hotels, Commercial, Shopping Centers	**(5)**
Industrial, Warehouse, etc.	4
Agricultural, Forestry, etc.	3
Detention, Correctional	2
No Buildings	0

Types of Buildings (Select the largest single value) **5**

Describe types of buildings in the area. Attached RAC

E. Accessibility to site refers to access by humans to ordnance and explosive wastes. Use the following guidance:

BARRIER	VALUE
No barrier or security system	5
Barrier is incomplete (e.g., in disrepair or does not completely surround the site). Barrier is intended to deny egress from the site, as for a barbed wire fence for grazing.	4
A barrier, (any kind of fence in good repair) but no separate means to control entry. Barrier is intended to deny access to the site.	**(3)**
Security guard, but no barrier	2
Isolated site	1
A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry onto the facility; or An artificial or natural barrier (e.g., a fence combined with a cliff), which completely surrounds the facility; and a means to control entry, at all times, through the gates or other entrances to the facility (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the facility).	0

Accessibility (Select the single largest value) **3**

Describe the site accessibility. Attached RAC

F. Site Dynamics - This deals with site conditions that are subject to change in the future, but may be stable at the present. Examples would be excessive soil erosion by beaches or streams, increasing land development that could reduce distances from the site to inhabitated areas or otherwise increase accessability.

	VALUE
Expected	5
None Anticipated	0

Site Dynamics (Select largest value) **0**

Describe the site dynamics._____

TOTAL HAZARD PROBABILITY VALUE
(Sum of Largest Values for A through F--Maximum of 30) **21**

Apply this value to Hazard Probability Table 2 to determine Hazard Probability Level.

TABLE 2

HAZARD PROBABILITY

Description	Level	Hazard Probability Value
FREQUENT	A	27 or greater
PROBABLE	**(B)**	**21 to 26**
OCCASIONAL	C	15 to 20
REMOTE	D	8 to 14
IMPROBABLE	E	less than 8

*** Apply Hazard Probability Level to Table 3.**

Part III. Risk Assessment. The risk assessment value for this site is determined using the following Table 3. Enter with the results of the hazard probability and hazard severity values.

TABLE 3

Probability Level	FREQUENT A	PROBABLE B	OCCASIONAL C	REMOTE D	IMPROBABLE E
Severity Category:					
CATASTROPHIC I	1	1	2	3	4
CRITICAL II	1	(2)	3	4	5
MARGINAL III	2	3	4	4	5
NEGLIGIBLE IV	3	4	4	5	5

RISK ASSESSMENT CODE (RAC)

RAC 1 Expedite INPR, recommending further action by CEHND - Immediately call CEHND-ED-SY--commercial 205-955-4968 or DSN 645-4968.

RAC 2 High priority on completion of INPR - Recommend further action by CEHND.

RAC 3 Complete INPR - Recommend further action by CEHND.

RAC 4 Complete INPR - Recommend further action by CEHND.

RAC 5 Usually indicates that no further action (NOFA) is necessary. Submit NOFA and RAC to CEHND.

Part IV. Narrative. Summarize the documented evidence that supports this risk assessment. If no documented evidence was available, explain all the assumptions that you made.

This site consists of 280.77 acres and is located 13 miles west of Long Beach, CA. This was a coastal defense battery and fire control center. The weapons used on this site consisted of Nike Missiles, anti vessel, anti aircraft, 6" Panama gun and small arms.

PIRS Project Information Retrieval System
DERP-FUDS

Ordnance and Explosives
Chemical Warfare Material
Archives Search Report
FINDINGS
Point Vicente Seacoast Defense Sites
Rancho Palos Verdes, California
Los Angeles
Project Number - J09CA055802

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M REPORT DISTRIBUTION LIST

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2. Point Vicente Seacoast Defense Sites - Tracts 1-21 - Aerial Photograph-1945
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4. Palos Verdes Hills VHF sites - Tracts 1-6, 12 & 13 - Aerial Photograph-1945
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6. Point Vicente - LA 55 Nike A & L Facilities - Aerial Photograph-1963

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PIRS Project Information Retrieval System

Ordnance and Explosives
Chemical Warfare Material
Archives Search Report
FINDINGS
Point Vicente Seacoast Defense Sites
Rancho Palos Verdes, California
Los Angeles
Project Number - J09CA055802

1.0 INTRODUCTION

1.1 Authority

In 1986, Congress established the Defense Environmental Restoration Program at 10 U.S.C. 2701 et.seq. This program directed the Secretary of Defense to "carry out a program of environmental restoration at facilities under the jurisdiction of the Secretary."

In March, 1990, the EPA issued a revised National Contingency Plan. Under 40 C.F.R. 300.120, EPA designated DOD to be the removal response authority for incidents involving DOD military weapons and munitions under the jurisdiction, custody and control of DOD.

Since the beginning of this program, the U.S. Army Corps of Engineers has been the agency responsible for environmental restoration at Formerly-Used Defense Sites (FUDS). Since 1990, the U.S. Army Engineering and Support Center, Huntsville, has been the Mandatory Center of Expertise and Design Center for Ordnance and Explosives.

1.2 Subject

The **Point Vicente Seacoast Defense Sites** consisted of about 20 tracts of land comprising 378.40 acres along the Pacific coastline and the Palos Verdes hills (see Plates 1 and 2 in the Report Plates Section for the location of the sites). The War Department began acquiring these parcels in 1942 as part of the Harbor Defenses of Los Angeles (HDLA). The HDLA, headquartered at Fort MacArthur, was a coordinated system of several different and highly specialized missions. Generally, these systems consisted of locating the position of enemy targets both on the surface (ships) and in the air (planes). The systems then directed artillery or anti-aircraft fire toward the enemy targets or scrambled fighter squadrons to intercept them.

The Point Vicente Seacoast Defense Sites included: gun emplacements (permanent, temporary and prepared positions for roving batteries), both visual and radar fire control stations, searchlights, an Aircraft Warning Service (AWS) and a VHF (Very High Frequency) Fighter Control System. Many of the tracts were only cable easements or road right of ways between the fire control stations and the gun emplacements. The leases for the majority of the sites were terminated between October 1944 and June 1952 as the artillery, enemy detection and locations systems became obsolete and were replaced by more advanced systems. The Army retained the Point Vicente Military Reservation tract of land, and during the 1950's and 1960's, it became the administration and launch facilities for both the Nike Ajax and the Nike Hercules anti-aircraft missiles. At that time it was designated as site #55 of the Los Angeles Defense Area (LADA), a part of the air defense system of Los Angeles. By the early 1970's the Nike defense system had became obsolete, and the Army released the remainder of the site to local government bodies in pieces in 1978 and 1979.

1.3 Purpose

This Archives Search Report (ASR) compiles information obtained through historical research at various archives and records holding facilities, interviews with persons associated with Point Vicente Seacoast Defense Sites or its operations, and personal visits to the site. All efforts were directed towards determining possible use or disposal of ordnance on the site. Particular emphasis was placed on establishing the types, quantities and area of disposal. Information obtained during this process was used in developing recommendations for further

actions at the former Point Vicente Seacoast Defense Sites.

1.4 Scope

This investigation focused on the potential that OE and/or CWM contamination could remain on the area of the former **Point Vicente Seacoast Defense Sites.** The DERP-FUDS project number is J09CA055802. This report presents the following:

- -History of Point Vicente Seacoast Defense Sites
- -Description and characterization of the immediate surrounding area
- -Real estate ownership information
- -Findings of visual site inspections
- -Confirmed ordnance presence

Project personnel used available records and site inspections of the Point Vicente Seacoast Defense Sites to evaluate the potential ordnance or chemical warfare material contamination.

2.0 PREVIOUS SITE INVESTIGATIONS

2.1 Corps of Engineers Documents.

The Los Angeles District of the Corps of Engineers prepared five investigations on real estate included in the **Point Vicente Seacoast Defense Sites** in support of the Defense Environmental Restoration Program (DERP)forFormerlyUsed Defense Sites (FUDS). The **Point Vicente Military Reservation And Fire Control Sites,** project number J09CA055800, is the INPR that instigated this Archive Search Report. Real estate parcels contained under this INPR are included in the 4 other INPRs listed as follows (see Appendix D-1, D-2, D-3, D-4, and D-5):

- Inventory Project Report for project no. J09CA055800, **Point Vicente Military Reservation And Fire Control Sites,** Rancho Palos Verdes, California, dated 15 October 1993.
- Inventory Project Report for site no. J09CA015500, **Nike Battery #55, Point** Vicente, Rancho Palos Verdes, California, dated 30 June 1993.
- Inventory Project Report for site no. J09CA054000, Palos Verdes Project, Palos Verdes, California, dated 10 June 1993.
- Inventory Project Report for site no. J09CA035900, **Palos Verdes VHF Control** Center, Palos Verdes, California, dated 30 October 1992.
- Inventory Project Report for site no. J09CA051300, **NORAD Center San Pedro Hill,** Palos Verdes, California, dated 1 I February 1992.

In addition to the OE potential identified at **Point Vicente Military Reservation And Fire Control Sites,** this INPR identified a containerized hazardous, toxic and radioactive waste project (CON/HTRW). This project consists of the removal of two = 500 gallon underground storage tanks and associated piping, with proximate soil sampling at Battery 240 on tract 8 of the Point Vicente Military Reservat on.

The **Nike Battery #55, Point Vicente** covers most of the Point Vicente Military Reservation -Tract #8. This INPR identified a containerized hazardous, toxic and radio active waste project (CON/HTRW) consisting of removing three abandoned fuel storage tanks and sampling and disposal of seven 55-gallon drums. Proximate soil sampling is to be included around these areas as well as in the area of the former paint storage shed, acid storage and fueling facilities as part of HTRW project. A building demolition/debris removal (BD/DR) project was also identified to prevent access to 2 vaults for the underground fuel tanks and 5 subterranean underground structures. These underground structures are assumed to be the base end observation bunkers for the Long Point Fire Control Station. This report recommended that the MCX at Huntsville make a final determination on the OE potential of the site based on the former Nike facilities.

The **Palos Verdes Project** covered the SCRradarsites included under the **Point Vicente Military Reservation And Fire Control Sites** INPR (tracts numbers: 7, 11, 15, and 17) and was excluded from further study.

The **Palos Verdes VHF Control Center** is the same project **as the NORAD Center San Pedro Hill,** and includes real estate that was part of tract 15 in the **Point Vicente Military Reservation And Fir e Control Sites.** This INPR identified no OE potential with this site. This report did however identified a CON/HTW at

the **Palos Verdes VHF Control Center,** on San Pedro Hill. This project consists of the removal of 11 transformers, 3 cooling towers, and one 1,000 gallon underground storage tank along with associated piping and proximate soil sampling. Asbestos is also present in some of the remaining buildings, but asbestos removal is not part of the BD/DR program.

The Los Angeles District is managing further investigation and work on these non-OE related aspects of Point Vicente Seacoast Defense Sites.

2.2 Other Reports

The archive search did not locate any additional environmental investigations or reports concerning Point Vicente Seacoast Defense Sites.

3.0 SITE DESCRIPTION

3.1 Land Use

3.1.1 **Location.**

The Point Vicente Seacoast Defense Sites were approximately 20 separate tracts of land situated on 378.40 acres in Los Angeles County, California (see Plates I and 2). The sites are dispersed across the Palos Verdes Hills which are approximately 21 miles south of Los Angeles and 15 miles west of Long Beach.

3.1.2 **Prior Site Use.**

Prior to DOD ownership, the land comprising Point Vicente Seacoast Defense Sites was undeveloped or being used predominately for agricultural purposes. Urbanization of the area was just beginning at the time of World War 11.

3.1.3 **Present Site Use.**

Currently the land comprising of the former Point Vicente Seacoast Defense Sites is used for a variety of purposes including residential, light commercial (both commercial and local government), agriculture, recreational park land, land slide mitigation, education and some is undeveloped. See Real Estate Table 5.0 for a more specific breakdown.

3.2 Climatic Data

The climate of the former Point Vicente Seacoast Defenses Sites is generally pleasant and mild throughout the year, primarily due to the nearby Pacific Ocean. No part of the site is more than 2-3 miles from the ocean and this close proximity greatly narrows the range of temperature extremes at the site compared to areas further inland. Abundant sunshine is the norm from spring through much of the fall, with most of the precipitation occurring during the winter months. Over 90% of the rainfall occurs in the period from November through April, based on rainfall records of Torrance, California, about five miles northeast of the center of the site. Winter rainfall results from long duration, low intensity cyclonic storms moving inland from the Pacific Ocean. The occurrence of thunderstorms or snowfall is extremely unusual. Snowfall has been observed only once in the past 50 years at Torrance, although snow can easily be seen at the higher elevations on the nearby San Gabriel and Santa Ana Mountains throughout much of the winter. The summers are dry with little rainfall from about May through October. Unless significant reservoir storage exists in a given watershed, area streams will go dry during the summer and fall periods.

Temperatures are usually pleasant, with daily high-low temperatures from the 40's to 60's in the winter and the 50's to 80's in the summer, as recorded at the Long Beach climatologic data collection station about 10-15 miles east of the Point Vicente Military Reservation. Summer temperatures can occasionally be severe, as demonstrated by the record high of 111°F occurring in October 1961. Temperatures well in excess of 100°F can occur during the spring, summer and fall months, and have been recorded in every month from April through November. However, these high temperatures are moderated by low relative humidifies and by westerly winds from the Pacific. Winter temperatures are mild, with the lowest temperatures normally still above freezing. The record low temperature for the area is 25°F occurring in January 1976.

Winds vary from about 5-7 miles per hour from the west through the year, except for MayJune when they are from the south. Wind gusts up to 54 miles per hour have been recorded in the area. Strong wind gusts are typically associated with strong Pacific storms coming onshore, rather than the "Santa Ana" winds that occur from the east during the fall or winter period. The Point Vicente Seacoast Defense Sites are situated on the Palos Verdes Hills and site topography varies from sea level at the coast line to nearly 1500 feet NGVD. Depending on the elevation and local topography of any portion of the site, temperatures and wind speed could vary somewhat from the climatological values summarized in TABLE 3.2.1.

TABLE 3.2.1
CLIMATOLOGICAL DATA FOR POINT VICENTE SEACOAST DEFENSE, CA

	TEMPERATURE(F)		PRECIPITATION		WIND VELOCITY	WIND DIRECTION
MONTH	AVERAGE DAILY MIN	AVERAGE MONTHLY MAX	MEAN	AVERAGE (Inches)	(mph)	
January	44.3	66.0	55.2	3.21	5.6	WNW
February	45.9	67.3	56.6	2.71	6.1	W
March	47.7	68.0	57.9	2.09	6.9	W
April	50.8	70.9	60.9	0.85	7.4	W
May	55.2	73.4	64.3	0.17	7.3	S
June	58.9	77.4	68.2	0.04	7.0	S
July	62.6	83.0	72.8	0.01	6.8	WNW
August	64.0	83.8	73.9	0.09	6.6	WNW
September	61.6	82.5	72.1	0.20	6.2	WNW
October	56.6	78.4	67.5	0.27	5.8	WNW
November	49.6	72.7	61.2	1.61	5.5	WNW
December	44.7	67.4	56.1	1.86	5.1	WNW
ANNUAL	53.5	74.2	63.9	13.33	6.3	WNW

Source: NOAA 1991, Local Climatological Data (temperature and wind) of Long Beach, California, and NWS1994,Precipitafion Data for Torrance, Los Angeles County, CA.

3.3 Geology and Soils

3.3.1 **Geology and Physiology**

The Point Vicente Seacoast Defense Sites are located in the Los Angeles Basin. This area is a basin which was once a sea floor where a great thickness of mud and sand accumulated. There is a northwest structural grain to the features of the basin.

Topographically, the basin is a lowland sloping gently toward the sea, also called a coastal plain. The coastal plain rises from the sea to elevations of a few hundred feet with a few scattered hills and mesas. The Palos Verdes Hills at the southwestern edge interrupt the otherwise smooth transition of the coastal plain to the sea. The Los Angeles Basin is enclosed on its landward sides by mountains rising abruptly thousands of feet.

The surface of the Los Angeles Basin is largely covered by stream-laid sand, gravel, and silt which hide the underlying bedrock. There are three principal groups of rocks which comprise the basin floor; old crystalline basement rocks, pre-basin sedimentary rocks, and the basin fill material. The basement rocks in the site area are metamorphic in nature. These rocks are called the Catalina Schist and are unusually high in sodium content and are typically a bluish color. Younger than these rocks, but older than the basin fill sediments are the late Cretaceous to lower Miocene deposits. They are layers of conglomerate, sandstone, and shale aggregating a total thickness of nearly 17,000 feet. After these deposits, volcanic material built up in the basin about 3,000 feet and near-surface intrusives added about 10,000 more feet. The basin was then affected by uplift and erosion

before renewed subsidence led to additional deposition of thick sections of Miocene, Pliocene, and Pleistocene sedimentary beds, all of marine origin.

Structurally, the Palos Verdes Hills are a doubly plunging anticline uplifted along a fault on the northeast side. A small area of Catalina Schist is exposed in the core of this anticline The most widely exposed rock unit is the Monterey Formation, a thinly bedded brown-towhite shale which covers 90 percent of the surface.

Landslides are a hazard in the site area also. The seaward sloping soft, thinly bedded, incompetent shale layers are underlain by an unstable, clay-rich, volcanic ash and water mixture. The sea is constantly undercutting and steepening the slope. Landslides have occurred in the past and continue to occur within the Palos Verdes Hills (Sharp 1976).

3.3.2 **Soils**

The soils of the Point Vicente Seacoast Defense Sites are all basically the same in composition.. However, there are two distinct topographies to deal with. In one area the surface slopes only slightly at 2 to 9 percent, in the other area the surface slopes at 30 to 50 percent. The soils are relatively to a maximum depth of 50 inches. The soil is composed of dark gray, neutral, clay surface layer about 20 inches thick. The subsoil is dark grayish-brown, strongly calcareous clay. The soil is commonly underlain by partially weathered calcareous soft shale or sandstone. Corrosivity of the soil to uncoated steel pipe is high. Erosion is a severe hazard in the steeply sloped areas (SCS 1969).

3.4 Hydrology

3.4.1 **Surface Water**

As mentioned earlier, topography of the site is rugged with significant variations in elevation over short distances. This situation is conducive to flash flooding and high stream flow velocities.. Runoff from storm events is rapid, and could contain high quantifies of sediment and debris. Runoff from the Palos Verdes Hills is by many relatively small streams with steep slopes. However, the many specific sites within the overall Point Vicente Seacoast Defense Sites boundaries do not contain perceptible surface streams. Drainage for any specific site appears to be by overland flow to nearby streams or canyons and then directly to the Pacific Ocean. Site flooding is possible, but should be shallow and of very short duration.. No hydrologic data is available for any of the small streams within the area.

3.4.2 **Ground Water**

The Los Angeles Basin is geologically separated by surface-water drainage divides and ground water divides. These are the mountains which surround the area. The basin is filled with varying amounts of alluvial fill. These alluvial deposits form the major aquifers and store relatively large quantities of water. This basin formed very slowly and the deposits range in thickness from a few thousand to over 10,000 feet.

In almost all basins, the general vertical sequence of sedimentary units is, in ascending order, sediments deposited before the formation of the Basin and Range topography, lower basin and upper basin fill, and stream alluvium. Each of these hydrologic units has different physical, geologic, and hydrologic properties largely because of differences in depositional environment and source area of the sedimentary material (Sun and Weeks 1991).

3.5 Ecology

The information provided for this site was compiled from the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game Natural Diversity Data Base (NDDB).

The following federally-listed species may occur in the vicinity of the Point Vicente Seacoast Defense Sites: Palos Verdes blue butterfly (Glaucopsyche lygdamus palosverdesensis), endangered; pacific pocket mouse (Perognathus longimembris pacificus), endangered; western snowy plover (Charadrius alexandrinus nivosus), threatened; peregrine falcon (Falco peregrinus), endangered; brown pelican (Pelecanus occidentalis), endangered; costal California gnatcatcher(Polioptlacalifomica californica), threatened; California least threated; (Sterna antillarum browni), endangered; salt marsh bird's-beak (Cordylanthus maritimus ssp. maritimus), endangered; and Lyon's pentachaeta (Pentachaeta lyonii), proposed endangered.

The NDDB reported that the following state-listed species occurs in the vicinity of the Point Vicente Seacoast Defense Sites: Mohave Tui chub (Gila bicolor mohavensis), endangered; beach spectaclepod (Dithyrea maritima), threatened; California least tern,, endangered; Mexican flannelbush (Fremontodendron mexicanum), rare; and Lyon's pentachaeta, endangered.

No additional information on the occurrence of rare or endangered species or natural communities is known at this time. This does not mean that other state or federally-listed species may not be present within the areas of interest. An on site inspection by appropriate state and federal personnel may be necessary to verify the presence, absence or location of listed species, or natural communities if remedial action is recommended as part of the final ASR.

3.6 Demographics

3.6.1 **Centers of activity.**

The **Point Vicente Seacoast Defense Sites** are generally scattered around the city of Ranch Palos Verdes, California, located in Los Angeles County. This is a residential community, though it does have a shopping district and restaurant area. The parks and recreational areas includes ball fields, tennis courts, camping, hiking, and community centers.

3.6.2 **Business and Industry Profile.**

The County of Los Angeles is an economic diverse community. The community supports agriculture, construction, manufacturing, retail, finance and service industries. Following is an industry breakdown, based on a total of 215,937 establishments in Los Angeles County: manufacturing, 8.8%; agriculture, 0.8%; service, 39.8%; trade and finance, 39.8%; construction, 5.9%; and other non-agriculture, 4.9%. The number of establishments is down from the 1991 county business pattern by almost 3,000 establishments.

3.6.3 **Population density.**

Location	Population	Area (Square Miles)	Population Density (Square Miles)
Rancho Palos Verdes	41,659	N/A	N/A
Los Angeles County	8,295,900	4,070	2,038

3.6.4 **Types of Housing.**

Housing in Rancho Palos Verdes is composed of both single family and mulfi-family dwellings. The median value of 14,943 specified owner-occupied housing units in Rancho Palos Verdes is $500,001.

3.6.5 **New Development in the Area.**

In the city of Rancho Palos Verdes, although specific names of new industry were not available, new businesses are being drawn into this area.

3.6.6 **Typical Cross Sections of the Population.**

Rancho Palos Verdes	**Percentages**
White	76.0
Black	1.9
American Indian, Eskimo or Aleut	0.2
Asian or Pacific islander	20.5
Other	1.2

The percent of the total population (of any race) that is of Hispanic origin is 5.3 % in Rancho Palos Verdes area.

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Rancho Palos Verdes, California
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4.0 SITE HISTORY

4.1 Historical Site Summary

The **Point Vicente Seacoast Defense Sites** consisted of about 20 tracts of land in close proximity to one another along the Pacific coastline and the Palos Verdes hills as shown on the site map (see Plates 1 and 2). The War Department began acquiring these parcels beginning in 1942. They secured them as part of the **Harbor Defenses of Los Angeles (HDLA).** The HDLA was a coordinated system of several different and highly specialized missions headquartered at Fort MacArthur, several miles down the coastline. Generally, these systems consisted of locating the position of enemy targets both on the surface (ships) and in the air (planes). The defense system then directed artillery or anti-aircraft fire toward them or scrambled fighter squadrons to intercept them. The Point Vicente Seacoast Defense Sites included: gun emplacements (permanent, temporary and prepared positions for roving batteries), both visual and radar Fire Control Stations, searchlights, an Aircraft Warning Service (AWS) and a Very High Frequency (VHF) Fighter Control System. Many of the tracts were only cable easements or road right of ways between the fire control stations and the gun emplacements. The HDLA was under the 3rd Coast Artillery command stationed at Fort MacArthur. A breakdown of the mission assigned to each tract and other pertinent details is included in the following paragraphs.

Tract #1 - **Palos Verdes Crest Road Right-of-Way**

This site served as a right of way access road to several VHF sites along the Crest Road. The lease on this tract was terminated on 30 June 1952 (Corps of Engineers, U. S. Army 1960).

Tract #2 - **Hill 1076/ VHF SCR 564-"Homer" Direction/Finder Station**

Located on this site was a SCR (Set Complete Radio)[1] 564 station of the VHF program. The station signaled a "homing" bearing for pilots returning from a interception mission (War Department 1943). The site is also referred to in historical documents as site 1H. The lease on this tract was terminated on 15 November 1946 (CEUSA 1960).

Tract #3 - **VHF Fighter Control Center or Signal Corps School**

The VHF Fighter Control Program consisted of elements of the Army Air Corps and Army Signal Corps. The VHF system controlled the interception of enemy aircraft by fighter pursuit planes once the aircraft warning service established the location of the enemy target. The radar system was designed to guide and direct Air Corps fighter aircraft in defense of Los Angeles. The Fighter Control Center was the nerve center of the VHF operation. It alerted the interceptor squadrons at Torrance Army Air Field, which was less than 3 miles to the northwest. The VHF Fighter Control Center then plotted and tracked the progress of the enemy raiders as well as the interceptor squadrons. The site consisted of the Area Operations Center (SCR 561), a SCR 562-Transmitter, and an SCR 563-Receiver (Fighter Command School 1942). The site is also referred to in historical documents as Construction 210, Hill 1290, site 1Z, 1U, and 1R. The termination date of the lease on this tract is unknown.

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[1] SCR is frequently referred to as being a Sea Coast Radar, a Signal Corps Radio or variations there of in

various secondary source documents. SCR (Set Complete Radio) was a standard Signal Corps abbreviation that refers to various types of systems.

Tract #4 - **VHF Camp Site**

This area became a base camp and was used by troops from VHF Fighter Control Center and other nearby sites (War Department 1943). Specific details of the number and size of the barracks buildings was not available. The site is also referred to in historical documents as site 240.01. The lease on this tract was terminated 25 July 1947 (CEUSA 1960).

Tract #5 - **Hill 1322 / VHF SCR 565-"Fixer" Direction/Finder Station**

Situated on this tract was a SCR 565 "Fixer" station (War Department 1943). The purpose of the facility was to take bearings on the interceptor squadron to get a "fix" on their locations (Fighter Command School 1942). The site is also referred to in historical documents as site 7K3. The lease on this tract was terminated on 25 July 1947 (CEUSA 1960).

Tract #6 - **Hill 1455 / VHF SCR 565-"Fixer" Direction/Finder Station**

This was the location of another SCR 565 =Fixer" station, and was also referred to in historical documents as site 1K1 (War Department 1943, Fighter Command School 1942). The lease on this tract was terminated on 15 November 1946 (CEUSA 1960).

Tract #7 - **SCR-296 Site No. 3 - Palos Verdes Hills**

This tract was acquired for use as a SCR 296 site. The SCR 296 was the standard fire control radar used by coast artillery units during World War 11. It consisted of an antenna mounted on an ~ 100' tower commonly disguised as a water tower. The transmitter, receiver, generators and controllers were located in a few adjacent buildings. The SCR 296 had the capability to locate and track surface targets such as ships up to a range of 100,000 yards (Malone 1989). Each SCR 296 site was associated with a specific permanent gun emplacement. Site No. 3 provided radar fire control information for the two 16 inch guns at Battery #127 - White Point (Berhow 1992 [2]). The lease on this tract was terminated 30 June 1952 (CEUSA 1960).

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[2]Included in the Mark Berhow reference are reproductions of primary source documents entitled "Report of Completed Works - Seacoast Fortification" dated with original construction complete dates.

Tract #8 - Point Vicente Military Reservation

The site was acquired in 1942 for the purpose of the construction of Battery #240, also known as Harry C. Barnes. This site was comprised of two 6 inch coastal defense gun emplacements which became operational in October 1943. The guns were soon phased out for more favorable anti-aircraft weapons. During construction, two 40mm anti-aircraft guns, and two .50 caliber anti-aircraft machine guns were emplaced on the site (Berhow 1992), though the exact location was not determined. It is highly possible that a portion of this site was also used on an emergency basis as Battery No. 3, a prepared position for a roving 155 mm gun batteries, as well as a searchlight location immediately following the attack on Pearl Harbor.

After World War 11, portions of the site were transferred to the U.S. Coast Guard as part of the Point Vicente Lighthouse installation. The Army retained the majority of the site. During the 1950's and 1960's, the site was home to the administration and launch facilities for both the Nike Ajax and the Nike Hercules anti-aircraft missiles. It was designated as LADA (Los Angeles Defense Area) #55, a part of the air defense system of Los Angeles. The Army placed the integrated Fire Control (IFC) station for the missiles several miles away in the Palos Verdes hills. A known distance rifle range was constructed during this time frame. By the early 1970's the Nike defense system was obsolete. The remainder of the site was released from the Army to local government bodies in pieces in 1978 and 1979 (Berhow & Stokes n.d.).

Long Point Fire Control Station

This tract, adjacent to Tract #8, was not part of the property acquired for the Point Vicente Seacoast Defense Sites. The site was already part of the real estate holdings for Fort MacArthur. It housed a series of six visual base end stations[3] to direct artillery fire for the large guns emplaced at Fort MacArthur. These earth covered observation bunkers were completed in the early 1930's (Berhow 1992).

Tract #9 - **Long Point Military Reservation**

The only details available about this tract indicate that it accommodated Battery #5 - Long Point. Battery #5 was comprised of two 155 mm guns on Panama mounts (Berhow 1992). These weapons were of a temporary nature, built to defend the Point Vicente area while Battery #240 at Point Vicente Military Reservation on Tract #8 was under construction. The completed battery was transferred to HDLA on 15 May 1943. The lease on this tract was terminated on 6 October 1944 (CEUSA 1960).

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[3]Visual base end stations were earth covered bunkers used for visual surveillance by coastal observers. When the enemy was spotted, these visual Fire Control Stations (FCS) would triangulate the position through coordination with another FCS and direct artillery fire.

Tract #10 - **SCR-296 Site No. 1 - Point Vicente**

This tract was acquired for use as the SCR 296 site for the two 6 inch guns at Battery #240 - 37 Point Vicente (Berhow 1992). The site was transferred to HDLA on 19 January 1944 and the lease was terminated on 30 June 1952 (CEUSA 1960).

Tract #11 - **Fire Control Site No. 3 - Point Vicente**

This was a visual Fire Control Station consisting of two, double tier underground bunkers about 90' apart overlooking the coast line. The bunkers were manned by coast artillery observers and were linked directly to a firing battery by underground cabled telephone lines. The mission of this Fire Control Station was to support the gun emplacements #127 at White Point, #241 at Fort MacArthur-Upper Reservation, and #128 at Bolsa Chica (Berhow 1992). The lease on this tract was terminated on 30 June 1950 (CEUSA 1960).

Tract #12 & 12A - **Utility Right-of-Way**

These two tracts served as a cable easements or utility line right-of-ways for the adjacent tract 3, VHF Fighter Control Center. The date the lease on this tract was terminated is unknown.

Tract #13 - **Unknown, Probable VHF System**

Investigation of historical records did not reveal the mission assigned to this site. It was in close proximity to the tracts associated with the VHF Fighter Control System and is assumed to have been associated with them. Access to the site was via the Chadwick private boarding school. The lease on this tract was terminated on 6 October 1944 (CEUSA 1960).

Tracts #14 & 14A - **Utility Right-of-Way - SCR 296 #1 & Fire Control Station #3**

These two tracts served as a cable easements or utility line right-of-ways for the adjacent tracts 10 and 11. The lease on these tracts was terminated on 30 June 1952 and 30 June 1946 respectively (CEUSA 1960).

Tract #15 - **SCR-682 San Pedro Hill**

This tract was acquired for use as a SCR 682 surveillance radar site. The SCR 682 unlike the SCR 296, was able to track multiple targets at one time over a larger area. The data was also easier to interpret. This system was also lightweight. It could be converted to a mobile unit which was designated as the SCR 582. The SCR 682

could be used to direct fire for the mobile 155 mm guns and in conjunction with the SCR 296 for target acquisition (Malone 1989).

The site was transferred to HDLA on 20 March 1944. The lease on this tract was terminated on 20 February 1947 (CEUSA 1960). The site was reacquired by the government on 26 March 1959 for a NORAD(NORth American Air Defense) radar facility operated jointly by the U.S. Army, U.S. Air Force and the Federal Aviation Administration (FAA). The site was transferred to the Coast Guard for joint use with the FAA on 31 July 1981. See inventory Project Report (INPR) #J09CA051300 in Appendix D-5 for further information.

Tract #16 - **Utility Right-of-Way**

This site served as a utility right of way for the SCR 682 site. The lease on this tract was terminated on 31 August 1947 (CEUSA 1960).

Tract #17 - **SCR-296 Site No. #4 (San Pedro Hills)**

This 4.885 acre site was a proposed location for another SCR 296 (Corps of Engineers 1944). However, site #4 was not constructed here but was eventually built on the Fort MacArthur Upper Reservation (Berhow 1992).

Fire Control Station No. 4 - Sea Bench

Like the Long Point Fire Control Station, Sea Bench Fire Control Station #4 was a part of the real estate holdings for Fort MacArthur and hence was not acquired for the Point Vicente Seacoast Defense Sites. It housed a series of the six 1930's era earth covered observation bunkers to direct artillery fire for the large guns emplaced at Fort MacArthur. During the World War 11 buildup, a three tier observation bunker to support gun batteries #240 at Point Vicente, #127 at White Point and #241 at Fort MacArthur-Upper Reservation was added amongst the older base end stations. It appears that this site was also used on an emergency basis as Battery No. 1, a prepared position for a roving 155 mm gun battery immediately following the attack on Pearl Harbor (Berhow 1992).

Tract #18B - **Easement-Cable Line**

This site served as a cable easement for Fire Control Station #4 at Sea Bench. The date when the lease on this tract was terminated is unknown.

Tract #19 - **West Sea Bench Military Reservation**

The archive search did not locate any formal documentation of the details of this site. The site inspection located what appeared to be four mount locations and a couple of areas where supporting structures had been located. These mounts might have been searchlight or gun emplacements. If they were gun emplacements the type of gun is unknown. The site was not tied into any of the identified fire control stat ons, but a visual line of fire weapon could have been possible. The lease on this tract was terminated on 19 August 1946 (CEUSA 1960).

Tract #20 - **X-37 AWS Camp Site**

There was meager historical documentation this tract. It appears to have been part of the Aircraft Warning Service (AWS). Like the VHF program, this was another joint Air Corps/Signal Corps program designed to detect incoming enemy aircraft. The exact mission of the site was not determined. A site plan located a series of barracks buildings and other support structures (Corps of Engineers, U. S. Army 1944). The lease on this tract was terminated on 30 September 1944 (CEUSA 1960).

Tract #21 - **Permit, Cable Line**

This tract contained no land. It was a permit for cable right of way from Point Vicente to White Point Military Reservation along the Palos Verdes Coast Highway, Pacific Avenue and 25th Street (CEUSA 1960). The date when the permit was terminated is unknown.

Tract #22 - **Access Road Permit**

This tract contained 6.24 acres of land that was included in Tract 10. When the lease for Tract 10 was terminated on 30 June 1952, an indefinite term access road permit was written on 1 July 1952. The date when the permit was terminated is unknown.

Portuguese Point and Inspiration Point

Formal historical documentation on whether or not these sites were legally acquired by the War Department was not found. It is possible that Portuguese Point was used on an emergency basis as Battery No. 2 immediately following the attack on Pearl Harbor. Battery No. 2 consisted of a roving 155 mm gun and possibly a searchlight (Berhow 1992).

4.1.1 **Summary of OE Activities**

At most of the tracts making up the Point Vicente Seacoast Defense Sites, the only OE related activity associated was the use of small arms (.30 caliber rifle and carbine, and .45 caliber pistol) to secure the position. Three tracts were identified as having coastal artillery or anfi-aircraft weapons present. These were tracts #8, #9, and possibly #19.

Tract #8 - **Point Vicente Military Reservation** had battery #240, which consisted of two 6inch guns, two 40mm guns, and two .50 caliber machine guns. Between the 1950s and 1970s, Nike Battery Site LA 55 was located at Point Vicente Military Reservation. Site LA 55 had both the Nike Ajax missiles, with high-explosive warhead and the Nike Hercules with nuclear and high explosive warhead capability. A known distance rifle range (.30 caliber rifle and carbine) was constructed on the site during this period.

The second tract with known artillery weapons was Tract #9 - **Long Point Military Reservation.** This property had two 155 mm guns emplaced on Panama mounts.

The third possible ordnance related tract was Tract #19 - **West Sea Bench Military Reservation.** Historical records could not validate the type or if weapons were emplacement here. Based on the four mounts still present, a visual fire anfi-aircraft weapons such 40mm guns or .50 caliber machine-guns seems most plausible.

In addition and permanent emplacements, the Army prepared positions for roving 155 mm gun batteries at **Portuguese Point, Sea Bench** (Fort MacArthur property), as well as at **Point Vicente.**

4.1.2 **Summary of CWM Activities**

The archives search did not locate any documentation relating to CWM activities at any of the Point Vicente Seacoast Defense Sites. There is no evidence of chemical warfare training ever being conducted or chemical warfare materials ever being stored, used or disposed of at Point Vicente Seacoast Defense Sites.

4.1.3 **Certificates of Clearance**

Investigation of historical records did not reveal any certificates of ordnance clearance, decontamination or dedudding associated with any of the Point Vicente Seacoast Defense Sites.

4.2 Review of Historical Records

The research methodology for the archives search report was concentrated in three areas:

- locating documentation concerning military use of the site
- compiling the types, quantifies and probable locations of military ordnance items
- collecting real estate in formation

All in-text citations of author and date are fully referenced alphabetically in Appendix A along with the appendix location of the document itself.

The locations listed below were searched for records relating to OE/CWM activities at Point Vicente Seacoast Defense Sites. Notes on records reviewed follow each entry. At the National Archives, Regional Archives, and Federal Records Center the research team examined the following record groups (RG) as they were available and as initial inquiry led the researchers to believe they might contain useful information.. At other repositories,

the research team used finding aids and records managers to locate documents relevant to the team's research. Complementary documents on the Point Vicente Seacoast Defense Sites that were gathered and reviewed, but not specifically used in preparation of this ASR, will be stored with all the original ASR documents.

RG 77 - Records of the Office of the Chief of Engineers
RG 107 - Records of the Office of the Secretary of War
RG 160 - Records of the Headquarters Army Service Forces
RG 165 - Records of the War Department General and Special Staffs
RG 175 - Records of the Chemical Warfare Service
RG 269 - Records of the General Service Administration
RG 270 - Records of the War Assets Administration
RG 291 - Records of the Property Management and Disposal Service
RG 338 - Records of the United States Army Commands
RG 342 - Records of U.S. Air Force Commands and Activities
RG 392 - Records of the United States Army Coast Artillery Districts and Defenses
RG 394 - Records of the U.S. Army Cont nental Commands
RG 407 - Records of the Adjutant General's Office

National Archives
8th and Pennsylvania
Washington, D.C. 20408
POC: Mr. Richard Peuser
202-501-5671

- Record Group 165
  - Entry - installations Branch, 1914-1946
    - Boxes 54-57. Material on evaluations of World War II construction for radar units (SCR and VHF).
- Record Group 392
  - Entry - Harbor Defenses of Los Angeles
    252 Record Cards. These area general correspondence on routine matters, purchase orders, and personnel orders.
- Record Group 407
  - Entry - Operations Branch, Special Projects, Harbor Defense, 1929-48 Annexes to the Harbor Defenses of Los Angeles, 1933-44. These annexes contain a wealth of informati on and follow a standard format consisting of the following:
  - Annex A - Armament. Section I - General. This includes the mission of the harbor defense, the tactical organizations listing the armament in order of tactical importance. Section 11 - Seacoast Artillery. This includes a list of batteries, caliber and model of guns, mounts, range of guns, location, status, ammunition allowances, was reserve ammunition. Section III - Miscellaneous. This includes defenses against motor torpedo boats, information on protective concealment, Government-owned or leased reservations.
  - Annex B - Fire Control. Exhibits include arcs of view for fire control for each battery, location of datum points, fire control sites, both visual and radar, and related items.
  - Annex C - Seacoast Searchlights. Included arcs of illumination for each light, tactical of seacoast searchlights.
  - Annex D - Underwater Defense. Includes among other items, locations of mine fields, locations of mines within fields and related topics.
  - Annex E - Antiaircraft Artillery (Harbor Defense). This includes a location map for all anti-aircraft defense elements.
  - Annex F - Gas Defense. Particulars relating to the harbor defense's protection against poison gas attack are provided.

- Annex G - Equipment. Contains details on equipment available and/or required.
- Annex H - Real Estate Required. Self explanatory.

National Archives 11
8601 Adelphi Road
College Park, MD 20740
POC: Mr. Ken Schlessinger
301-713-7250

- Record Group 77
  - Entry 1011 - Security-Classified Subject Files, 1940-45
    - Box 8-11 - VHF program, 1940-45
    - Box 18-20 - VHF program, 1940-45
    - Box 22-25 - VHF program, 1940-45
    - Box 90-93 - AWS program, 1940-45
    - Box 96-99 - AWS program, 1940-45
    - Box 533 - Palos Verdes
    - Box 534 - Fort MacArthur
    - Box 540- Palos Verdes
    - Box 541 - Fort MacArthur
    - Box 657 - Fort MacArthur
    - Box 688-690 - AWS program, 1940-45
  - Entry - Harbor Defense Files, 1918-1945 (Decimal File)
    - Box 71-74 - Los Angeles Harbor Defense
- Record Group 107
    - Entry 102 - Project Decimal File, 1943-46
      - Box 105-107 - Harbor Defenses of Los Angeles
- Record Group 269
  - Entry NN4-251-85-25 - Real Property Disposal Case Files
    - Box 8-11 - Los Angeles/Palos Verdes
- Record Group 270
  - Entry UD/15
    - Box 18-20 - Los Angeles

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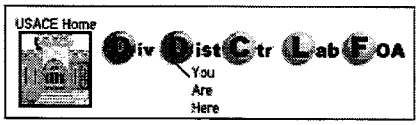

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Ordnance and Explosives
Chemical Warfare Material
Archives Search Report
FINDINGS
Point Vicente Seacoast Defense Sites
Rancho Palos Verdes, California
Los Angeles
Project Number - J09CA055802

5.0 REAL ESTATE

5.1 Confirmed DOD Ownership

The former Point Vicente Seacoast Defense Sites consisted of approximately 20 separate tracts of land totaling 378.40 acres. The Real Estate Table 5.0 starting on page 5-2 gives a detailed breakdown. This acreage does not concur with the real estate figures stated in the INPR. The discrepancy is the result of an erroneous totaling of the site acreage and the omission of the acreage for Tracts 3, 12, 12A and 18B. These tracts were removed from the real estate maps between the final Audit map of 1949 and the update in 1960. This is discussed in section 4.4.2.2 for further details. The leases for the majority of the sites were terminated between October 1944 and June 1952. Lease termination dates on each tract are discussed in section 4.1. The Army released the last pieces of the project in the late 1970s. Based on a review of available real estate documents, Point Vicente Seacoast Defense Sites were released from the military with no restrictive covenants or land use restrictions.

5.2 Potential DOD Ownership

The archive search did not identify any addition areas of potential military usage except for perhaps Portuguese Point and inspiration Point. No formal real estate documentation was found that either of this sites were legally acquired or leased by the Department of the Army. It appears that at least one of them, Portuguese Point, was used on an emergency basis as Battery No. 2. This battery was a prepared position for a roving 155 mm gun as well as a searchlight location. Its usage probably followed immediately after the attack on Pearl Harbor.

5.3 Significant Past Ownership Other than DOD

The investigation of Point Vicente Seacoast Defense Sites revealed no significant past ownership relating to ordnance or chemical warfare material. The Sea Bench and Long Point Fire Control Station were both part of Fort MacArthur property holdings and are not considered to be directly part of this project. The other areas associated with the Point Vicente Seacoast Defense Sites were obtained from development holding companies (Palos Verdes Corporation and Filorium Corporation) except for a cable permit was obtained from the County of Los Angeles. The properties were acquired by a Declaration of Taking or by leases.

5.4 Present Ownership

The current property owners of the former Point Vicente Seacoast Defense Sites include the city of Rancho Palos Verdes, Los Angeles County, Long Beach Coast Guard Station (I (11th District), Department of the Transportation, U.S. Coast Guard, the Palos Verdes Peninsula Unified School District, land development trusts and numerous private residential property.

Real Estate Table 5.0 - Point Vicente Seacoast Defense Sites

Tract	Fee	Lease	Lesser	Tract Name/Description of Army Use	Current Site Use
1	-	38.912	-	**Palos Verdes Crest Road Right-of-Way**	Road
2	-	9.212	-	**Hill 1076 / VHF SCR 564-"Homer" Direction / Finder Station**	Residential
3	-	97.311	-	**VHF Fighter Control Center or**	Residental and light

				Signal Corps School	industrial (radio towers)
4	-	15.28	-	**VHF Camp Site**	Rolling Hills High School and Palos Verdes Peninsula Unified School District Maintenance yard.
5	-	11.077	-	**Hill 1322 / VHF SCR 565-"Fixer" Direction/Finder Station**	Residential
6	-	8.453	-	**Hill 1455/ VHF SCR 565-"Fixer" Direction/Finder Station**	Residential
7	-	4.357	-	**SCR-296 Site No. 3 - Palos Verdes Hills**	Residential
8	107.77	-	-	Point Vicente Military Reservation	**Battery 240**-Coast Guard Storage; **Rifle Range**-Point Vicente Park; **Nike Admin.** RPV City Hall; **Nike Launch**-RPV maintenance storage yard
	-	-	-	**Long Point Fire Control** - 0.72 acres attached to Fort Fort MacArthur	Undeveloped, RPV city property
9	-	25.775	-	**Long Point Military Reservation**	formerly " Marine Land", currently undeveloped.
10	-	25.903	-	**SCR-296 Site No. I - Point Vicente**	Residential
11	-	2.344	-	**Fire Control Site No. 3 - Point Vicente**	Residential
12	-	0.06	-	**Utility Right-of-Way - VHF FCC,** formerly Parcel 2 of tract 12	Residential
12A	-	0.02	-	**Utility Right-of-Way** - VHF FCC, formerly Parcel 1 of tract 12	Residential
13	-	5.850	-	**Unknown, Probable VHF System**	Residential
14	-	0.82	-	**Utility Right-of-Way - SCR 296 #1**	Residential
14A	-	0.11	-	**Utility Right-of-Way - FCS #3**	Residential
15	-	7.00	-	**SCR-682 San Pedro Hill**	Depart. of Trans., Coast Guard & FAA Communication facilities
16	-	0.522	-	**Utility Right-of-Way**	Residential
17	-	-	-	**SCR-296 Site No. #4 (San Pedro Hills)** 4.885 acre site was proposed but was eventually built on the Fort MacArthur Upper Reservation	Marymount School
18	-	-	-	**Fire Control Station No. 4 - Sea Bench** 1.451 acres attached to Fort MacArthur.	Undeveloped
18B	-	-	0.23	**Easement-Cable Line - Fire Control** Station No. 4 -Sea Bench	Undeveloped
19	-	3.541	-	**West Sea Bench Military Reservation**	Undeveloped
20	-	13.855	-	**X-37 AWS Camp Site**	Agriculture and undeveloped
21	-	-	no area	**Permit-Cable Line** along Palos Verde Hwy. between Point Vicente M R. and White's Point M.R.	Not Applicable
22	-	-	-	**Access road permit** (6.24 acres	Road

				was originally part of the tract 10 lease but was reduced to a lesser interest)	
Sub-Total	107.77	270.40	0.23	**Total Acreage used for Point Vicente Seacoast Seacoast = = = >**	378.40 acres
				Not included in the above:	
-	-	-	-	**Portuguese Point & Inspiration Point**	Undeveloped

6.0 SITE INSPECTION

6.1 General Procedures and Scope

The purpose of the ASR site inspection was to characterize OE potential based on ascertaining ordnance presence or disposal at the Point Vicente Seacoast Defense Sites. Verbal permission was obtained by the present land owners prior to visiting the area. The inspection was limited to visual, non-intrusive methods (i.e. no digging for or handling of potential OE). A site safety plan was developed and followed by the team to prevent injury during the inspection (see Appendix L-1). The inspection team consisted of the following St. Louis District Corps of Engineers personnel: Randy L. Fraser, Larry V. Baker and Randal S. Curtis. They performed site surveys of the former Point Vicente Seacoast Defense Sites on 6 February 1996. A detailed account of the visit is contained in Appendix L-2. Subparagraph 6.2 contains a synopsis of the site visits. Appendix I contains current site photographs.

6.2 Site Inspection Synopsis.

The ASR inspection team arrived at the former Point Vicente Seacoast Defense Sites on 6 February 1996 in the morning. The team was joined by Tom Thomas of Coastal Defense Study Group and Fort MacArthur Museum Association and Doland Cheung of the Los Angeles District of the Corps of Engineers (CESPL). They had made arrangements to meet at 0930 at the city hall of Rancho Palos Verdes. The city hall is on former **Tract #8 - Point Vicente Military Reservation.** The city hall buildings are the original administration and launch facilities for the former LADA Nike Battery #55. The team met with Seaman Sandra Anderson of the Long Beach Coast Guard Station (I 11 th District) who had the keys for the Battery #240 bunkers. The gun mounts for the two 6 inch guns were easily identified as were the ready magazines outside. The bunkers in between the two gun mounts were explored but did not reveal any OE hazards. Mr. Cheung located the two underground storage tanks that CESPL is planning to have removed this fiscal year. Seaman Anderson parted company with the group. The team then looked at the observation bunkers for the **Long Point Fire Control Station** and the launch facilities for the Nike battery that was located in the area. Before leaving the upper portion of tract #8, the team met with Carolynn Petru, the Planning Administrator for the City of Rancho Palos Verdes. Following earlier telephone conversations, she had checked with the public works engineer and with Charles Abbott & Associates (who did the city's design work prior to 1990) for any additional material that might be of use to the ASR team. She did not turn up any pertinent information.

The team continued the site inspection by visiting each of the individual areas in a clockwise direction. **Tract #10 - SCR 296 Site No. 1 - Point Vicente, Tract #11 - Fire Control Site No. 3 -Point Vicente, Tract #7 - SCR 296 Site No. 3 - Palos Verdes Hills, and Tract 32 Hill 1076 / VHF SCR 564"Homer" Direction/Finder Station** are all in developed residential areas and no signs of the past military use was evident. Tract 3 is mostly covered by light commercial and residential property. However, the location of the **VHF Fighter Control Center (SCR 561)** building is an open field with a slight depression. There are several radio towers in the area also. The team made a reconnaissance of the Chadwick Seaside School which was the old access to tract 13. Going around from the other side, the team found tract 13 to be a residential neighborhood also. The use of tract 13 was not determinable from historical documents. Given its distance inland and the fact that it is not on top of a hill, it seems very unlikely to have had any anti-aircraft or coastal artillery weapons placed on it. it's proximity to the rest of the VHF Fighter Control sites leads one to suppose that it was associated with those facilities, but no evidence was found during the site survey to indicate the military's use of the parcel.

The team than visited Del Cerro Park which was not included as part of the Point Vicente Seacoast Defense Sites but it was the location of the **LADA Nike Battery 55-Integrated Fire Control (IFC) site.** It is a grass covered park with private residents Banking it. No structures remained but some of the earthwork was discernable. **Tract #4 - VHF Camp Site** is currently the Palos Verdes Peninsula Unified School District Maintenance yard and the site of a local high school. The foundations of a few of the camp buildings are

discernable and some of the maintenance yard structures appear to have been of military origin. The team talked with a member of the facility who had been there since 1988 but who never recalled there being any OE related items found.

The team did not visit **Tract #5 - Hill 1322 / VHF SCR 565-"Fixer" Direction/Finder Station or Tract #6 - Hill 1455 / VHF SCR 565-"Fixer" Direction/Finder Station.** They are in a gated community. The roadway to them (Palos Verdes Crest Road) was restricted by security guard who denied the team access to these areas. Since no potential OE related hazard was identified with either site, it was decided to disregard them from the site visit. **Tract #16 - SCR-682 San Pedro Hill** was omitted from the site visit also since it to had no potential OE related hazard identified and the most direct access was from the gated road.

The team returned to the lower portion of **Tract #8 - Point Vicente Military Reservation** to look at the former Known Distance Target Range. The range is currently part of the Point Vicente Park. The park is currently being used as a nature area, crisscrossed with bike trails and with a whale watching location on the coast. There were about a dozen or so cars in the parking lot. The small arms range has been left in a "natural" (unmaintained) state, though the berms are clearly distinguishable beneath the overgrown grasses and bushes. The range set up was not obvious but it seemed to consist of berms placed at known distances from the firing line. The team traversed the berms but did not pace off the distances between them or locate any signs of OE debris. No other signs of the past military use except for the earthwork was denoted. Doland Cheung left the group at this point to return to the CESPL office. **Tract #9 - Long Point Military Reservation** was immediately adjacent to this area. All signs of the 2 Panama gun emplacements and the associated structures were removed when the site was developed into Marine Land. Marine Land has been closed for several years and the site remains idle.

The team continued on to **Fire Control Station No. 4 - Sea Bench.** Both the 1930s and World War II era observation bunkers were all still present. A couple of the bunkers were actively being used as "housing" for vagrants who were disturbed by the inspection team's presence. At **Tract #20 - X-37 Camp Site** (West Sea Bench area) the team met with James Ishibashi. Mr. Ishibashi is 77 years old and was one of the original itinerant Japanese farmers in the area. His family, which farmed parts of tracts 19 & 20 prior to World War II, was sent to interment camps for the duration of the war. They returned to the area after the war and continued to farm. Mr. Ishibashi is still actively farming several acres of the area which he leases from the Zuckerman family. He said that in the entire time he and his family have been there they have never found any OE related items. He has dug up a fair number of cabling though. According to the only map located for tract 20, the buildings were all located in an area over a drainage culvert. There is no sign of the structures and Mr. Ishibashi did not recall them being there.

The team continued on to **Tract #19 - West Sea Bench Military Reservation** which is adjacent to the coast line. The area had several para-sailors and model aircrafters using it. No sight plans were located for this area. Aerial photo analysis located a series of buildings and four circular features near the edge of the palisades. The ASR team located four concrete pads with circular bolt patterns. The bolt patterns ostensibly appear to be for gun emplacements. Given the lack of them being connected to a Fire Control Station and that there were 4 mounts, a visually sighted guns such as the 3 inch anti-aircraft could have been mounted there. Mr. Thomas said that when the Coastal Defense Study Group surveyed the site during their 1991 convention, they could not specifically identify the purpose of the 4 emplacements. Evidently the bolt spacing and number did not correspond to any type of weapons or searchlights they were familiar with. immediately adjacent to 2 of the concrete pads were dug out areas approximately 10 feet by 10 feet. They seemed similar to ready ammunition magazines, though it could not be ascertained. They faced seaward which would have hampered their use logistically but would have been a better, explosive safety arrangement. There was no evidence of OE debris discovered.

The team completed the site survey by inspecting **Inspiration Point.** Historical documents never specifically showed that this parcel of land was ever acquired by the Army as part of the seacoast defense. Some documents implied that it may have been used as a searchlight location or as a prepared site for one of the roving 155 mm batteries. Aerial photography analysis had two circular features at the point with an unimproved road to them. Vehicular access to the point is probably no longer possible due to landslides cutting away at the road. The point seems to be broad enough to have placed a searchlight there temporarily or even a 155 mm gun. There was no evidence of military use of the land discovered.

The site survey did not reveal any specific ordnance or explosive hazard at any of the areas inspected for Point Vicente Seacoast Defense Sites.

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Ordnance and Explosives
Chemical Warfare Material
Archives Search Report
FINDINGS
Point Vicente Seacoast Defense Sites
Rancho Palos Verdes, California
Los Angeles
Project Number - J09CA055802

7.0 EVALUATION OF ORDNANCE POTENTIAL

7.1 Conventional Ordnance Contamination.

Based on the results of the archive search, conventional ordnance was both stored and utilized at the Point Vicente Seacoast Defense Sites. The missions of the sites centered on coastal defense, either in providing or directing artillery or anti-aircraft fire. The conventional ordnance consisted of the small arms ammunition and medium to large caliber ammunition.

Medium and large caliber ammunition was identified with only a few tracts (#8, #9, #19, and possibly Portuguese Point) based on the presence of permanent, temporary, or mobile gun batteries at these locations. The only frequently utilized OE related feature identified was the "Known Distance" rifle range on Tract #8 - Point Vicente Military Reservation. It was used for small arms familiarization and qualification. Though no specific records were found, it is presumed that all the tracts of the Point Vicente Seacoast Defense Sites had small arms present for security purposes. No other ordnance operations were identified with these sites.

This archive search did not find any indication of a current ordnance and explosive hazard from the military's use of Point Vicente Seacoast Defense Sites. Historical records were not found that indicated any ordnance was left behind or disposed of on site. interviews with people familiar with the site did not expose any incidents of OE hazards being found in the past. Aerial photography analysis did not locate any distinct signs of on-site burial. Additionally, the site inspection did not find any evidence of ordnance and explosive hazards being present.

7.2 Chemical Warfare Material Contamination.

Based on the investigation of historical records reviewed, the results of the site survey and interviews, there is no evidence of chemical warfare materials ever being stored, used or disposed of at any of the Point Vicente Seacoast Defense Sites.

8.0 TECHNICAL DATA OF ORDNANCE AND EXPLOSIVES

8.1 Ordnance and Chemical Related Missions

Small arms were probably present at all of the land tracts that made up Point Vicente Seacoast Defense Sites for security reasons. The major ordnance related activities at Point Vicente Seacoast Defense Sites were present at only a few tracts of land at the site. These tracts included gun batteries for permanent, temporary, or mobile guns. These tracts were #8, #9, #19, and possibly Portuguese Point. The mission of these emplacements was artillery support for coastal defense. Upon enemy contact, the batteries received coordinates from the associated visual or radar fire control stations to deliver artillery barrages. The following summarizes types of ordnance that research has shown was present at these tracts:

- .30 caliber carbine rounds
- .30 caliber rifle rounds
- .45 caliber pistol rounds
- .50 caliber machine gun rounds
- 40 mm gun rounds

- 6 inch projectiles
- 155 mm projectiles
- propellant charges for 155 mm and 6 inch gun
- artillery fuzes
- artillery primers for 155 mm and 6 inch

In addition to the gun emplacements on Tract #8 - Point Vicente Military Reservation, a "Known Distance" rifle range appears beginning in the 1950s. A Known Distance range was required to be used for small arms familiarization and qualification by military personnel. Also of ordnance interest on Tract #8 was the Nike Ajax and a Nike Hercules missile battery present from 1950 to 1970. The Nike Ajax was a surface to air missile with a warhead of conventional explosives. It was replaced by the Nike Hercules in the 1960s, whose warhead had conventional or nuclear capabilities. Due to the conspicuous nature of these ordnance items such as size, security, and accountability, the potential OE hazard present following their removal from the site is non-existent and they will not be discussed further.

The archive search produced no evidence of any chemical warfare training, the storage of any chemical warfare materials, or the disposal of any chemical warfare materials during the military's tenure at Point Vicente Seacoast Defense Sites. No evidence surfaced of there ever being a mission of chemical warfare nature associated with this site.

8.2 Description of Conventional Ordnance

The .30 caliber carbine, .30 caliber rifle, .45 caliber pistol, and the .50 caliber machine gun ammunition were all what was considered "small arms" by the military. All small arms are basically the same except for size and packaging. The .30 caliber carbine was a small shoulder fired weapon smaller than the Ml rifle.. The standard issue pistol for this time era was the .45 caliber pistol. The most effective anti-aircraft machine gun was the .50 caliber. All of these small arms had four components in common; a cartridge case, a primer, propellant, and a projectile (slug). The carbine, rifle, and pistol ammunition could be loaded 7, into clips which were separate items of issue. The machine gun ammunition came packaged in metal links (Appendix C-2 through C-5).

The 40 mm gun was a medium caliber mobile or temporary mounted anti-aircraft weapon. The ammunition was a fixed round packaged in four round clips. It was very effective against dive bombers and low flying aerial targets. Besides the practice round for training, the 40 mm also came in the High Explosive (HE) and Armor Piercing (AP) styles (Appendix C-6).

The 6 inch gun was used in seacoast defense at the beginning of World War 11, but was eventually phased out in favor of more efficient anti-aircraft weapons. This was a separate loading item which needed three or four separately issued components to make a complete round. Loading the gun breech consisted of more than one movement (Appendix J-3). it came in an AP and a HE type. The HE round required a Point Detonating (PD) fuze, and the AP round had a Base Detonating (BD) fuze built into the round which wasn't a separate item of issue. The general purpose of an AP round was to pierce a hardened target and make a large hole prior to a detonation. The HE round was filled with more explosives and would detonate on contact and produce shrapnel fragments (Appendix C-l). The 6 inch gun mounts were usually installed in a permanent concrete emplacement (Appendix J-2).

The 155 mm gun was also a seacoast defense weapon that was eventually phased out of coastal defense as the 6 inch was. The 155 mm round is similar in all ways to the 6 inch except for a slight size difference. It was also separate loading and came in the AP and HE types. The 155 mm weapon system could be a mobile (Appendix J-4), temporary Panama mounts (Appendix J-5), or a permanent concrete gun emplacement. The 155 mm is still a favored infantry field artillery weapon today (Appendix C-7).

9.0 EVALUATION OF OTHER SITE INFORMATION

Two tracts, #8 and #15, of the Point Vicente Seacoast Defense Sites have been identified as having potential environmental concerns as a result of the INPR process (see section 2.0).

The potential environmental projects at Tract #8 - Point Vicente Military Reservation were identified in conjunction with Nike Battery #55. The projects identified were based on the presence of 3 abandoned fuel storage tanks, seven 55-gallon drums, former paint storage shed, acid storage and fueling facilities and access denial to 2 vaults for the underground fuel tanks and 5 subterranean underground structures.

Tract 15 - SCR 682 San Pedro Hill had environmental projects identified as a result of its later use as the Palos Verdes VHF Control Center and NORAD Center San Pedro Hill. The projects identified were based on the presence of 11 transformers, 3 cooling towers, and one 1,000 gallon underground storage tank and associated piping.

The Los Angeles District of the Corps of Engineers is aware of these concerns and is managing further investigation and work on these aspects of Point Vicente Seacoast Defense Sites.

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Purpose: Federal Facility PA Review

Site: Fort MacArthur
Point Vicente and Point Fermin Bunkers
San Pedro, California
Los Angeles County

Site EPA ID Number: CA5690331330

URS Investigator: Gary A. Floyd

Report Prepared By: Gary A. Floyd

Report Reviewed By: Des Garner

Review/Concurrence: D Garner

Report Date: March 25, 1996

Document Control No: 62312.68.33.1868 05.a.1

Submitted To: Philip Armstrong
EPA Region IX
Work Assignment Manager

1.0 Introduction

The U.S. Environmental Protection Agency (EPA), Region IX, under authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), and the Superfund Amendments and Reauthorization Act of 1986 (SARA), has tasked URS Consultants, Inc. to conduct an abbreviated Federal Facility Review (FFR) of the combined Preliminary Assessment (PA) Report documentation for the United States Coast Guard (USCG) Point Vicente and Point Fermin Bunkers of Fort MacArthur (FMA) in San Pedro, Los Angeles County, California. The abbreviated scope of this FFR was limited to a review of the combined PA report. Based on their proximities, the Point Vicente and Point Fermin Bunkers are being jointly addressed in this FFR by direction from EPA Region IX.

Fort MacArthur was identified as a potential hazardous waste site and entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) on January 1, 1985 (1). On November 16, 1988, Fort MacArthur was placed in the Federal Agency Hazardous Waste Compliance Docket established under section 120(c) of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) according to the requirements of section 103(c) of CERCLA (2).

FMA is comprised of four sites: the Middle Reservation, Upper Reservation (which includes Point Fermin Bunker), White's Point, and Point Vicente. Two of the sites, Middle Reservation and Upper Reservation, were previously subject to a Federal Facility Site Inspection Review (SI) (3). The FMA Point Vicente and Point Fermin Bunkers, are the subjects of this FFR. In October 1995, on behalf of the USCG Maintenance and Logistics Command Pacific (MLCPAC), EARTH TECH, Inc., as a subcontractor to Lockheed Martin Energy Systems, Inc., performed a combined PA for the USCG Bunkers located at Point Vicente and Point Fermin (4). The PA was a limited-scope investigation designed to determine if the bunker sites posed a threat to human health and the environment. The PA also assessed whether the bunker sites required a possible time-critical emergency response action. After receiving the USCG's combined PA report for the Point Vicente and Point Fermin Bunkers, the EPA decided that further investigation of Fort MacArthur would be necessary in order to more completely evaluate the sites using the EPA's HRS criteria. The HRS assesses the relative threat associated with actual or potential releases of hazardous substances from sites. It is the principal mechanism the EPA uses to place sites on the National Priorities List (NPL). The NPL identifies sites at which the EPA may conduct remedial response actions. This report is the result of URS' evaluation of the submitted data.

1.1 Apparent Problem

Historical operations at the Fort MacArthur military reservation (FMA) resulted in the generation and disposal of hazardous wastes on-site. Hazardous wastes have been disposed of and incinerated on-site, transported off-site to municipal landfills, recycled off-site, and discharged to the storm sewers. The primary migration pathway for contaminants at the Point Vicente and Point Fermin Bunker are FMA's storm drain sewers (3, 4, 5, 6).

Hazardous wastes such as paint thinner, paint sludge, chlordane and other pesticides, oil and grease, and ethylene glycol were routinely discharged to storm drains on FMA grounds (6). The storm sewers lead to Los Angeles Harbor and into San Pedro Bay, which

is a source of commercial and recreational fishing, and San Pedro Bay provides habitat for federally and state-listed endangered species (3, 5).

2.0 Site Description

Point Vicente and Point Fermin Bunkers are located near the cities of Palos Verdes and San Pedro, California, respectively (T5S, R13W, San Bernardino Baseline and Meridian). Both sites are situated near the Pacific Ocean coastline (see Figure 1). Communities surrounding the site include medium-density residential, light industrial, and commercial areas (3). Section 2.0 presents the site location, site description, and operational history information for both bunkers.

2.1 Location

Point Vicente Bunker

The USCG Point Vicente Bunker is located on the Palos Verde Peninsula approximately 1 mile south of the city of Ranch Palos Verde (33° 38' 26" latitude, 118° 15' 24" longitude), Los Angeles County, California. The site vicinity of Point Vicente Bunker is delineated in Figure 2; the facility layout is presented in Figure 3; and the site plan is shown in Figure 4. The bunker is located to the east of Point Vicente, where the USCG owns radio facilities which are currently leased to the local and state government agencies in California (4). Point Vicente Bunker was known as Battery 240, and is located on 6.06 acres of land transferred to the USCG from the U.S. Army in 1976 (4).

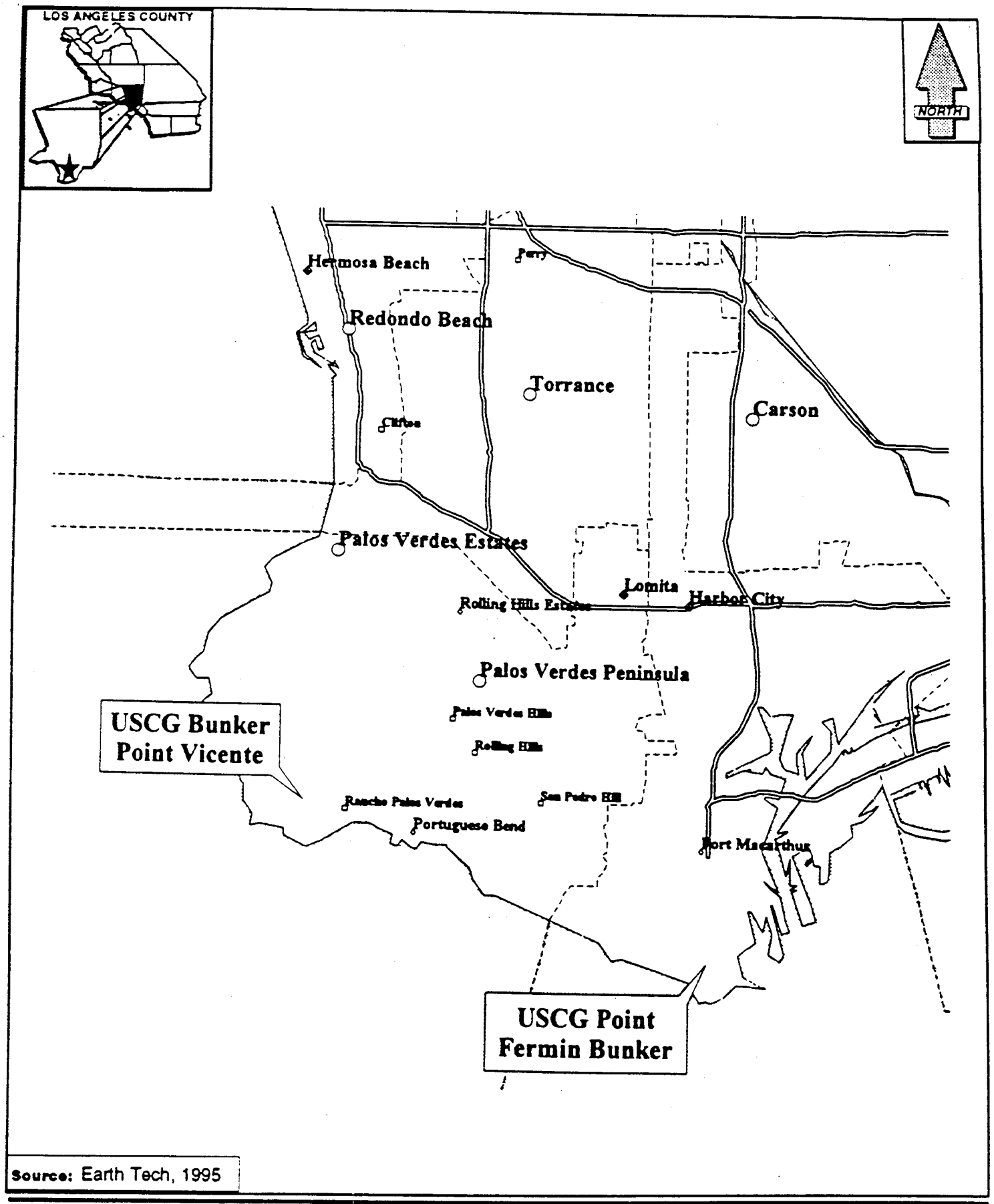
Point Fermin Bunker

The USCG Point Fermin Bunker is located near the intersection of West 37th Street and Gaffey Street approximately 1 mile south of the city of San Pedro, Los Angeles County, California. The Point Fermin Bunker is located 21 miles south of Los Angeles, near the city of San Pedro, California. Specifically, the bunker complex is located north of Paseo Del Mar Drive, west of Gaffey Street, and east of Roxbury (4). The site vicinity location of Point Fermin is delineated in Figure 5; the facility layout is presented in Figure 6; and the site plan is shown in Figure 7. The bunker is located to the north of Point Fermin where the USCG operated a lighthouse. The bunker complex was known as Battery Merrian-Leary, and is located below a 0.85-acre parcel of land transferred to the USCG from the U.S. Army in 1976 (13).

2.2 Site Description

Point Vicente Bunker

The USCG Point Vicente Bunker is located within the Fort MacArthur Military Reservation. The property is owned by the USCG and is bordered by property owned by the city of Palos Verdes, the U.S. Army, and other USCG property. The site consists of an antenna field and one subsurface bunker. The city of Rancho Palos Verde municipal office complex is also located on the north side of the USCG property. A review of the EARTH TECH, Inc. photographic log of the site indicated that the surrounding properties are comprised of light-density residential housing, commercial development, and municipal buildings. There are no other buildings on this property, except the USCG bunker (4).



Source: Earth Tech, 1995

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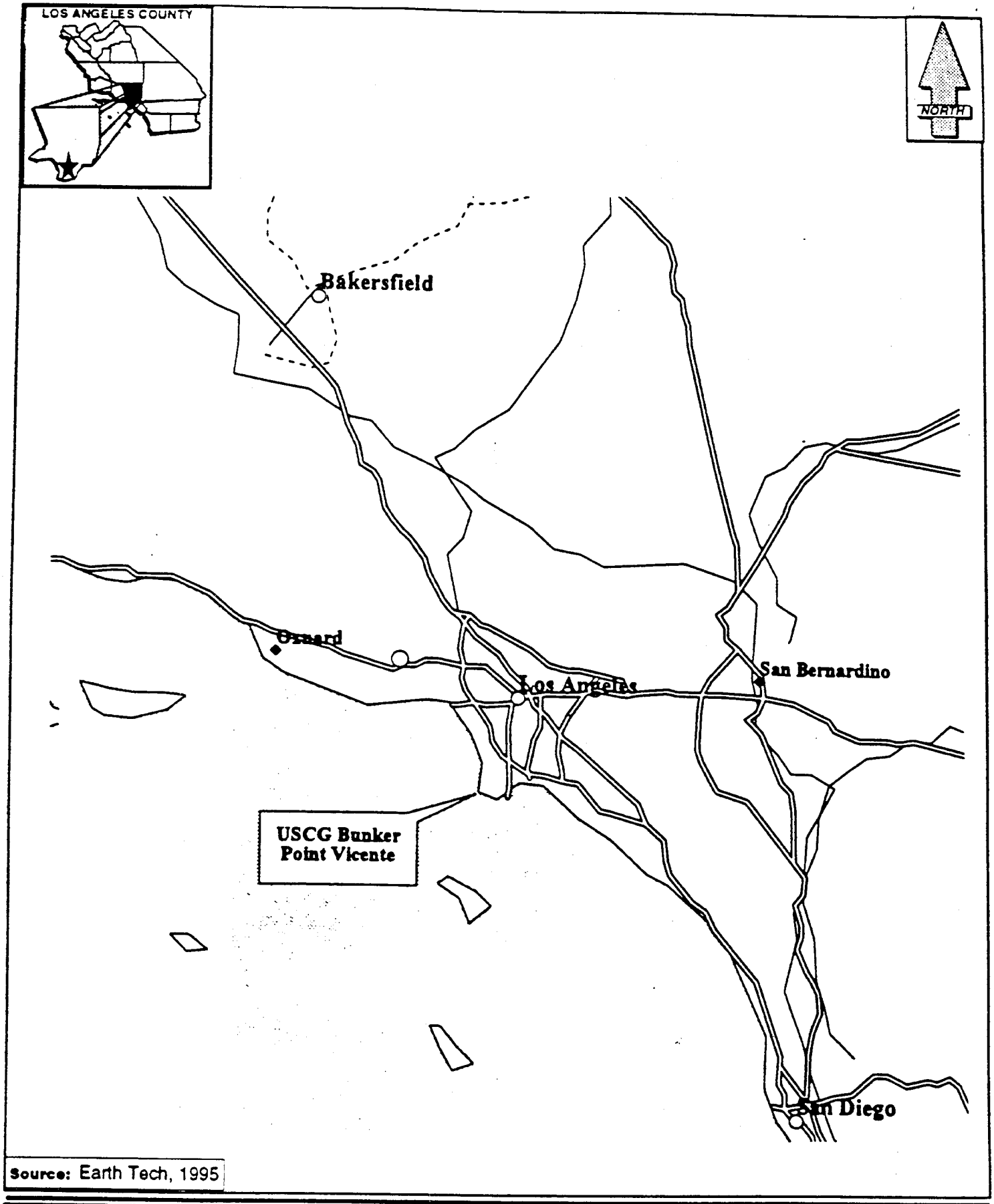
February 27,1996

Site Vicinity Map

Fort MacArthur Federal Facilities
Point Vicinte and Point Fermin Bunkers
Los A' geles County, California

FIGURE

1



Source: Earth Tech, 1995

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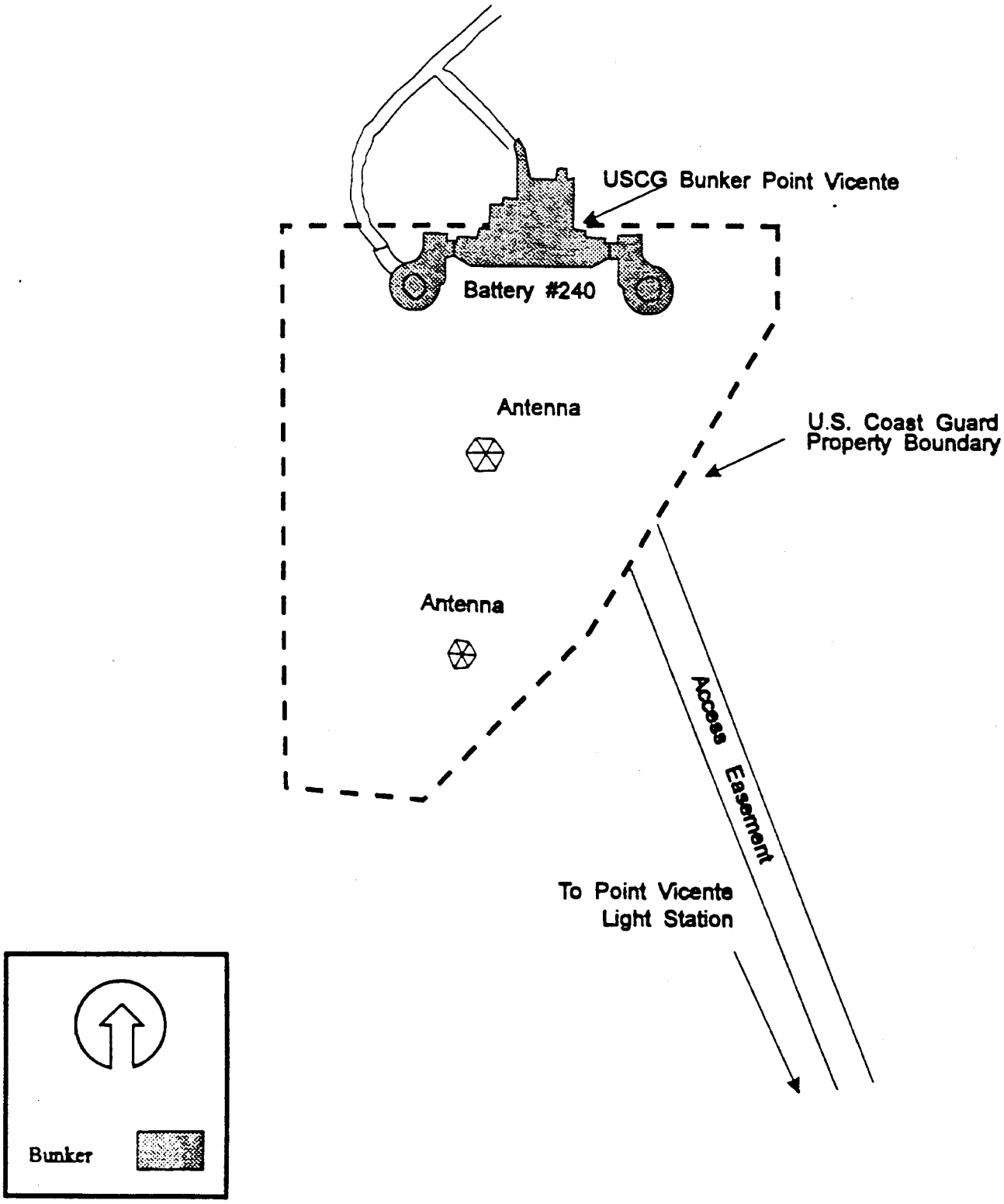
February 27,1996

Site Location Map- Point Vicente Bunker

Fort MacArthur
Palos Verdes, California
Los Angeles County

FIGURE

2



Source: Earth Tech, 1995

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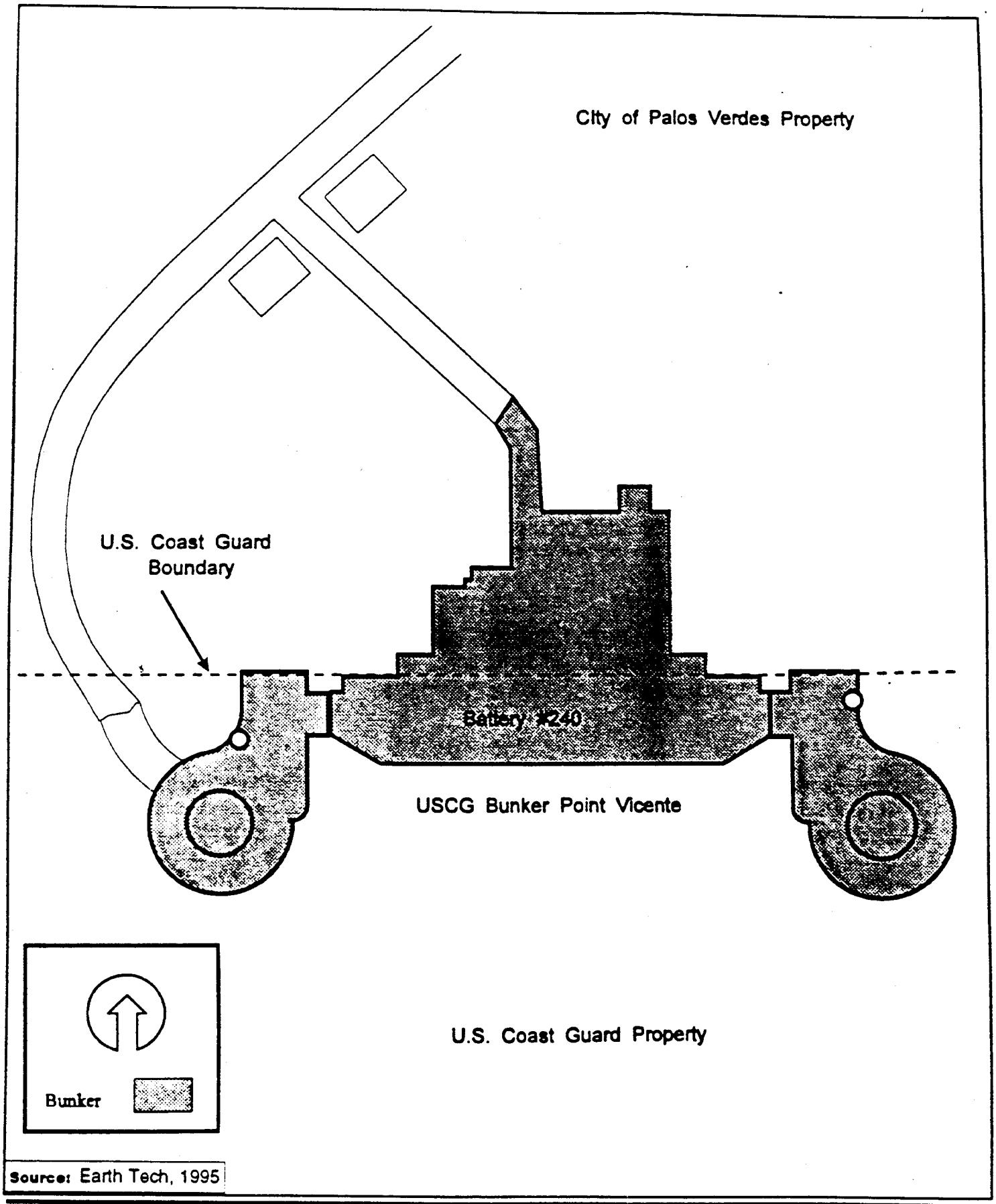
February 27,1996

Facility Map- Point Vicente Bunker

Fort MacArthur
Palos Verdes, California
Los Angeles County

FIGURE

3



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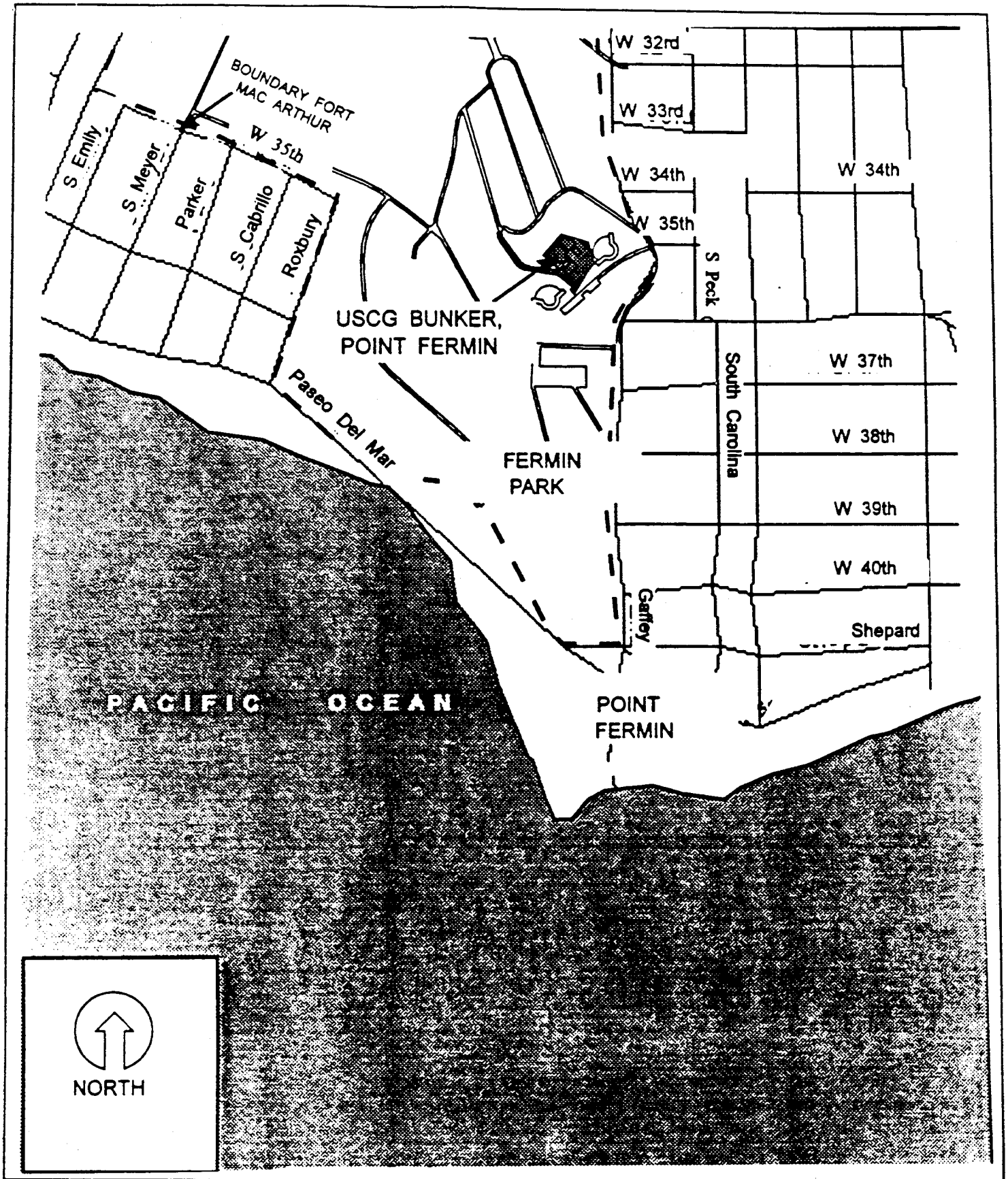
Site Plan- Point Vicente Bunker

Fort MacArthur
Palos Verdes, California
Los Angeles County

FIGURE

4



Source: Earth Tech, 1995

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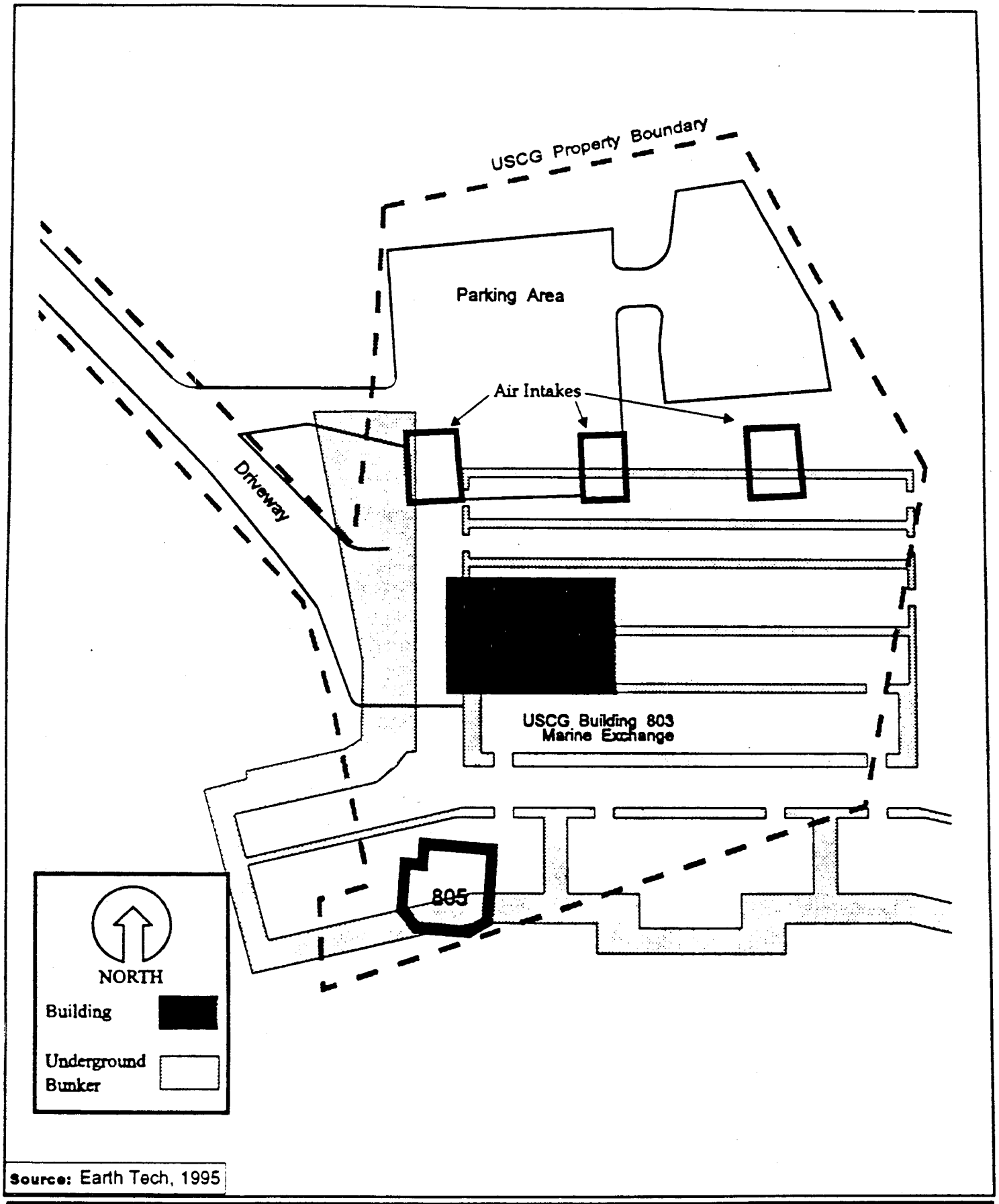
Site Location Map- Point Fermin Bunker

Fort MacArthur
San Pedro, California
Los Angeles County

FIGURE

5



Source: Earth Tech, 1995

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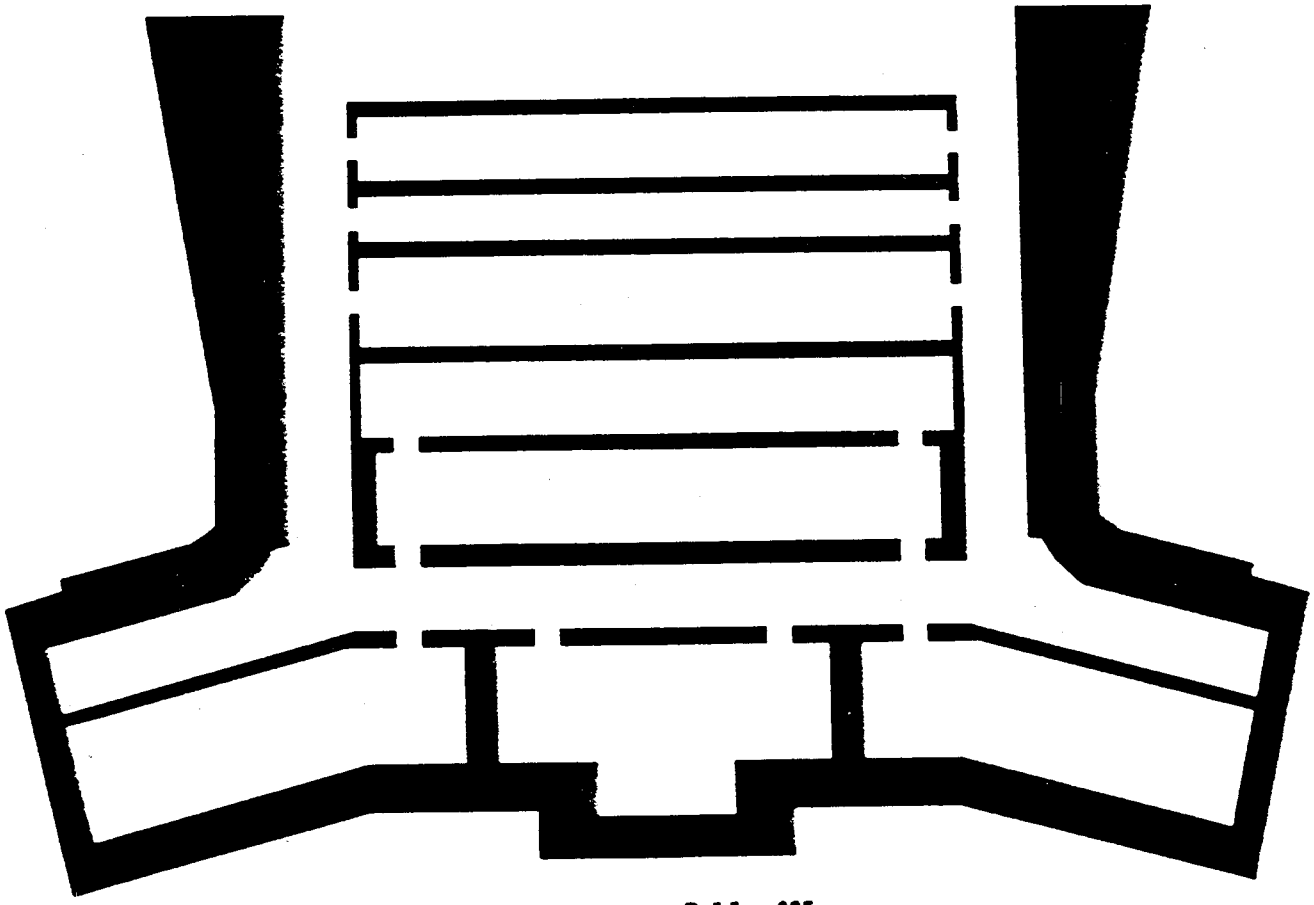
Facility Map- Point Fermin Bunker

Fort MacArthur
San Pedro, California
Los Angeles County

FIGURE

6



Source: Earth Tech, 1995

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Site Plan- Point Fermin Bunker

Fort MacArthur
San Pedro, California
Los Angeles County

FIGURE
7

Point Fermin Bunker

The Point Fermin Bunker is located within the Upper Reservation of the Fort MacArthur Military Reservation. The actual bunker (Building 885) is not owned by the USCG; rather, the property overlying the bunker is owned by the USCG and is bordered on all sides by property belonging to the Los Angeles Department of Parks and Recreation, Angels Gate Cultural Center, and the Los Angeles Unified School District (8). The subsurface bunker, which is actually owned by the City of Los Angeles Department of Recreation and Parks, is solely comprised of Building 885 (9). The overlying USCG property is comprised of three buildings, designated as building numbers 803, 805, and 883. Building 803 houses the Marine Exchange, which is a tracking service for vessel traffic that is operated by the Los Angeles-Long Beach Harbor, Inc. The Marine Exchange building is located directly on top of the underground bunker. The bunker is located to the north of Point Fermin, where the USCG operated the Point Fermin Lighthouse. The lighthouse is no longer operable, but is occupied and maintained by an employee of the City of Los Angeles Recreation and Parks Department (9). The area surrounding the lighthouse is known as Point Fermin Park. The bunker complex was known as Battery Merrian-Leary, and is located below a 0.85-acre parcel of land transferred to the USCG from the U.S. Army in 1976 (4). A review of the EARTH TECH, Inc. photographic log of the site indicated that the surrounding area consists of medium-density residential housing, light industrial and commercial development, and recreational areas operated by various local governmental agencies (4).

2.3 Operational History

The Point Vicente and Point Fermin Bunkers are situated on land that was once part of the FMA Military Reservation formerly owned by the U.S. Army (3, 4, 6). The property is currently owned by the USCG, except for the actual subsurface bunker at Point Fermin, and is bordered by property belonging to the city of Palos Verdes and the U.S. Army. The original FMA site consisted of a 50-acre parcel of land reserved by the U.S. War Department in 1888 for use as a harbor defense installation (3). Between World Wars I and II, FMA was used as a harbor defense and anti-aircraft artillery post to protect Los Angeles Harbor. During this period, FMA expanded to approximately 506 acres, which included the four reservations of FMA: Middle Reservation, Upper Reservation, White's Point, and Point Vicente. In the 1950s, the bunkers originally housed 15-inch-diameter defense guns, and subsequently served as locations for NIKE surface-to-air missile batteries. As the NIKE missile program became obsolete in the 1970s, the Army decided to close FMA for economic reasons. As a result, all FMA land was declared excess in August 1975, except for the Middle Reservation (3, 5). A portion of the Upper Reservation, then known as Battery Merrian-Leary, was transferred to the USCG in 1976. Wastes generated at the Battery Merrian-Leary consisted of paints, paint thinners, oil and grease, and other miscellaneous wastes associated with the operation of the coastal defense system (4). Similarly, Point Vicente was transferred to the USCG in 1976, and subsequently transferred to the General Services Administration (GSA), which deeded the site to the City and County of Los Angeles for use as recreational areas by the County of Los Angeles Department of Parks and Recreation, the City of Los Angeles Department of Recreation and Parks, and the Los Angeles Unified School District (LAUSD) (4, 6).

Point Vicente Bunker

Historical operations at Point Vicente and Point Fermin Bunkers are not well documented. It is believed that the types of materials used and the types of wastes generated from past operations would, however, be similar to those at the Point Fermin Bunker. These would be expected to include pesticides, polychlorinated biphenyls (PCBs), petroleum products, organic solvents, explosive ordnance, and NIKE missile propellants (3, 4).

Point Fermin Bunker

The USCG Point Fermin Bunker is located on Upper Reservation land that was once part of the Fort MacArthur Military Reservation owned by the U.S. Army (3, 4, 6). Historical operations at Point Fermin involved the use of pesticides, PCBs, petroleum products, organic solvents, explosive ordnance, NIKE missile propellants, and radiological materials (3, 4).

2.4 Regulatory Involvement

There is a long regulatory history associated with FMA; however, no direct involvement of the USCG Point Vicente or Point Fermin Bunkers was noted during the telephone interviews and record reviews. The regulatory history of both the Point Vicente and Point Fermin Bunkers is limited. The sites do not appear in the Resource Conservation and Recovery Information System (RCRIS) database (10). A review of findings from an environmental records and database search for Point Vicente and Point Fermin Bunkers revealed that the sites were not listed on any of the environmental databases (4).

The Point Vicente and Point Fermin Bunkers are no longer part of the Los Angeles Air Force Base (LAAFB) (11). The United States Department of the Army Corps of Engineers' (COE's) involvement with Point Vicente Bunker is limited to maintaining facility maps in the COE archives. The COE has no maps of Point Fermin Bunker. The COE does not have any other involvement with Point Vicente or Point Fermin Bunkers since the bunkers were transferred from the U.S. Army to the USCG in 1976 (12).

The USCG maintains ownership of both Point Vicente and Point Fermin Bunkers, except for the actual subsurface bunker at Point Fermin. Based on conversations with the USCG's environmental department, neither Point Vicente Bunker nor Point Fermin Bunker are currently the subject of regulatory agency involvement (8). The California Environmental Protection Agency Department of Toxic Substances Control (Cal-EPA DTSC) is not actively involved with FMA (13). The RWQCB does not have any specific involvement with Point Vicente or Point Fermin Bunkers (14). FMA currently holds an active air operating permit which was reissued on November 14, 1995, by the South Coast Air Quality Management District under the name of Los Angeles Air Force Station (Facility ID= 096255) for the use of Freon-12 (Permit = D72497) at the Middle Reservation maintenance facility; however, there are no activities conducted at either Point Vicente or Point Fermin Bunkers that require an air operating permit (15). The Los Angeles City Fire Department (LAFD) maintains underground storage tank (UST) files for FMA. In the past, in order to avoid weakening the structural stability of the various unspecified historical structures at FMA, the LAFD has permitted USTs to be properly abandoned in-place; however, the LAFD was not aware of any UST removals or in-place closures at the Point Vicente or Point Fermin Bunkers (16).

3.0 Investigative Efforts

3.1 Previous Sampling

No known groundwater, surface water, soil or air sampling has been conducted at either the Point Vicente Bunker or Point Fermin Bunker sites (3, 4). Sampling conducted at other FMA sites has shown contamination to be primarily petroleum hydrocarbon in nature, with TPH levels of up to 2,800 milligrams per kilogram (mg/Kg) in soil, at the Upper Reservation site (3, 4).

4.0 Hazard Ranking System Factors

The Hazard Ranking System (HRS) is a scoring system used to assess the relative threat associated with actual or potential releases of hazardous substances from sites. It is the principal mechanism the EPA uses to place sites on the NPL. URS has evaluated the HRS factors discussed below, which are relative to this site.

4.1 Sources of Contamination

Sources of contamination at both the Point Vicente and Point Fermin Bunkers are not well documented. Since the bunkers originally housed 15-inch-diameter guns, and served as locations for NIKE surface-to-air missile batteries, the expected sources of contamination include those related to missile defense, light industrial facilities, and grounds maintenance. The use of pesticides at the subject sites, including chlordane, is documented (4, 7). Based on the review of the limited historical information, telephone interviews, and record searches, the following potential contaminants and their respective sources are identified (4, 7).

Table 1
Suspected Sources of Contamination at Point Vicente and Point Fermin Bunkers

SUSPECTED CONTAMINANTS	POTENTIAL SOURCE
Chlordane and other pesticides	General grounds keeping. Records indicate chlordane usage in 1976 and on-site storage in 1981
Polychlorinated biphenyls (PCBs)	Electrical transformers, various size capacitors, fluorescent light ballasts, electric motor fluids (e.g., hoists, lifts), waste oil
Petroleum products	Waste oil, mechanical lubricants, USTs, oil and grease, auxiliary USTs
Organic solvents	Degreasing solvents, paint thinners/paint removers
Explosives	Missile-related ordnance, unexploded ordnance (UXO), NIKE missile propellants
Asbestos-containing materials (ACM)	Surfacing materials (e.g., fireproofing), thermal system insulation components, fireproofing, roofing materials, floor tiles, miscellaneous building components
Lead-based paint (LBP)	Exterior and interior painted building components
Radiological materials	Coastal defense system components, including clocks, dials, and gauges

Figures 8 and 9 identify the suspected sources within the Point Vicente and Point Fermin Bunkers, respectively.

4.2 Groundwater Pathway

4.2.1 Hydrogeologic Setting

The Point Vicente and Point Fermin Bunkers lie within the Los Angeles Basin, which is characterized as a topographic lowland with a northwest-trending axis measuring approximately 50 miles long by 20 miles wide. Point Vicente is located west of Point Fermin on an uplifted block caused from movement along the Palos Verdes fault. The Palos Verdes fault is oriented in a northwest-southeast direction (3, 5).

Subsurface soil at FMA consists of 1 to 14 feet of fill material containing clay, clayey sand, silty sand, and debris from previous construction underlain by natural soil ranging from 0 to 8 feet in thickness. This natural soil unit is comprised solely of silty clay, which is underlain by fractured, weathered shale, sandstone, and siltstone of the Monterey Formation (3, 5).

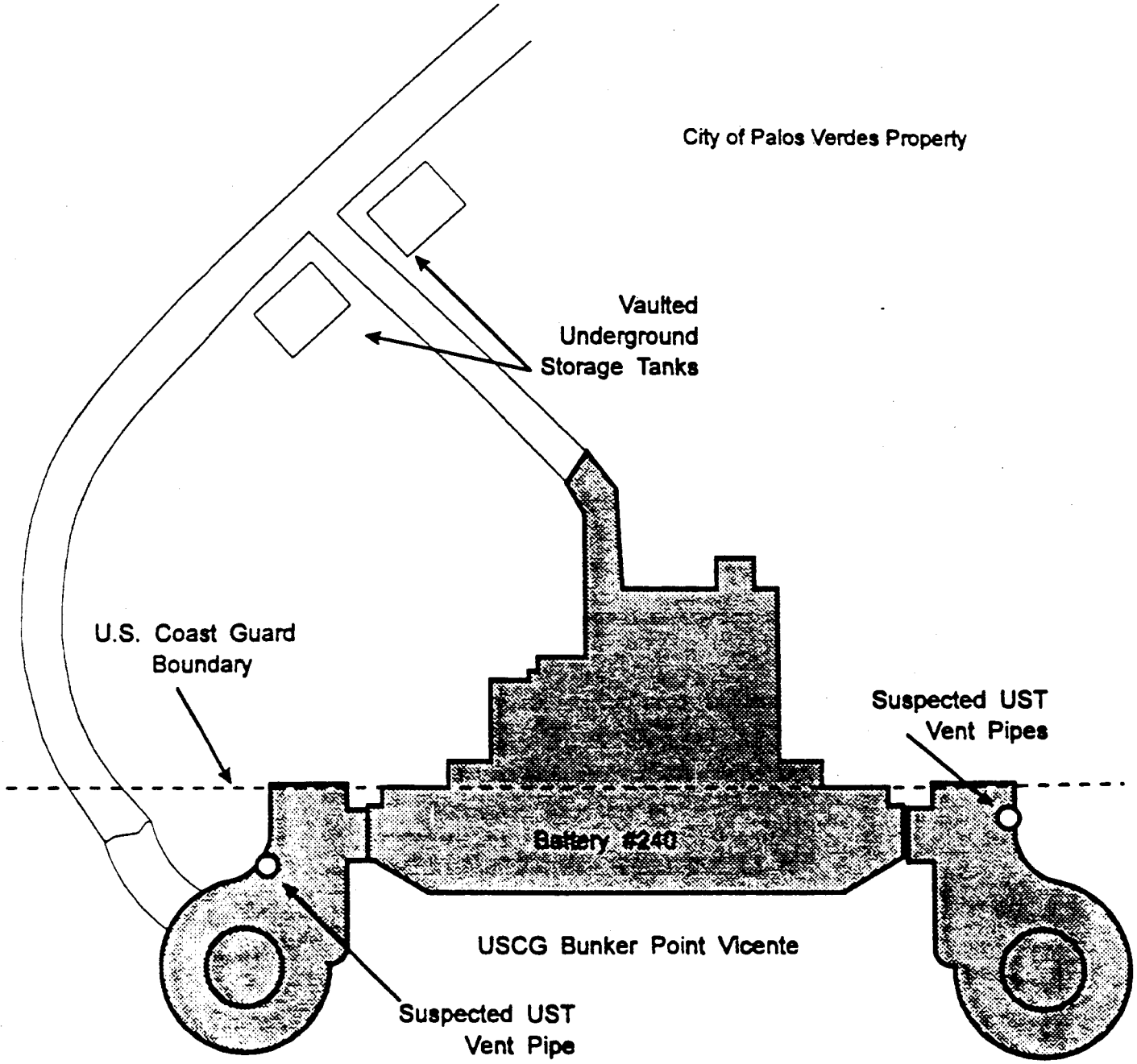
Because of the nature of the underlying geologic units at FMA, a well-developed aquifer system is not present beneath FMA. Groundwater occurs in small localized sand units in a highly saline condition. Groundwater at FMA represents connate formation water without hydraulic connection to freshwater recharge. In unconsolidated deposits north of FMA, groundwater in the Silverado Aquifer flows generally in an easterly direction (see Figure 10). Groundwater is also encountered in the shallower Gage and Gaspur Aquifers and flows predominantly in a southerly direction (see Figure 11). Groundwater elevations are noted on the potentiometric maps in units of mean sea level (msl). A saltwater barrier project consisting of artificial groundwater recharge operable in protecting potable water from saltwater intrusion is located approximately 2 miles north of FMA. The annual net precipitation for the FMA area is approximately 11.54 inches (3, 5).

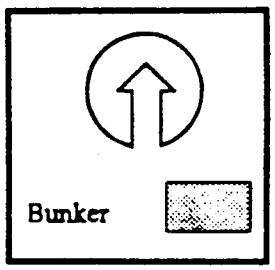
4.2.2 Groundwater Targets

Due to the nature of the geology in the area and the lack of a defined aquifer system, no groundwater wells are located on or within 4 miles of FMA. The nearest wells supplying potable water are the saltwater barrier project wells located approximately 5 miles north of FMA, hydraulically isolated from the site by the saltwater barrier project (3, 5, 17).

4.2.3 Groundwater Pathway Conclusion

No groundwater investigations have been conducted at the FMA site. The potential for contaminants attributable to the site to impact potable groundwater supplies is low, considering that no defined aquifer system exists beneath FMA, and that no groundwater production wells are located within 4 miles of the FMA site (3, 5).





Source: Earth Tech, 1995

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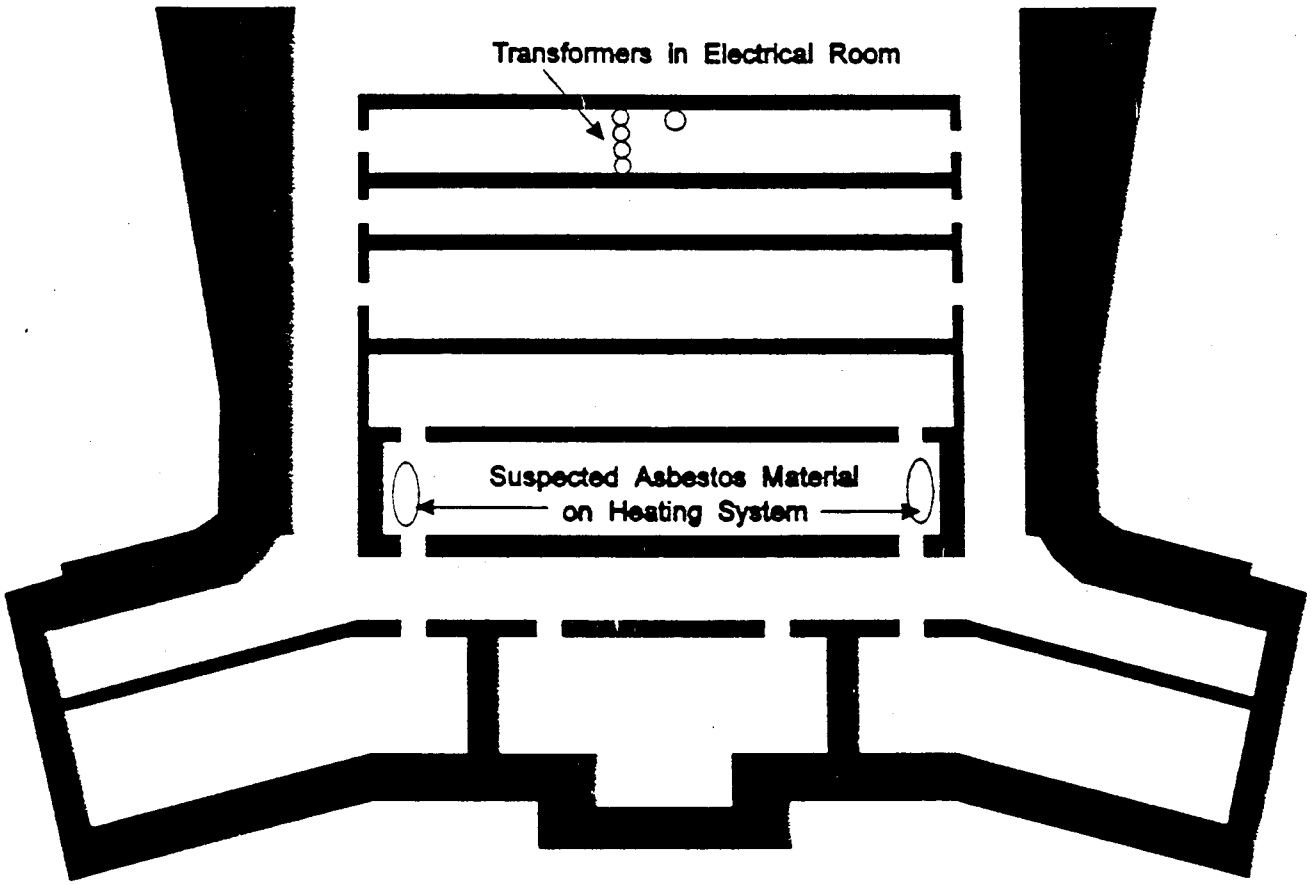
Areas of Concern- Point Vicente

Fort MacArthur
Palos Verdes, California
Los Angeles County

FIGURE

8



Source: Earth Tech, 1995

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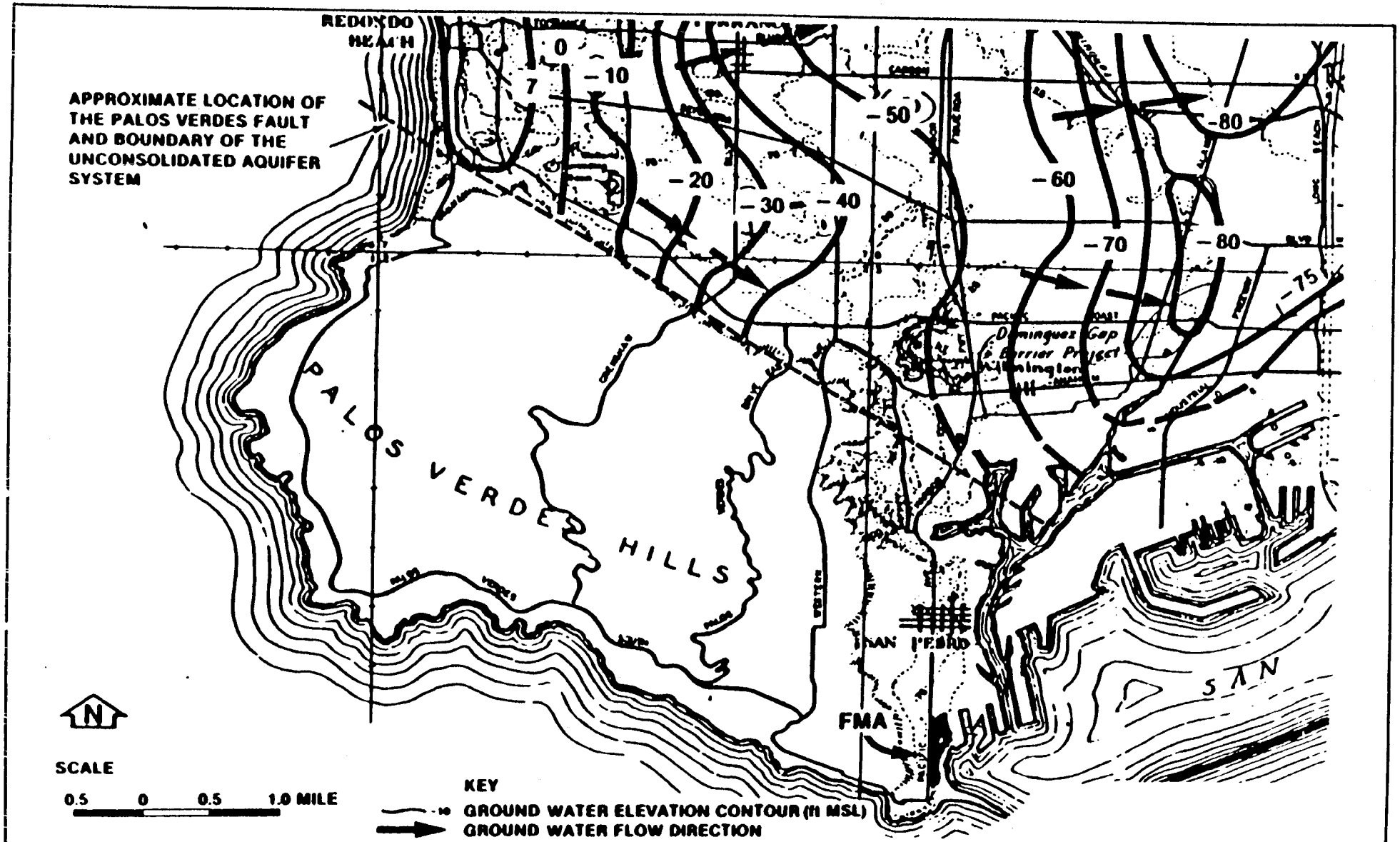
Areas of Concern- Point Fermin

Fort MacArthur
San Pedro, California
Los Angeles County

FIGURE

9



Source: Department of the Air Force, HQ Space Division, Installation Restoration Program, Phase I: Records Search, Fort MacArthur, CA, July 1985

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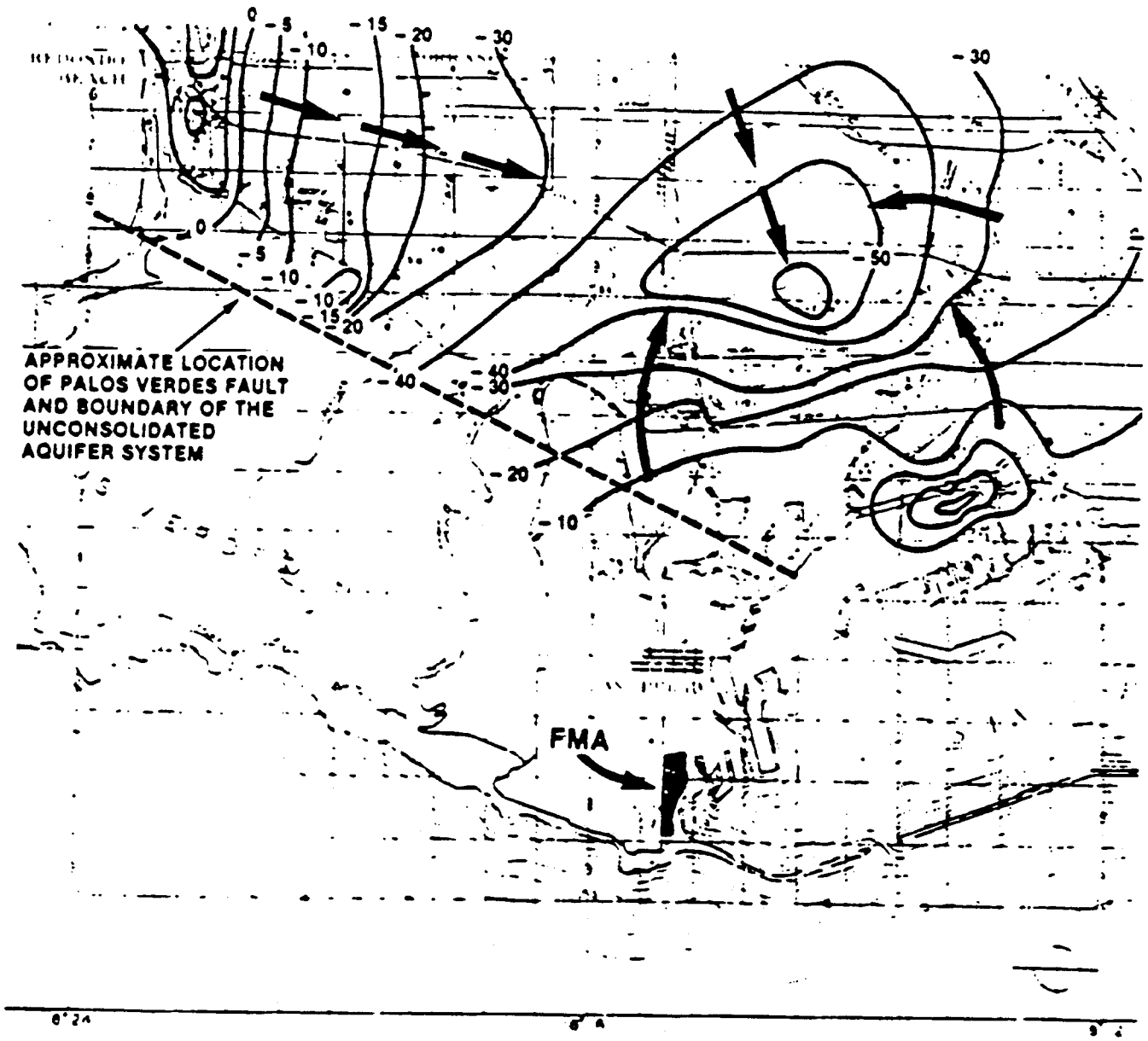
March 6, 1996

Potentiometric Surface of the Silverado Aquifer (Fall 1983)

Fort MacArthur Federal Facilities
Point Vicente and Point Fermin Bunkers
San Pedro, California

FIGURE 10



KEY

-10 GROUND WATER ELEVATION CONTOUR (ft MSL)

GROUND WATER FLOW DIRECTION

N

SCALE

0.5 0 0.5 1.0 MILE

Source: Department of the Air Force, HQ Space Division, Installation Restoration Program, Phase 1: Records Search, Upper Reservation of Fort Mac Arthur, CA, January 1988

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March 6, 1996

Potentiometric Surface of the Shallow Aquifer (Fall 1978)
Fort MacArthur Federal Facilities
Point Vicente and Point Fermin Bunkers
San Pedro, California

FIGURE

11

4.3 Surface Water Pathway

4.3.1 Hydrologic Setting

FMA lies within the Los Angeles Basin lowland at the southeastern end of the Palos Verdes Peninsula along the western edge of Los Angeles Harbor. The Palos Verdes Hills lie to the west of the lowland. The Point Vicente Bunker site is situated on a gently sloping, topographic bench on the west side of Palos Verdes Drive South. Surface elevations range from 160 feet msl along Palos Verdes Drive South to approximately 100 feet msl along Palos Verdes Drive South. Point Fermin Bunker lies within FMA's Upper Reservation, which is situated on a local high point of a ridge and terminates at Point Fermin. The topography in this area consists of moderately steep slopes which separate two relatively level marine terraces (3, 5).

The nearest bodies of surface water are Los Angeles Harbor and San Pedro Channel located at the western edge of FMA. Point Fermin Bunker is located within FMA's Upper Reservation, which is drained by a series of independent storm drain systems which discharge directly into Los Angeles Harbor. Figure 12 details the locations of these systems. Several drains located at FMA connect to the city of Los Angeles storm drains, which also drain to Los Angeles Harbor (3, 5).

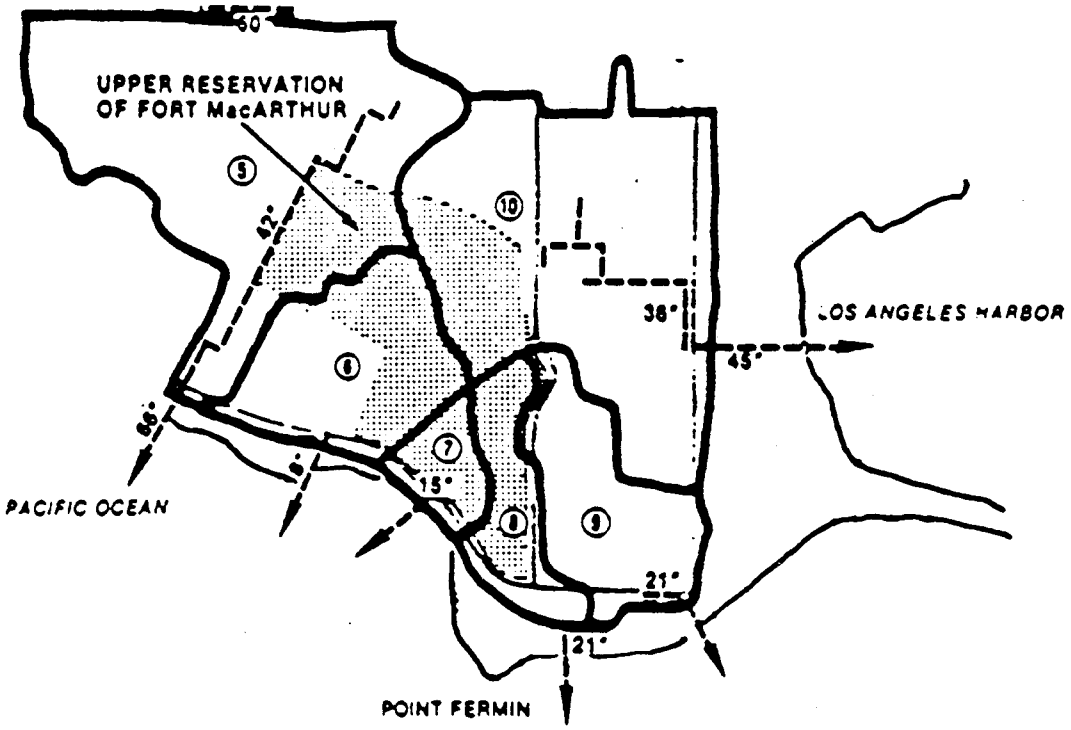
The 2-year, 24-hour precipitation for the FMA area is estimated to be 2.5 inches (1). FMA lies in Zone C, which is designated as an area of minimal flooding (above the 500-year floodplain) (3).

4.3.2 Surface Water Targets

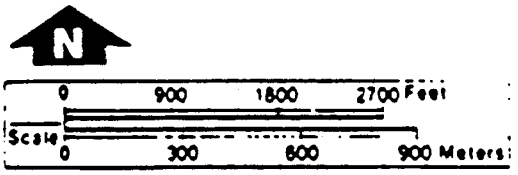
No drinking water intakes are located along the coast of the Palos Verdes Hills or Los Angeles Harbor. Commercial and recreational fishing occurs in coastal waters downstream of the FMA stormwater discharge points. In 1977, the California Department of Fish and Game recorded fish production numbers totaling approximately 480 million pounds at the Terminal Island, San Pedro, Redondo Beach, and Long Beach landing areas. In addition, the federally endangered California least tern (*Sterna antillanum browni*) and the state-endangered Lyon's pentachaeta (*Pentachaeta lyonii*) are found within 15 miles of the site (3, 18).

4.3.3 Surface Water Pathway Conclusion

FMA stormwater drains received a variety of industrial wastestreams, including paint sludge, thinner, detergent surfactants, oil and grease, pesticide-contaminated wastewater, and organic solvents. These independent storm drain systems discharge into Los Angeles Harbor. Historic and current discharges of industrial wastes through storm drain systems from the FMA site into the Los Angeles Harbor may have impacted surface water quality from 1945 to 1973. Two species of concern, the California least tern and the Lyon's pentachaeta are found within 15 miles downstream of FMA. The species may have been affected by uncontrolled industrial wastewater discharges into Los Angeles Harbor; however, since 1973, much of the industrial wastewater was discharged to the sanitary sewer system instead of the storm drain system. The Upper Reservation is located hydraulically upgradient of Point Fermin Bunker (5).



KEY
- OUTFALL LOCATION
- DRAINAGE DIVIDE
- BASIN NUMBER



Source: Department of the Air Force, HQ Space Division, Installation Restoration Program, Phase 1: Records Search, Upper Reservation of Fort Mac Arthur, CA, January 1988

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March 6, 1996

Stormwater Drainage Facilities

Fort MacArthur Federal Facilities
San Pedro, California

FIGURE

12

4.4 Soil Exposure and Air Pathways

4.4.1 Physical Conditions

Point Vicente Bunker

The Point Vicente Bunker is a buried, single concrete bunker which is not occupied. The U.S. Coast Guard is utilizing one small room of the bunker to house communications equipment. The site is locked and equipped with an alarm system. A 1994 inspection of the interior of the bunker, conducted by EARTH TECH, Inc., revealed no visible signs of spills or releases. An exterior reconnaissance of the facility during the same visit identified two potential UST vent pipes located at the bunker entrance. Two fuel oil USTs are located in underground vaults north of the bunker; however, these USTs are not located on USCG property (4). Due to the age of the bunker, some potential asbestos-containing material (PACM) may exist, including the floor tile and acoustic insulation (see Figure 8), and lead-based paint may exist on structural components of the complex (4).

Point Fermin

Limited portions of the Point Fermin bunker complex are currently being utilized. The Marine Exchange of Los Angeles-Long Beach Harbor, Inc., in cooperation with the USCG, occupies the top floors of Building 803. Approximately 10 to 20 persons may occupy the building at any one time (4). The majority of the bunker is located below-ground. The subsurface portion of the bunker is owned by the City of Los Angeles Recreation and Parks Department (8, 19). The property overlying the bunker is owned by the USCG. Some portions of the underground bunker (Building 885) extend beyond the USCG property (4, 8). The surface complex is owned by the USCG and is comprised of three buildings: Nos. 803, 805, and 883. All buildings except No. 803 have been closed to public access. A 1994 inspection of the entire interior of the bunker complex did not reveal any indications of past spills or releases. Four transformers and five oil switches were identified in the electrical room located below Building 803 in a room with a concrete floor that had no observed drain. At the time of the site visit, it was apparent that the lids of two transformers had previously been removed. The transformers were still full of dielectric fluid. No indications of spills were noted on the floor adjacent to the transformers. All five electrical switches had indications of small seeps of oil that were confined to the cases of the switches. During a 1996 telephone interview with Angels Gate Cultural Center historian, Mr. Tom Thomas, it was noted that the transformers are 1916 vintage and are still in service. The transformers apparently contain mineral oil and are not PCB-containing transformers (20). Due to the age of the bunker, some PACM may exist, including the floor tile, acoustic insulation, heating system components, and hot water tank components (see Figure 9). Lead-based paint may also exist on structural components of the complex (4).

4.4.2 Soil and Air Targets

Point Vicente Bunker

There are no identified soil targets for the Point Vicente Bunker, as the bunker is a buried, single concrete bunker which is not occupied. No potential sources were identified for the site. There are two potential UST locations at the site, but the existence of the tanks could not be confirmed with the available records (4).

Point Fermin Bunker

There are no identified soil targets for the Point Fermin Bunker. The transformers, which are housed in the concrete bunker, constitute the only potential sources and are not suspected to have had any releases. Air targets would be limited to five authorized personnel that periodically enter the underground portion of the bunker complex. The bunker is locked to prevent general public access. No known air monitoring studies have been conducted at Point Fermin Bunker. The PACM appeared to be in good condition during the 1995 site visit by EARTH TECH, Inc., and is not expected to be a source for airborne fiber releases. Air releases are not suspected at the Point Fermin Bunker (4).

Table 2
Population Within 4 miles of FMA
(1980 census)

Distance	Population
0 (on-site)	60
0 to 0.25	164
0.25 to 0.5	3,236
0.5 to 1	18,804
1 to 2	28,298
2 to 3	22,514
3 to 4	19,288

4.4.3 Soil Exposure and Air Pathway Conclusions

Source areas identified by URS would not impact the soil exposure pathway. The potential for air contaminant migration is low. Surface source areas identified at the Point Vicente and Point Fermin Bunkers are not expected to contain volatile contaminants or to have the potential for particulate migration (3, 5).

5.0 Emergency Response Considerations

The National Contingency Plan [40 CFR 300.415 (b) (2)] authorizes the Environmental Protection Agency to consider emergency response actions at those sites which pose an imminent threat to human health or the environment. For the following reasons, a referral to the EPA's Region IX Emergency Response Section is not necessary:

- There is no threat of drinking water contamination due to the lack of a defined aquifer in the vicinity of Point Vicente and Point Fermin Bunkers, and no wells are located within 4 miles of the FMA site.
- The potential for direct contact with hazardous substances is low, since the bunkers are locked and suspected PACM sources are in good condition.

6.0 Current Condition of the Site

FMA is comprised of four sites: the Middle Reservation, Upper Reservation (which includes Point Fermin Bunker), White's Point, and Point Vicente. Point Vicente and Point Fermin Bunkers are the subjects of this FFR. Point Vicente and Point Fermin Bunkers are vintage World War II bunkers located at FMA. The USCG owns both bunker complexes, with the exception of the subsurface portion of Point Fermin Bunker, which is owned by the City of Los Angeles Recreation and Parks Department.

Historical operations at Point Vicente and Point Fermin Bunkers are not well documented. Due to the age of the bunkers, some potential asbestos-containing material may exist, including the floor tile and acoustic insulation (see Figure 8), and lead-based paint may exist on structural components of the complexes. The Point Vicente Bunker is a buried, single concrete bunker which is not occupied. The U.S. Coast Guard is utilizing one small room of the bunker to house communications equipment. The site is locked and equipped with an alarm system. Two pipes, suspected of being UST vents, are located at the bunker entrance. Two fuel oil USTs are located in underground vaults north of the bunker; however, these USTs are not located on USCG property (4). Limited portions of the Point Fermin bunker complex are currently being utilized. The Marine Exchange of Los Angeles-Long Beach Harbor, Inc., in cooperation with the USCG, occupies the top floors of Building 803. Approximately 10 to 20 persons may occupy the building at any one time (4). Four transformers and five oil switches have been identified in the electrical room located below Building 803. The electrical room has a concrete floor with no observed drain.

The presence or absence of USTs, asbestos-containing materials, and lead-based paint at the Point Vicente Bunker has not been confirmed; however, petroleum contamination is excluded under CERCLA. Similarly, the presence or absence of PCB-containing transformers, asbestos, and lead-based paint at the Point Fermin Bunker has not been confirmed. A well-defined aquifer does not exist below the sites, and no known groundwater wells are located within 4 miles of the sites.

In 1994, the U.S. Air Force developed a Management Action Plan (MAP) to identify in more detail potential sources of contamination at military sites in the Los Angeles area, including FMA. The plan is under review by the RWQCB and DTSC. The MAP presents statements of fact concerning potential sources of contamination. The agencies will provide comments usually only if there is a disagreement as to the source of contamination or the characteristics of contamination. To date, DTSC has submitted no comments regarding the MAP (13).

7.0 Summary

Point Fermin Bunker is located near the coastline approximately 21 miles south of downtown Los Angeles in San Pedro, California, in a predominantly residential, commercial, and light industrial setting. Point Vicente Bunker is located in a similar setting approximately 1 mile south of Rancho Palos Verdes, which is approximately 7 miles northwest of the Point Fermin Bunker. The bunkers were used as a coastal defense installation and anti-artillery post from 1914 to 1975. In 1976, the U.S. Army transferred the bunker sites to the U. S. Coast Guard. The U.S. Coast Guard owns both of the vintage World War II bunker complexes, with the exception of the subsurface portion of Point Fermin Bunker, which is owned by the City of Los Angeles Recreation and Parks

communications equipment, while the Point Fermin Bunker has limited use by the Marine Exchange.

Historic military operations at FMA generated a variety of hazardous wastes, including pesticide-contaminated wastewater, solvents, paint thinner, paint sludge, organic solvents, and waste oil. These wastes were either discharged to stormwater/sanitary sewers or contained and transported off-site for disposal or recycling. Due to its long history of military use, FMA has been subjected to several environmental investigations to assess the possibility of contamination on FMA land. For instance, from 1945 to 1985, wastewater generated at FMA sites was discharged into Los Angeles Harbor, which leads to San Pedro Bay; however, no known contamination has been identified at either the Point Vicente or the Point Fermin Bunkers. The presence or absence of USTs, asbestos-containing materials, and lead-based paint at the Point Vicente Bunker has not been confirmed; however, petroleum contamination is excluded under CERCLA. Similarly, the presence or absence of PCB-containing transformers, asbestos, and lead-based paint at the Point Fermin Bunker has not been confirmed. A well-defined aquifer does not exist below the sites, and no known groundwater wells are located within 4 miles of the sites.

The following are the Hazard Ranking System factors pertinent to this site:

- Point Vicente and Point Fermin Bunkers lack a defined aquifer, and no groundwater wells are located within 4 miles of the site.

- Historic discharges of contaminated wastewater into Los Angeles Harbor and San Pedro Bay through storm drains may have impacted surface water quality near Point Vicente and Point Fermin Bunkers. Commercial and recreational fishing, as well as sensitive species, are known to occur within 15 miles downstream of Point Vicente and Point Fermin Bunkers.

Site Name: Fort MacArthur **EPA ID #:** CA5690331330

Alias Site Names:

City: San Pedro **County or Parish:** Los Angeles County **State:** CA

Refer to Report Dated: March 25, 1996 **Report Type:** Federal Facility SI Review

Report developed by: URS Consultants, Inc.

DECISION:

☑ **1. Further Remedial Site Assessment under CERCLA (Superfund) is not required because:**

☑ 1a. Site does not qualify for further remedial site assessment under CERCLA (Site Evaluation Accomplished - SEA)

☐ 1b. Site may qualify for further action, but is deferred to: ☐ RCRA ☐ NRC

☐ **2. Further Assessment Needed Under CERCLA**

2a. (optional) Priority: ☐ Higher ☐ Lower

2b. Activity Type ☐ PA ☐ ESI ☐ SI ☐ HRS evaluation

☐ Other _____

DISCUSSION/RATIONALE:

Report Reviewed and Approved by: Philip Armstrong **Signature:** Philip Armstrong **Date:** _____

Site Decision Made by: Philip Armstrong **Signature:** Philip Armstrong **Date:** 9/25/96

9.0 References

1. United States Environmental Protection Agency (EPA), Comprehensive Environmental Response Compensation and Liability Information System, January, 1, 1995.

2. U.S. EPA, Federal Facilities Hazardous Waste Compliance Docket, May 2, 1995.

3. URS Consultants, Inc., *Federal Facility SI Review, Fort MacArthur, San Pedro, California,* January 1994.

4. EARTH TECH, Inc., *Preliminary Assessment Report, United States Coast Guard Point Vicente and Point Fermin Bunkers, San Pedro, California*, October 1995.

5. Department of the Air Force, HQ Space Division, *Installation Restoration Program, Phase I: Records Search, Fort MacArthur, California,* Environmental Science and Engineering, Inc., July 1985.

6. Environmental Research Division Argonne National Laboratory, *Addendum to the Installation Restoration Program Preliminary Assessment, Upper Reservation, Fort MacArthur, San Pedro, CA,* August 1991.

7. U.S. Army Toxic and Hazardous Materials Agency, Aberdeen Proving Ground, MD., *Installation Assessment of Fort Ord, CA and its Subordinate Installations: Camp Roberts, Fort Hunter Liggett, Fort MacArthur and Presidio of Monterey, CA*, February 1983.

8. Stothers, Marda, and William E. Nichols, U.S. Coast Guard, and Gary Floyd, URS, teleconference, March 5, 1996.

9. Hensley, Larry, County of Los Angeles Parks and Recreation Department, and Gary Floyd, URS, telephone conversation, March 5, 1996.

10. United States Environmental Protection Agency, Resource Conservation and Recovery Information System (RCRIS), February, 1995.

11. Hanna, Michael, U.S. Air Force Los Angeles Air Force Base, and Gary Floyd, URS, telephone conversation, February 28, 1996.

12. Nagel , Richard, U.S. Army Corps of Engineers Los Angeles District, and Gary Floyd, URS, telephone conversation, February 28, 1996.

13. Gaslan, Milasol, California Environmental Protection Agency Department of Toxic Substances Control, and Gary Floyd, URS, telephone conversation, August 20, 1996.

14. Radulescu, Dan, California Regional Water Quality Control Board, and Gary Floyd, URS, telephone conversation, February 28, 1996.

15. Combs, Betty, South Coast Air Quality Management District, and Gary Floyd, URS, telephone conversation, February 28, 1996.

16. Neeley, Michael, City of Los Angeles Fire Department, Fuel Storage Tank Unit, and Gary Floyd, URS, telephone conversation, March 5, 1996.

17. U.S. EPA Region IX, IRM Branch, GIS Center Hazardous Waste Management Section, Fort MacArthur – Los Angeles County.

18. California Department of Fish and Game (CDFG), Poundage and Value of Landings and Shipments by Port, Los Angeles Area, 1977.

19. Conetta, Dave, City of Los Angeles Recreation and Parks Department, and Gary Floyd, URS, telephone conversation, March 5, 1996.

20. Thomas, Tom, Angels Gate Cultural Center, City of Los Angeles Recreation and Parks Department, and Gary Floyd, URS, telephone conversation, March 9, 1996.

Appendix A
Contact Log and Reports

Contact Log cont.

Facility Name: **Fort MacArthur (FMA)**
Point Vicente and Point Fermin Bunkers
Facility ID#: **CA5690331330**

Contact	Affiliation	Phone #	Date	Information
Julie Johnson (File Room Clerk)	California Environmental Protection Agency Department of Toxic Substances Control (Cal-EPA DTSC)	(310) 590-4980	2/28/96 3/5/96	The Cal-EPA DTSC has files for Fort MacArthur; however, a project officer has not been assigned for that site.
Michael Hanna	U.S. Air Force, Los Angeles Air Force Base (LAAFB)	(310) 363-0874	2/28/96	Point Vicente and Point Fermin Bunkers are no longer affiliated with the LAAFB.
Carlos Santos	California Regional Water Quality Control Board (RWQCB)	(213) 266-7658	2/28/96	Current records at RWQCB show no National Pollutant Discharge Elimination System (NPDES) requirements for FMA.
Dan Radulescu	RWQCB	(213) 266-7630	2/28/96	The RWQCB requires Fort MacArthur to comply with a general permit for submitting an annual stormwater prevention plan and a monitoring program for storm water discharges. The RWQCB failed to receive the latest required annual stormwater prevention plan and monitoring program from Fort MacArthur.

Contact Log cont.

Facility Name: **Fort MacArthur (FMA)**
Point Vicente and Point Fermin Bunkers
Facility ID#: **CA5690331330**

Contact	Affiliation	Phone #	Date	Information
Betty Combs	South Coast Air Quality Management District	(909) 396-2900	2/28/96	No requirements for Point Vicente or Point Fermin. Fort MacArthur possesses an air permit filed under Los Angeles Air Force Station (Facility ID# 096255) for the use of CFC-12 Freon (permit # D72497). The permit is currently active.
Richard Nagle	U. S. Army Corps of Engineers (COE)	(213) 894-2951 fax: (213)894-2013	2/28/96	The COE has maps of Point Vicente, but no maps of Point Fermin. The COE has no involvement with the Point Vicente or Point Fermin Bunkers.
Michael Neeley	City of Los Angeles, Fire Department, Tank Unit (LAFD)	(213) 485-7543	2/28/96 3/5/96	LAFD has a UST file for FMA. No file for Point Vicente or Point Fermin. Some USTs at FMA closed in-placed due to proximity to historical buildings.

Contact Log cont.

Facility Name: **Fort MacArthur (FMA)**
Point Vicente and Point Fermin Bunkers
Facility ID#: **CA5690331330**

Contact	Affiliation	Phone #	Date	Information
Milasol Gaslan	Cal-EPA DTSC	(310) 590-5568	3/5/96 8/20/96	The DTSC is not actively involved with FMA since no project officer has been assigned to the site. DTSC is currently reviewing the Management Action Plan, and have identified no short-comings to date (8/20/96).
Marda Stothers and William Nichols	United States Coast Guard, Civil, Environmental Branch	(510) 437-3916	3/5/96	Originally, the RWQCB had jurisdiction over Department of Defense sites, but more recently, the Cal-EPA DTSC has taken over jurisdiction of Department of Defense sites. Point Vicente Bunker is owned by the USCG. The actual subsurface bunker at Point Fermin Bunker is owned by the City of Los Angeles Recreation and Parks Department. The overlying land is owned by the USCG.

Contact Log cont.

Facility Name: **Fort MacArthur (FMA)**
Point Vicente and Point Fermin Bunkers
Facility ID#: **CA5690331330**

Contact	Affiliation	Phone #	Date	Information
Tom Thomas and Bill Allen	Angels Gate Cultural Center, City of Los Angeles Department of Recreation and Parks	(310) 548-2631 Messrs. Thomas and Allen are only available from noon to 5 p.m. on Saturdays and Sundays.	3/9/96	Technically speaking, there is no "Point Fermin Bunker." Battery 241 is probably what is being mistakenly called "Point Fermin Bunker." The transformers at Point Fermin Bunker are 1916 vintage and are still being used. They do not contain PCBs, only mineral oil (per Candice Rose of Argonne National Lab). The LAAFB completed a 2-year study as part of the Management Action Plan and successfully addressed and remediated all on-site environmental concerns, including USTs. The COE completed an ordnance survey in 1/96 and found no unexploded ordnance or exploded ordnance.

Contact Log cont.

Facility Name: **Fort MacArthur (FMA)**
Point Vicente and Point Fermin Bunkers
Facility ID#: **CA5690331330**

Contact	Affiliation	Phone #	Date	Information
Caesa Footracer	Angels Gate Cultural Center, City of Los Angeles Department of Recreation and Parks	(310) 519-0936	2/27/96	Ms. Footracer was not aware of any environmental concerns at Point Fermin Bunker. She recommended speaking with historian Mr. Julian Jimenez and Mr. Tom Thomas.
Julian Jimenez	Point Fermin Park Maintenance Supervisor, City of Los Angeles Department of Recreation and Parks	(310) 548-2631	3/8/96	Mr. Jimenez lives in the Point Fermin lighthouse, which is no longer operable, and is owned by the City of Los Angeles Department of Recreation and Parks. There is an adjacent "transient quarters" for USCG enlistees being reassigned posts. The park is named after Father Fermin, who planned to build a mission at Point Fermin, but due to lack of fresh drinking water built the mission at San Gabriel.

Contact Log cont.

Facility Name: **Fort MacArthur (FMA)**
Point Vicente and Point Fermin Bunkers
Facility ID#: **CA5690331330**

Contact	Affiliation	Phone #	Date	Information
Dave Conetta	City of Los Angeles Department of Recreation and Parks	(213) 485-5551	3/5/96	Mr. Conetta confirmed that the subsurface bunker at Point Fermin was the property of the City of Los Angeles Departments of Recreation and Parks.
Larry Hensley	County of Los Angeles Department of Parks and Recreation	(213) 738-2118	3/5/96	Mr. Hensley clarified the jurisdictions and departments of the City of Los Angeles Departments of Recreation and Parks versus the County of Los Angeles Department of Parks and Recreation.

Appendix B
Latitude/Longitude Worksheet

LATITUDE AND LONGITUDE CALCULATION WORKSHEET
#1
WHEN USING CUSTOM RULER OR COORDINATOR (TM)

SITE: Fort MacArthur - Point Vicente & Point Fermin Bunkers NUMBER: CA5690331330

AKA: USCG Point Vicnete & Point Fermin Bunkers SSID: _____

ADDRESS: Pacific Avenue

CITY: San Pedro STATE: CA ZIP CODE: 90731

SITE REFERENCE POINT: Center of Upper Reservation of Fort MacArthur Military Reservation

TOPO MAP San Pedro, California TOWNSHIP: 03S RANGE: 14W

SCALE: 1:24,000 MAP DATE: 1981 SECTION: NA 1/4 NA 1/4 NA 1/4 NA 1/4

MAP DATUM: ☒ 1927 ☐ 1983 MERIDIAN: San Bernardino

COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER OF 7.5' MAP:

LONGITUDE: 118° 15' 00" LATITUDE: 33° 37' 30"

COORDINATES FROM LOWER RIGHT (SOUTHEAST) CORNER OF 2.5 SUB-MAP:

LONGITUDE: NA° ___ ' ___ " LATITUDE: NA° ___ ' ___ "

CALCULATIONS: LATITUDE (7.5 MINUTE QUADRANGLE MAP)

A) ALIGN THE BOTTOM OF THE SCALE WITH BOTTOM OF GRID. ALIGN THE TOP OF THE SCALE WITH THE TOP OF GRID. POSITION EDGE OF RULER OVER SITE REFERENCE POINT WHILE KEEPING TOP AND BOTTOM ALIGNED.

B) READ TICS ON RULER AT 1OR 0.5 SECOND INTERVALS. (INTERPOLATE IF POSSIBLE)

0' 56"

C) RECORD LATITUDE: 33 38' 26"

CALCULATIONS: LONGITUDE (7.5 MINUTE QUADRANGLE MAP)

A) ALIGN THE BOTTOM OF THE SCALE WITH THE RIGHT SIDE OF GRID. ALIGN THE TOP OF THE SCALE W ITH THE LEFT SIDE OF GRID. POSITION EDGE OF RULER OVER SITE REFERENCE POINT WHILE KEEPING TOP AND BOTTOM ALIGNED.

B) READ TICS ON RULER AT 1 SECOND INTERVALS. (INTERPOLATE IF POSSIBLE)

0' 24"

C) RECORD LONGITUDE: 118 15' 24"

INVESTIGATOR: Gary A. Floyd DATE: 3-26-96

APPLICATION FOR CLOSURE
HAZARDOUS MATERIALS UNDERGROUND STORAGE
COUNTY OF LOS ANGELES-DEPARTMENT OF PUBLIC WORKS
WASTE MANAGEMENT DIVISION
900 S. FREMONT AVENUE
ALHAMBRA, CALIFORNIA 91803-1331

Permit B
File R/C
Fee $
Check [ ] Cash [ ]

OWNER: Name Commanding Officer, USCG ISC San Pedro, Ca Phone
Mailing Address P.O. Box 8 City San Pedro State Ca Zip 90731-0208

FACILITY:
Occupant Name United States Coast Guard Phone (310) 514-6414
Site Address RPV City Hall, Hawthorne Drive City Rancho palos Verdes Zip 90275
Mailing Address P.O. Box 8 City San Pedro State Ca Zip 90731-0208
Contact Person Jim Heinz , LT Title Engineering Officer

CONTRACTOR [ ], complete below: OWNER/OPERATOR AS CONTRACTOR [ ]
Name Phone
State License No. Class

CLOSURE REQUESTED:
[XX] PERMANENT, TANK REMOVAL (See Conditions A and C Attached)
How many underground tanks will remain after this closure?
[ ] PERMANENT, CLOSURE IN PLACE (See Conditions A and D Attached)
[ ] TEMPORARY (See Conditions A and B Attached)

TANK DESCRIPTION: PLOT PLAN ATTACHED [ ] EXISTING HMUSP NO.

Tank No.	Tank Mat'l	Age	Capacity	Materials Stored (Past/Present)
PTV-0001	Steel	35 years	4500 Gal	Number 1 Stove Oil
PTV-0002	Steel	35 years	4500 Gal	Number 1 Stove Oil

COMPLETE THE FOLLOWING:

	YES	NO
Has an unauthorized release ever occurred at this site?	[ ]	[XX]
Have structural repairs ever been made to these tanks?	[ ]	[XX]
Will new underground tanks be installed after closure?	[ ]	[XX]
Will any wells, including monitoring wells, be abandoned?	[XX]	[ ]

NOTICE: CONTAMINATED TANKS AND RESIDUES THAT MAY BE LEFT IN TANKS TO BE CLOSE MAY BE A HAZARDOUS WASTE WHICH MUST BE TRANSPORTED AND DISPOSED OF PURSUANT TO CHAPTER 6.5, CALIFORNIA HEALTH & SAFETY CODE. FAILURE TO COMPLY MAY BE PROSECUTED AS A FELONY VIOLATION.

By signature below the applicant certifies that all statements and disclosures above are true and correct and that they have read and agree to abide by this permit and all conditions and limitations attached.

Applicant's Signature Date
(Print Name) Phone
Owner [XX] Operator [ ] Contractor [ ]

TO BE COMPLETED BY THE DEPARTMENT OF PUBLIC WORKS

PURSUANT TO SECTION 11.80.070B, LOS ANGELES COUNTY CODE, PERMISSION IS HEREBY GRANTED TO PROCEED WITH THE CLOSURE DESCRIBED ABOVE SUBJECT TO THE ATTACHED CONDITIONS AND LIMITATIONS [X]. THIS PERMIT EXPIRES 180 DAYS FROM THE DATE BELOW.

BARRY W. STONE
Director of Public Works

By Date

732-7445

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

UNDERGROUND STORAGE TANK PERMIT APPLICATION - FORM A

COMPLETE THIS FORM FOR EACH FACILITY/SITE

MARK ONLY ONE ITEM: [ ] 1 NEW PERMIT [ ] 2 INTERIM PERMIT [ ] 3 RENEWAL PERMIT [ ] 4 AMENDED PERMIT [ ] 5 CHANGE OF INFORMATION [ ] 6 TEMPORARY SITE CLOSURE [X] 7 PERMANENTLY CLOSED SITE

I. FACILITY/SITE INFORMATION & ADDRESS - (MUST BE COMPLETED)

DBA OR FACILITY NAME: Point Vincente Bunker	NAME OF OPERATOR: United States Coast Guard
ADDRESS: RPV City Hall, Hawthorne Drive	NEAREST CROSS STREET: Palos verdes Dr W; PARCEL # (OPTIONAL)
CITY NAME: Rancho Palos Verdes; STATE: CA; ZIP CODE: 90275	SITE PHONE # WITH AREA CODE: None

✓ BOX TO INDICATE: [ ] CORPORATION [ ] INDIVIDUAL [ ] PARTNERSHIP [ ] LOCAL AGENCY DISTRICTS* [ ] COUNTY AGENCY* [ ] STATE AGENCY* [X] FEDERAL AGENCY*

* If owner of UST is a public agency, complete the following: name of supervisor of division, section, or office which operates the UST _____

TYPE OF BUSINESS: [ ] 1 GAS STATION [ ] 2 DISTRIBUTOR [ ] 3 FARM [ ] 4 PROCESSOR [X] 5 OTHER

[ ] ✓ IF INDIAN RESERVATION OR TRUST LANDS | # OF TANKS AT SITE: 02 | E.P.A. I.D. # (optional)

EMERGENCY CONTACT PERSON (PRIMARY)	EMERGENCY CONTACT PERSON (SECONDARY) - optional
DAYS: NAME (LAST, FIRST): Heinz, Jim; PHONE # WITH AREA CODE: (310)-~~514-6418~~	DAYS: NAME (LAST, FIRST): Howard, Anthony; PHONE # WITH AREA CODE: (310) ~~514-6418~~
NIGHTS: NAME (LAST, FIRST): Officer of the Day; PHONE # WITH AREA CODE: (310) 514-6400	NIGHTS: NAME (LAST, FIRST); PHONE # WITH AREA CODE

II. PROPERTY OWNER INFORMATION - (MUST BE COMPLETED)

NAME: United States Coast Guard	CARE OF ADDRESS INFORMATION: Integrated Support Command San Pedro
MAILING OR STREET ADDRESS: P.O. Box 8	✓ BOX TO INDICATE: [ ] INDIVIDUAL [ ] LOCAL AGENCY [ ] STATE AGENCY [ ] CORPORATION [ ] PARTNERSHIP [ ] COUNTY AGENCY [X] FEDERAL AGENCY
CITY NAME: San Pedro; STATE: CA; ZIP CODE: 90731-0208	PHONE # WITH AREA CODE: (310)514-6414

III. TANK OWNER INFORMATION - (MUST BE COMPLETED)

NAME OF OWNER: United States Coast Guard	CARE OF ADDRESS INFORMATION: Integrated Support Command San Pedro
MAILING OR STREET ADDRESS: P.O. Box 8	✓ BOX TO INDICATE: [ ] INDIVIDUAL [ ] LOCAL AGENCY [ ] STATE AGENCY [ ] CORPORATION [ ] PARTNERSHIP [ ] COUNTY AGENCY [X] FEDERAL AGENCY
CITY NAME: San Pedro; STATE: CA; ZIP CODE: 90731-0208	PHONE # WITH AREA CODE: (310) 514-6415

IV. BOARD OF EQUALIZATION UST STORAGE FEE ACCOUNT NUMBER - Call (916) 322-9669 if questions arise.

TY (TK) HQ 4 4 - [ ][ ][ ][ ][ ][ ]

V. PETROLEUM UST FINANCIAL RESPONSIBILITY - (MUST BE COMPLETED) - IDENTIFY THE METHOD(S) USED

✓ Box to indicate: [X] 1 SELF-INSURED [ ] 2 GUARANTEE [ ] 3 INSURANCE [ ] 4 SURETY BOND [ ] 5 LETTER OF CREDIT [ ] 6 EXEMPTION [ ] 99 OTHER _____

VI. LEGAL NOTIFICATION AND BILLING ADDRESS

Legal notification and billing will be sent to the tank owner unless box I or II is checked.

CHECK ONE BOX INDICATING WHICH ABOVE ADDRESS SHOULD BE USED FOR LEGAL NOTIFICATIONS AND BILLING: I. [ ] II. [X] III. [ ]

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT

OWNER'S NAME (PRINTED & SIGNED)	OWNER'S TITLE	DATE MONTH/DAY/YEAR

LOCAL AGENCY USE ONLY

COUNTY # [ ][ ] JURISDICTION # [ ][ ][ ] FACILITY # [ ][ ][ ][ ][ ][ ]

LOCATION CODE - OPTIONAL	CENSUS TRACT # - OPTIONAL	SUPVISOR - DISTRICT CODE - OPTIONAL

THIS FORM MUST BE ACCOMPANIED BY AT LEAST (1) OR MORE PERMIT APPLICATION - FORM B, UNLESS THIS IS A CHANGE OF SITE INFORMATION ONLY.

OWNER MUST FILE THIS FORM WITH THE LOCAL AGENCY IMPLEMENTING THE UNDERGROUND STORAGE TANK REGULATIONS

FORM A (rev)

Revised 3-97

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

UNDERGROUND STORAGE TANK PERMIT APPLICATION - FORM B

COMPLETE A SEPARATE FORM FOR EACH TANK SYSTEM.

MARK ONLY ONE ITEM
- [ ] 1 NEW PERMIT
- [ ] 2 INTERIM PERMIT
- [ ] 3 RENEWAL PERMIT
- [ ] 4 AMENDED PERMIT
- [ ] 5 CHANGE OF INFORMATION
- [ ] 6 TEMPORARY TANK CLOSURE
- [X] 7 PERMANENTLY CLOSED ON SITE
- [ ] 8 TANK REMOVED

DBA OR FACILITY NAME WHERE TANK IS INSTALLED: PT. Vincente Radio Station

I. TANK DESCRIPTION
COMPLETE ALL ITEMS - SPECIFY IF UNKNOWN

A. OWNER'S TANK I.D. #: PTV001 & PTV002
B. MANUFACTURED BY: Unknown
C. DATE INSTALLED (MO/DAY/YEAR): 09/31/61
D. TANK CAPACITY IN GALLONS: 4500 gallons/tank

II. TANK CONTENTS
IF A-1 IS MARKED, COMPLETE ITEM C.

A.
- [ ] 1 MOTOR VEHICLE FUEL
- [ ] 2 PETROLEUM
- [ ] 3 CHEMICAL PRODUCT
- [X] 4 OIL
- [ ] 80 EMPTY
- [ ] 95 UNKNOWN

B.
- [X] 1 PRODUCT
- [ ] 2 WASTE

C.
- [ ] 1a REGULAR UNLEADED
- [ ] 1b PREMIUM UNLEADED
- [ ] 2 LEADED
- [ ] 3 DIESEL
- [ ] 4 GASAHOL
- [ ] 5 JET FUEL
- [X] 99 OTHER (DESCRIBE IN ITEM D. BELOW)
- [ ] 6 AVIATION GAS
- [ ] 7 METHANOL

D. IF (A.1) IS NOT MARKED, ENTER NAME OF SUBSTANCE STORED: Stove Oil No.1 C.A.S. #:

III. TANK CONSTRUCTION
MARK ONE ITEM ONLY IN BOXES A, B, AND C, AND ALL THAT APPLIES IN BOX D AND E

A. TYPE OF SYSTEM
- [ ] 1 DOUBLE WALL
- [X] 2 SINGLE WALL
- [ ] 3 SINGLE WALL WITH EXTERIOR LINER
- [X] 4 SECONDARY CONTAINMENT (VAULTED TANK)
- [ ] 95 UNKNOWN
- [ ] 99 OTHER

B. TANK MATERIAL (Primary Tank)
- [X] 1 BARE STEEL
- [ ] 3 CONCRETE
- [ ] 9 BRONZE
- [ ] 2 STAINLESS STEEL
- [ ] 6 POLYVINYL CHLORIDE
- [ ] 10 GALVANIZED STEEL
- [ ] 3 FIBERGLASS
- [ ] 7 ALUMINUM
- [ ] 95 UNKNOWN
- [ ] 4 STEEL CLAD W/ FIBERGLASS REINFORCED PLASTIC
- [ ] 8 100% METHANOL COMPATIBLE W/FRP
- [ ] 99 OTHER

C. INTERIOR LINING
- [ ] 1 RUBBER LINED
- [ ] 5 GLASS LINING
- [ ] 2 ALKYD LINING
- [ ] 6 UNLINED
- [X] 95 UNKNOWN
- [ ] 3 EPOXY LINING
- [ ] 99 OTHER
- [ ] 4 PHENOLIC LINING

IS LINING MATERIAL COMPATIBLE WITH 100% METHANOL? YES ___ NO ___

D. CORROSION PROTECTION
- [ ] 1 POLYETHYLENE WRAP
- [ ] 3 CATHODIC PROTECTION
- [ ] 2 COATING
- [ ] 91 NONE
- [ ] 3 VINYL WRAP
- [ ] 95 UNKNOWN
- [ ] 4 FIBERGLASS REINFORCED PLASTIC
- [X] 99 OTHER Exterior Paint

E. SPILL AND OVERFILL — SPILL CONTAINMENT INSTALLED (YEAR): 1961 — OVERFILL PREVENTION EQUIPMENT INSTALLED (YEAR): 1961

IV. PIPING INFORMATION
CIRCLE A IF ABOVE GROUND OR U IF UNDERGROUND, BOTH IF APPLICABLE

A. SYSTEM TYPE: (A) (U) 1 SUCTION; (A) (U) 2 PRESSURE; A U 3 GRAVITY; A U 99 OTHER

B. CONSTRUCTION: A U 1 SINGLE WALL; A U 2 DOUBLE WALL; A U 3 LINED TRENCH; A U 95 UNKNOWN; A U 99 OTHER

C. MATERIAL AND CORROSION PROTECTION:
- A U 1 BARE STEEL
- A U 5 ALUMINUM
- (A) (U) 9 GALVANIZED STEEL
- A U 2 STAINLESS STEEL
- A U 6 CONCRETE
- A U 10 CATHODIC PROTECTION
- A U 3 POLYVINYL CHLORIDE (PVC)
- A U 7 STEEL W/ COATING
- A U 95 UNKNOWN
- A U 4 FIBERGLASS PIPE
- A U 8 100% METHANOL COMPATIBLE W/FRP
- A U 99 OTHER

D. LEAK DETECTION
- [ ] 1 AUTOMATIC LINE LEAK DETECTOR
- [ ] 2 LINE TIGHTNESS TESTING
- [ ] 3 INTERSTITIAL MONITORING
- [ ] 99 OTHER

V. TANK LEAK DETECTION
- [ ] 1 VISUAL CHECK
- [X] 6 TANK TESTING
- [ ] 2 INVENTORY RECONCILIATION
- [ ] 7 INTERSTITIAL MONITORING
- [ ] 3 VADOZE MONITORING
- [ ] 91 NONE
- [ ] 4 AUTOMATIC TANK GAUGING
- [ ] 95 UNKNOWN
- [ ] 5 GROUND WATER MONITORING
- [ ] 99 OTHER

VI. TANK CLOSURE INFORMATION
1. ESTIMATED DATE LAST USED (MO/DAY/YR): 09/93
2. ESTIMATED QUANTITY OF SUBSTANCE REMAINING: 0 GALLONS
3. WAS TANK FILLED WITH INERT MATERIAL? YES [ ] NO [X]

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY, AND TO THE BEST OF MY KNOWLEDGE, IS TRUE AND CORRECT

APPLICANT'S NAME (PRINTED & SIGNATURE): DATE:

LOCAL AGENCY USE ONLY
THE STATE I.D. NUMBER IS COMPOSED OF THE FOUR NUMBERS BELOW

STATE I.D.# — COUNTY # — JURISDICTION # — FACILITY # — TANK #

PERMIT NUMBER — PERMIT APPROVED BY/DATE — PERMIT EXPIRATION DATE

THIS FORM MUST BE ACCOMPANIED BY A PERMIT APPLICATION - FORM A, UNLESS A CURRENT FORM A HAS BEEN FILED.
FILE THIS FORM WITH THE LOCAL AGENCY IMPLEMENTING THE UNDERGROUND STORAGE TANK REGULATIONS

FORM B (12-91)

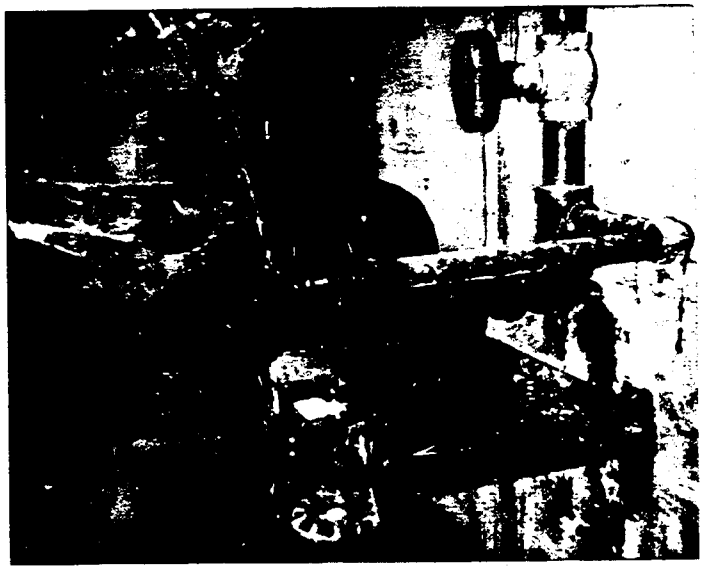
FORM B-96

TOTAL P.04

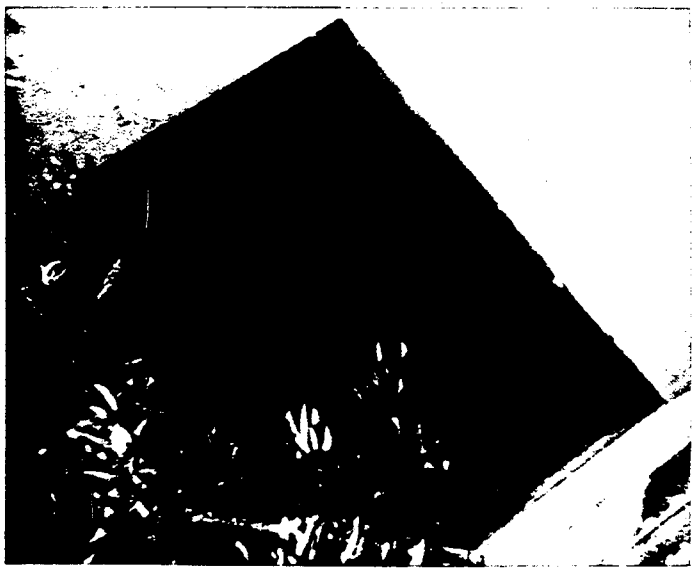
Typical example of both vaults.

Standing at the front of the tank looking aft.

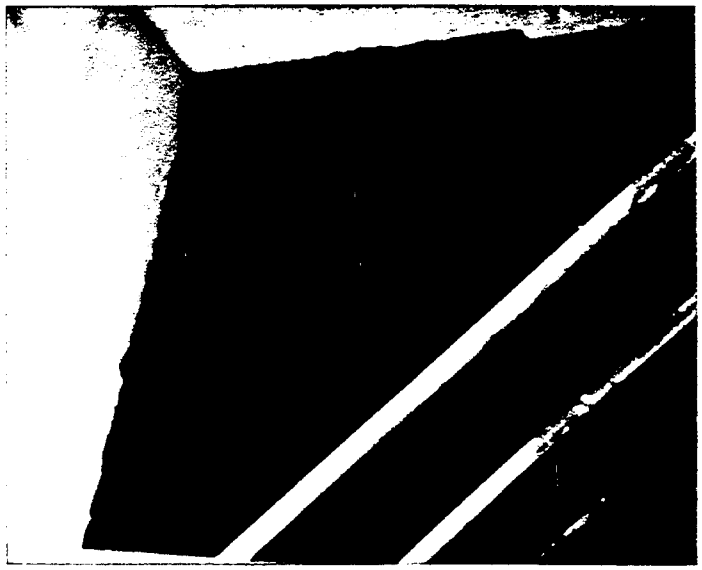
Pump and valve setup. Note oil on pipes.



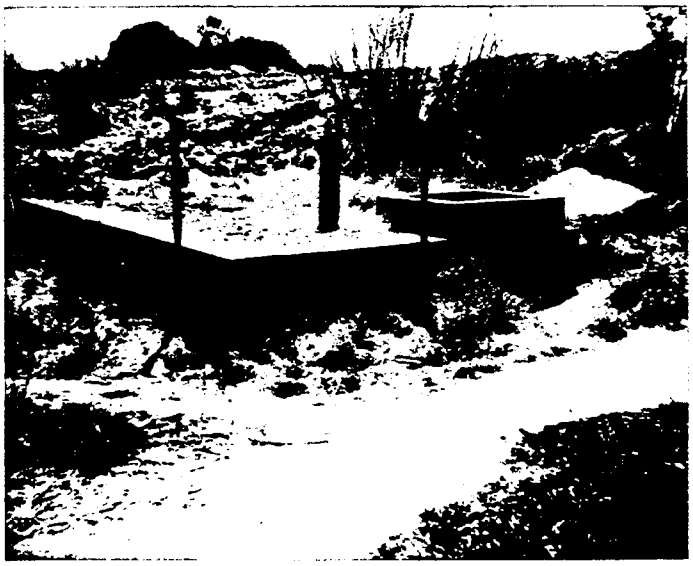
Looking down into tank #1



Looking down into tank #2

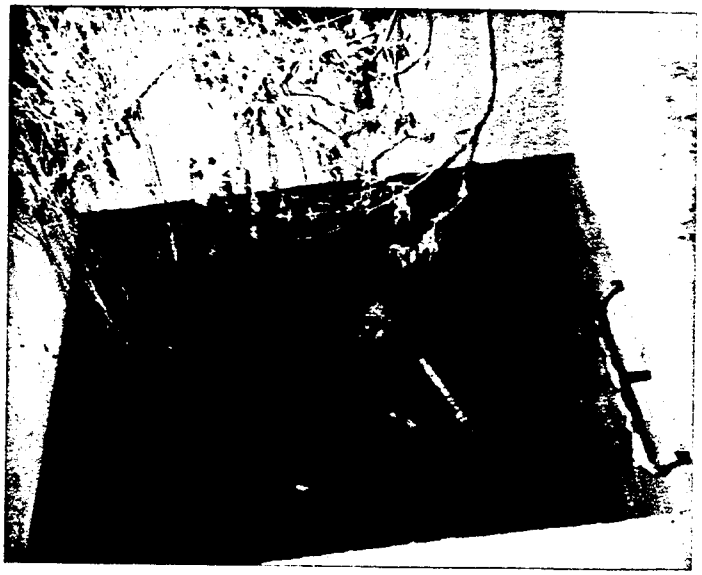


Tank #1 concrete vault



Tank #2 concrete vault

Concrete vault full of old pallets and garbage.
Located beside the north enterance.



DRAFT - FOR DISCUSSION PURPOSES ONLY

INTERIM REMOVAL SITE ASSESSMENT AND WORKPLAN

Point Vicente Interpretive Center
31501 Palos Verdes Drive West
Rancho Palos Verdes, California 90275

Submitted to

The California Department of Toxic Substances Control

On Behalf Of

CITY OF RANCHO PALOS VERDES
30940 Hawthorne Boulevard
Rancho Palos Verdes, CA 90275-5391

November 12, 1999

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INTERIM REMOVAL SITE ASSESSMENT
AND WORKPLAN

Point Vicente Interpretive Center
Palos Verdes Drive West
Rancho Palos Verdes, California

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1.0 INTRODUCTION AND EXECUTIVE SUMMARY

The Source Group, Inc. (TSG) is pleased to present this Site Assessment and Workplan for Interim Removal Action (Workplan) for soil stockpiled at the Point Vicente Interpretive Center (PVIC), located at 31501 Palos Verdes Drive West in the City of Rancho Palos Verdes, California.

The site is a portion of the Point Vicente Park property, owned by the County of Los Angeles and leased to the City of Palos Verdes. Historical records indicate that the site was a former rifle and small arms range which was used from the 1940's to the 1970's. Soil on the site contains lead from the rifle range activities.

This Workplan is intended to provide the Department of Toxic Substance Control (DTSC), Glendale Office, with a description of the environmental concerns and the proposed response approaches and actions. Specifically, these environmental concerns relate to the interim action of removal of stockpiled soil containing regulated levels of lead. This Workplan is being submitted to the California Department of Toxic Substances Control (DTSC), as the lead agency for the removal and other response actions at PVIC by the City of Rancho Palos Verdes (City), pursuant to Health & Safety Code Section 25356.1. The actions described in this Workplan are intended and will be implemented in a manner to comply with Health & Safety Code Section 25350, et seq., and applicable requirements of the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part. 300 (1998) [NCP], and specifically those requirements relating to removal actions (i.e., 40 C.F.R. Sections 400.410, et seq., and 300.700.)

This Workplan is limited to assessment and removal of lead-contaminated soil piles located on the site. Further response actions will be conducted after further environmental, engineering and geologic assessment, testing and analysis in conjunction with and under DTSC's supervision.

This Workplan presents a summary of TSG's investigation to address contaminants found or detected in soil at PVIC. The Workplan summarizes the results of the assessment performed to determine the potential risks to public health and the environment associated with the chemical contaminants found.

This Workplan also provides a discussion of the feasible alternatives that were evaluated. The Workplan recommends an alternative that will meet the objectives of protecting public health and the environment. Speicifically, this Workplan proposes removal of contaminated soil in the two temporary stockpiles at the site.

The City and TSG believe that this Workplan complies with the law as specified in California Health and Safety Code, section 25356.1(e) which requires "a statement of reasons setting forth the basis for the removal and remedial actions selected." The statement of reasons "shall also include an evaluation of the consistency of the removal and remedial actions proposed by the plan with the federal regulations and factors specified in subdivision (d)..." Subdivision (d) specifies six factors against which the remedial alternatives in this Workplan must be evaluated. The proposed removal action is consistent with the NCP and State and federal Superfund regulations. This Workplan addresses all these factors in detail.

The City and TSC also believe that this Workplan and the proposed removal action are exempt from Health & Safety Code Section 25356.1(h)(1), which provides exemptions to the requirement for preparing and approving a full Remedial Action Plan (RAP) if the site presents an imminent or substantial endangerment to the public health and safety or to the environment or a responsible party takes a removal action at a site and the estimated cost of the removal is less than $1 million. The City and TSG believe that the removal actions outlined in this Workplan meet these requirements.

The remedial objectives, methodologies, and equipment for the proposed interim removal efforts are presented herein.

2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION AND REMEDIAL INVESTIGATION ACTIVITIES

The site is located southwest of the intersection of Palos Verdes Drive West and Hawthorne Boulevard, part of the Point Vicente Park in the City of Rancho Palos Verdes, California (Figure 1). The site is developed with a building, parking lots, and landscaped areas that serve as the Point Vicente Interpretive Center. The site is currently undergoing construction associated with the expansion of the facility (Figure 2).

Earth moving activities during the facility expansion included the excavation and export of soil at the site. Testing of certain exported soils subsequent to the excavation indicated that portions of the surface soils at the site may have contained quantities of lead. Further testing at the site encountered additional lead contaminated soil in the surface soils at the site.

The lead contamination in the soil was apparently the result of past use of the site as a rifle and small arms range. The potentially lead-contaminated soil appears to be limited to a clay zone encountered at the site at shallow depths (ranging from one to four feet below ground surface [bgs]). The lateral extent of the lead contaminated soil is currently being defined by TSG's site assessment activities initiated in September 1999.

2.2 SITE HISTORY

Historical information and pertinent details are referenced from information provided by the City of Rancho Palos Verdes ("City").

The site is a portion of a 28.4-acre property that was previously operated by the U.S. Department of Defense as Nike Battery 55, as part of the Point Vicente Military Reservation and Fire Control Sites (FUDS Site No. J09CA05580). A rifle and small arms range was operated by the U.S. Army and possibly, the County of Los Angeles, from the 1940's to the 1970's. The range was deactivated in 1974.

According to the Findings of Fact and Site Survey Summary Sheet prepared by the U.S. Army Corps of Engineers (USACE) for the site, the property had been purchased from the Palos Verdes Corporation, as part of a 107.55 acre tract, and used for harbor defense of Los Angeles. In 1957, 10.53 acres of the tract were transferred to the County of Los Angeles and were developed as the Point Vicente County Park. Although the USACE's report identifies

environmental concerns relating to two underground storage tanks which were apparently removed from another portion of the former military reservation, no specific environmental concerns were identified with respect to the former range.

The City later received a grant to develop the site into a park site. From 1983 to 1984, as part of the development of the park property, the soil mound used for the rifle range was graded. The existing building on the site was constructed in 1984 (currently, the Point Vicente Interpretive Center).

In July 1999, as part of a planned expansion of the Point Vicente Interpretive Center, soil from the site was excavated and transported to property in San Pedro as fill material. Subsequent sampling of this transported soil indicated lead concentrations had the potential to exceed regulated levels. The soil was transported back to the PVIC site and temporarily placed in stockpiles (designated Stockpile A).

A second soil stockpile (Stockpile B) generated from grading activities also remains at the site (see Figure 2).

Stockpiles A and B are approximately 1,200 and 350 cubic yards in size, respectively. Using a density conversion of 1 cubic yard to 1.5 tons, the total weight of soil is estimated to be approximately 2,325 tons.

2.3 NOTIFICATIONS AND SITE INSPECTION

Upon discovery of the lead concentrations, the California Regional Water Quality Control Board - Los Angeles Region (RWQCB) was notified. At the time of the notification, the RWQCB was invited to oversee and/or participate in the corrective action measures. The RWQCB recommended the DTSC act as the lead agency because no potential threat to State waters was evident. Furthermore, the RWQCB believed that the scope of the lead mitigation has a greater relevance to health risk prevention.

DTSC was notified of the presence of lead in the soil promptly upon TSG's discovery of potential lead concentrations in reportable quantities. Such notice was followed by written notice to DTSC by the City and the subsequent filing of a Nonemergency Hazardous Substance Release Report, pursuant to Health & Safety Code Section 25359.4.

Notice has also been provided to the National Response Center and Region IX of the U.S. Environmental Protection Agency. (U.S.E.P.A.)

DTSC personnel have visited the site. The City will request an inspection of the site by DTSC personnel prior to implementation of the Workplan.

2.4 POTENTIALLY RESPONSIBLE PARTIES

The City has also given notice to the County of Los Angeles (the "County") and the United States Army, as Potentially Responsible Parties ("PRP's") and requested that such PRP's participate in all removal, remedial and other response actions at PVIC. These PRP's will be advised of the preparation of this Workplan and the proposed date of commencement of the

removal. The City will invite their comments on this Workplan and request that they advise the City and DTSC if they are prepared to perform the removal action promptly and properly themselves.

2.5 SUMMARY OF SITE RISKS AND EVALUATION OF RELEASE AND THREAT TO HEALTH AND THE ENVIRONMENT

Based on testing and sampling to date, TSG believes that the primary chemical of concern is lead.

The soil stockpiles, if left unmanaged, could present a threat to public health or the welfare or the environment. This is primarily due to the consolidation of the contaminant in an area that could cause contaminants in the form of dust from high winds or runoff from rains to leave the site. Temporary precautions have been implemented to control the soil stockpiles, but are not appropriate for long term protection of human health and environment.

As discussed in further detail in this Workplan, and based on TSG's evaluation of the potential threat to health and the environment in accordance with 40 CFR Section 300.415(b) and applicable DTSC and U.S.E.P.A. guidances, TSG believes that prompt removal of the soil stockpiles is necessary and the most appropriate response action under the circumstances.

At this point, TSG has not identified a potential discharge to surface or ground water. Therefore, TSG believes at this time that the release is not governed by the Clean Water Act.

3.0 GEOLOGIC AND HYDROGEOLOGIC SETTING

The site is located within the Peninsular Range geomorphic province which consists of predominantly northerly and northwesterly trending mountains and associated valleys. The site is located in the Palos Verdes Hills, south of the Coastal Plain of Los Angeles County.

The Palos Verdes Hills are bordered to the north and east by the Los Angeles Coastal Plain and to the south and west by the Pacific Ocean. The Palos Verdes Shelf extends seaward for about one mile from the coast of the Palos Verdes Hills. Elevation at the site ranges from approximately 180 feet above mean sea level (amsl) near the northeastern portion of the site, to 100 feet amsl near the coastal cliffs (USGS Topographic Map, Redondo Beach, California). The site slopes gently south-southwest to the coastal cliffs at the Pacific Ocean.

Bedrock in the southwestern Palos Verdes Hills consists of complex stratigraphic layering of shale, mudstone, siltstone, and volcanic basaltic rock. Deposition of shale, mudstone, and siltstone that forms the Monterey Formation occurred in the Tertiary Period. The volcanic rocks were formed contemporaneously with the Miocene age Monterey Formation. These volcanic rocks were deposited at shallow depths along the sea floor concurrent with the sedimentation and contain sedimentary rocks as clasts.

The near-surface soil at the site is underlain by clay soils and silty sand with gravel and fractured rock. The clay soil represents recent surficial deposits (derived from the weathered volcanics) and engineered fill from previous site development and grading related to adjacent

Palos Verdes Drive West. Silty sand represents material derived from volcanic rock and the Monterey Formation of shale, mudstone, and siltstone. Soil encountered during site assessment activities consisted of a silty, sandy clay layer ranging from two to eight feet in thickness. Below the clay, silty sandstone derived from the weathered bedrock was encountered. The clay layer was in direct contact with the bedrock in some areas throughout the site.

Tertiary deposits in the Palos Verdes Hills are nonwater-bearing (State of California Department of Water Resources, 1961). The County of Los Angeles Public Works Department of Hydrologic Records indicated that no public water wells exist within two miles of the site.

4.0 STOCKPILE SAMPLING

4.1 EXCAVATED SOIL STOCKPILE A

During the construction activities related to the expansion of PVIC in the City of Rancho Palos Verdes, soil was graded from the area of the proposed construction. Approximately 800 cubic yards of soil was removed from the site and transported to a construction site in San Pedro, California. Upon arrival at the San Pedro site, soil samples were obtained and analyzed for the presence of total metal concentrations (Title 22 metals; 17 regulated metals). The analytical results indicated that elevated concentrations of total lead and barium were present in the soil (Table 1). The environmental consultant, representing the developer of the construction site, collected and analyzed four additional samples for total lead and barium. The barium concentrations proved to be below State and Federally regulated levels. The subject soil was excavated from the San Pedro site, transported back to the PVIC, stockpiled, and secured in the western parking lot.

All five of the soil samples collected from the PVIC soil at the San Pedro site contained concentrations of total lead greater than 50 milligrams per kilogram (mg/kg) and were therefore analyzed for soluble lead by the Waste Extraction Test (WET) method under California Title 22 protocol. The analytical results from these additional analyses were received. The results exhibit concentrations of soluble lead above California thresholds for hazardous waste (Table 1 and Appendix A).

TSG returned to the PVIC site to collect additional soil samples from Stockpile A for lead characterization. At that time, 20 grab samples were collected from random locations throughout the stockpile. The samples were obtained for the purpose of evaluating the waste disposal alternatives. Initially, each sample was analyzed for the presence of total lead by EPA Method 6010. Following the receipt of the analytical results, the samples that exceeded total lead concentrations of 50 mg/kg and 100 mg/kg were also analyzed for soluble lead by the WET and TCLP protocol, respectively. These analyses were performed to determine the waste characteristics of the soil.

4.2 EXCAVATED SOIL STOCKPILE B

TSG collected 12 samples from a soil stockpile that remained at the Rancho Palos Verdes construction site. This stockpile was also generated by the expansion activities and was estimated to be approximately 350 cubic yards in volume. The preliminary analyses were for the presence of total lead. Similar to Stockpile A, the samples that exceeded total lead concentrations of 50 mg/kg and 100 mg/kg were analyzed for soluble lead by the WET and TCLP protocol, respectively. These analyses were performed to determine the waste characteristics of the soil (Table 2 and Appendix B).

5.0 CHARACTERIZATION AND PROFILING OF SOIL PILES

At present, the two stockpiles comprise approximately 2,000 to 2,400 tons of soil. For this quantity of soil, all 36 random soil samples were used to characterize the waste material. The soil samples were collected in four-ounce glass jars, labeled and packed for shipment to a Positive Lab Service, a State certified analytical laboratory. Samples were handled and transported under chain of custody protocol.

5.1 SAMPLING PLAN AND QUALITY ASSURANCE

The methods outlined in SW-846 provide a systematic approach for determining the mean concentration of a given contaminant within a soil and the appropriate number of samples necessary to calculate this mean to within a specified confidence level. Initial sampling will be performed based on one sample per 50 cubic yards of material.

The analytical results indicate that the soil must be profiled as non-RCRA hazardous waste, and therefore, all handling, transportation, and disposal will be performed accordingly. Quality assurance methodology is discussed in detail below.

5.2 STOCKPILE MANAGEMENT

Before the soil was returned from the San Pedro construction site, the potential stockpile areas were evaluated relative to public protection, drainage, traffic management, security, and ease of maintenance. The large parking lot depicted in Figure 2 (attached) was selected.

Prior to stockpiling the soil in the selected parking area, the asphalt concrete parking surface was covered with plastic sheeting. Similarly, all stockpiled soil was covered with plastic sheeting and secured with chain link fencing after the transfer activities were completed.

While interim removal alternatives were considered for the stockpiles, the soil piles and fenced compounds were maintained and placarding was posted to identify the areas as *Restricted*.

6.0 INTERIM CORRECTIVE ACTION

6.1 APPLICABLE, RELEVANT OR APPROPRIATE REGULATIONS (ARARS)

For the purposes of a removal action the following regulations or rules are identified as ARARs (Applicable or Relevant and Appropriate Requirements) for the PVIC site stockpiled soil.

1. Land disposal criteria for a non-RCRA hazardous waste.
   Stockpiled soil must be removed to an appropriately permitted facility for the disposal of lead contaminated soil meeting the California requirements (or Federal requirements if disposed of out of state) for a non-RCRA hazardous waste.

2. Ninety-day storage of hazardous waste without Storage facility permitting.
   The stockpiled soil has been shown by sample characterization to meet the definition of a non-RCRA hazardous waste and by such classification may not be stored onsite for more than 90 days without the acquisition of a storage facility permit or an extension on the non-permitted time frame. The process for the permitting and/or extension would exceed the time remaining under the non-permitted 90-day rule.

3. AQMD requirements for the loading of soil.
   The loading of soil into trucks has the potential for creating excessive levels of dust. The AQMD requires permits for excavations primarily for dust control (no permit is required for non-volatile contaminants) and may require notification for the loading of soil.

Other ARARS which normally would be evaluated for the onsite treatment, stabilization, or containment of the contaminated soil are not considered relevant due to the time period necessary to implement such an approach, most likely greater than six months.

6.2 ENGINEERING EVALUATION/ COST ANALYSIS AND TECHNOLOGY SCREENING

6.2.1 Response Action Analysis and Evaluation of Alternatives

The following removal and other response actions were evaluated for the soil stockpiles at the PVIC site in accordance with the nine evaluation criteria required by Health and Safety Code Section 25356.1(d) and the NCP to evaluate alternatives for cleaning up a hazardous substance release site. See, 40 CFR 300.430(e)

The alternatives evaluated are summarized and discussed below:

- Fences, warning signs, and site security/site control precautions: The site has been secured by fencing.

- Drainage controls: A winterization plan has been developed for the site in general. The stock piled soil is stored on plastic and covered with plastic with berms around the piles.

- Stabilization of berms, dikes, or impoundment's or drainage or closing of lagoons: the stockpiles currently contain berms around them.

- Capping of contaminated soils: the stockpiles are temporary capped with plastic

- Using chemicals and other material to retard the spread of a release: the contaminant is stable within the stock piled material and the need for a retarding of the release is not evident.

- Excavation, consolidation, or removal of highly contaminated soil from drainage or other areas: removal of the soil stockpiles will reduce the potential for the spread of or direct contact with the lead containing soil.

- Containment, treatment, disposal, or incineration of hazardous materials to reduce the likelihood of human, animal, or food chain exposure: the following options were evaluated.

- Soil washing: appears to be possible, but not feasible due to the time to implement and complete.

- Chemical fixation: requires the contaminant to remain on-site in an inert state. Will not be feasible due to the time to implement.

- Soil containment or encapsulation: requires that the contaminant remain onsite in a condition that does not allow for exposure to humans or the environment.

- Soil disposal: this option directly addresses any issues relating to the storage of a hazardous waste and can be implemented at the site for the stock piled soil.

Although several containment and treatment options are potentially technically and cost feasible, the time period within which the work must be completed does not meet feasibility or the time requirements specified by DTSC. DTSC requires that hazardous substances be moved from a site and not be stored for more than 90 days unless the site is a permitted facility. PVIC is not a permitted facility. Accordingly, alternatives, which would require time beyond the 90-day period, were not considered to be feasible options.

The option that does meet technical, cost, and hazardous waste disposal criteria, as well as each of the nine criteria set forth in the NCP, is the removal and disposal of the soil stockpiles.

Therefore, the soil stockpiles will be appropriately manifested and transported to a licensed Treatment, Storage and Disposal Facility (TSDF) for final disposal of the lead contaminant.

6.3 INTERIM CORRECTIVE ACTION

As discussed above, the selected interim corrective action is removal of the soil stockpiles followed by immediate transport and disposal of the soil at an appropriately licensed facility.

Upon completion of waste profiling (pre-qualifying the soil at the selected waste disposal facility), the soil contained in stockpiles A and B will be loaded into hazardous waste certified trucks and transported to a hazardous waste disposal facility. The material will be transported under California hazardous waste manifests by appropriately licensed waste haulers. Approximately 105 truck trips will be made to remove the stockpiles from the PVIC site (using end dump trucks).

The site will be under strict dust control by the use of water on the soil during loading operations and by use of plastic sheeting covers where piles are not actively being loaded. Site personnel will be required to use level D personal protective equipment (PPE), hard hat, eye protection, steel toed shoes, long pants. If dust conditions warrant site personnel will upgrade to modified level C by using respirators with organic, dust filter cartridges. Level D PPE will be required in all other areas within the exclusion zone.

6.4 PLANNING PERIOD

A planning period of at least six months is not available to conduct the interim removal action with respect to the stockpiles. Accordingly, the removal action will be implemented as soon as practicable.

7.0 SCHEDULE

With the start of fieldwork, the following schedule (in business days) is proposed:

Scheduling/Coordination	**3 to 7 days**
Waste Pre-qualification	**2 to 5 days**
Fieldwork	**2 to 4 days**
Soil loading	
Site cleanup	
Data Management & Reduction	**7 to 10 days**
Reporting	**7 to 14 days**

The interim removal operation will be considered complete upon the removal of stockpiles A and B. At the close of the removal action a report will be developed and submitted to the DTSC.

8.0 HEALTH AND SAFETY

8.1 HEALTH AND SAFETY PROGRAM

TSG considers proper health and safety to be a foremost concern. In accordance with the Occupational Safety and Health Administration (OSHA), all personnel involved with the field activities will be required to comply with the conditions set forth in 29 CFR 1910.120, including medical surveillance/monitoring, 40-hour training with current 8-hour refreshers, and applicable supervisory training. The potential physical and chemical hazards will be clearly documented in the Health and Safety Plan (HASP) developed specifically for the PVIC project.

All personnel involved in on-site operation will be apprised of the risks of working with the site contaminants by a Hazard Communications document. If site personnel are not involved in a yearly health monitoring program, TSG will recommend blood screening before and after the project be implemented. TSG personnel currently participate in a heath monitoring program.

Risk of exposure to lead for workers is deemed low (inhalation is the only route of exposure), the PVIC soil is primarily clay and does not dust when disturbed by excavation. Regardless, the site will be managed to eliminate any dust generation by the use of soil watering and plastic coverings, during active testing and soil removal as well as during non-active periods prior to soil removal from the site. This will in turn remove any risk of exposure to surrounding communities.

Prior to the start of field activities, a site-specific health and safety plan will be completed and circulated to appropriate site personnel and kept onsite during the actual work.

8.2 EQUIPMENT DECONTAMINATION

A decontamination area for vehicles leaving the exclusion zone will be constructed. The zone will consist of a rumble strip for the removal of soil from tires, and a brush down area for the removal of soil and dust from vehicle body parts. With the last truckload of soil waste, the decontamination area will be cleaned up and the material shipped with the last truck out of the PVIC site.

8.3 SITE CONTROLS AND MANAGEMENT

Access to restricted areas such as the Exclusion Zone (EZ), Contamination Reduction Zone (CRZ), and the Support Zone (SZ) will be strictly controlled during all working phases. Health and Safety measures will be implemented and governed to minimize the potential exposure to unprotected personnel (e.g., vendors/suppliers, visitors, regulators, and workers). Governing these restricted areas will also encompass the necessary medical surveillance, safety training, and maintenance of personal protective equipment.

A secured entrance with a visitor's log will be maintained for all personal permitted to enter the different potential exposure zones. Physical barriers will be installed between potential exposure zones, with area-specific sign-in logs for tracking the personnel and equipment, in accordance with the HASP. The daily activity log, maintained by the Site Supervisor, will contain a record of all significant activities, including lists of personnel, visitors, vehicles, and equipment entering and leaving the site. The Site Supervisor's activity log will also document the decontamination procedures, as the specific resource is moving through the decontamination zones.

9.0 QUALITY ASSURANCE/QUALITY CONTROL

The purpose of this section is to outline the standard procedures for obtaining representative data that can be used to meet the objectives of the project. In general, data quality and representativeness are assured by adherence to the formalized and standardized field and laboratory procedures outlined herein. All field and laboratory procedures are performed by trained, qualified personnel.

The objectives of this section can be subdivided into the following elements:

- Sample handling and chain-of-custody procedures;
- Equipment calibration and maintenance procedures;
- Analytical procedures;
- Data reduction, validation, and reporting methods;
- Internal quality control checks;
- Performance and system audits;
- Preventive maintenance methods;
- Data assessment procedures;
- Corrective action procedures; and
- Quality assurance reporting.

These are discussed in Appendix C.

Samples collected for chemical characterization will be analyzed by a State-certified analytical testing laboratory. The analytical laboratory will be accredited under the ELAP, and will perform chemical analyses in accordance with the Federal Safe Drinking Water Act and Cal-EPA regulations in the Drinking Water, Waste Water, and Hazardous Waste categories. The analytical laboratory will provide quality oversight of chemical analyses.

The general field procedures to be used by TSG in sample collection include:
- Proper decontamination procedures;
- Residuals management;
- EPA-approved sampling methods; and
- Proper record keeping/sample tracking.

The analytical laboratory procedures include the following:
- EPA-acceptable sample preparation and analytical methods;
- Regularly scheduled instrument calibration via standard analytical reference materials;
- Regular equipment maintenance and servicing;
- Control samples (spikes, blanks, duplicates) and method control charts;
- Statistical data evaluation to identify acceptable limits, including analytical precision and accuracy determination;
- Corrective action for "out-of-control" situations; and
- Laboratory record keeping including sampling chain-of-custody documentation from field to laboratory and in the laboratory.

10.0 INTERIM REMOVAL COMMUNITY RELATIONS PROGRAM

10.1 SPOKESPERSONS

The City requests that DTSC identify a primary Spokesperson for the agency with respect to the actions set forth in this Workplan. The primary Spokeperson for the City with respect is:

Dean Allison
Director of Public Works

City of Rancho Palos Verdes
30940 Hawthorne Boulevard
Rancho Palos Verdes, California 90275-5391

Telephone: (310) 541-6500
Fax: (310) 377-4582

10.2 PUBLIC MEETING

A public meeting will be scheduled prior to commencement of the removal action. Appropriate officials from the regulatory agencies, including DTSC, will be scheduled to attend. Notice of this meeting will be published in local newspapers and posted at City Hall, and sent to all interested parties, including PRP's and the media.)

The purpose of this public meeting is to present:

- An assessment of the degree of contamination.
- The risks to human health and the environment posed by site conditions.
- A discussion of all alternatives considered, including those rejected.
- A description of the proposed removal action.
- An estimate of the time required to perform the removal action.
- The rationale for selection of the proposed removal action.

At DTSC's request, the City will take other appropriate steps to make the community aware of the Workplan and the contemplated removal actions at the site, and, if necessary, prepare a community profile report.

10.3 RESPONSES TO COMMENTS AT PUBLIC MEETING

The City will prepare written responses to any comments made at the public meeting and will make appropriate modifications of the Workplan to the extent necessary to address concerns raised by such comments.

11.0 INITIAL ADMINISTRATIVE RECORD

11.1 PREPARATION OF RECORD

The City requests that DTSC prepare and maintain an administrative record in accordance with 40 CFR 300.415 and Management Memo #EO-94-004-MM, "Identification of the Administrative Record."

The City will prepare its own initial administrative record, which will be publicly available at City Hall, and will be updated regularly with information regarding the site and the removal action. The record will include all public City Council minutes relating to the site remediation and removal actions.

11.2 CONTENTS OF RECORD

The City will maintain records and documentation of all actions, including

a. All environmental assessments.

b. Copies of the minutes of all public meetings where removal action was discussed.

c. Technical documents generated during the cleanup process.

d. Information regarding the location of off-site disposal and treatment (i.e. waste manifests),

e. Photographs of the cleanup in progress.

11.3 PUBLICATION

The city will promptly publish in the local newspaper a notice of availability of the administrative record and request comments on the record and the Workplan.

12.0 STANDARD LIMITATIONS

All work was performed under the supervision of a California Registered Geologist as defined in the Registered Geologist Act of the California Code of Regulations. The information contained in this report represents TSG's professional opinions, and is based, in part, on information supplied by the client. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location.

13.0 REFERENCES

California Division of Mines and Geology, *Geology of the Los Angeles Basin*, in Geology of Southern California, Bulletin 170, 1954.

California Regional Water Quality Control Board – Los Angeles Region, Interim Site Assessment & Cleanup Guidebook, Groundwater Protection.

US EPA, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, US Environmental Protection Agency, 1986.

California Department of Toxic Substances Control, *Remedial Action Plan (RAP) Policy* (1995).

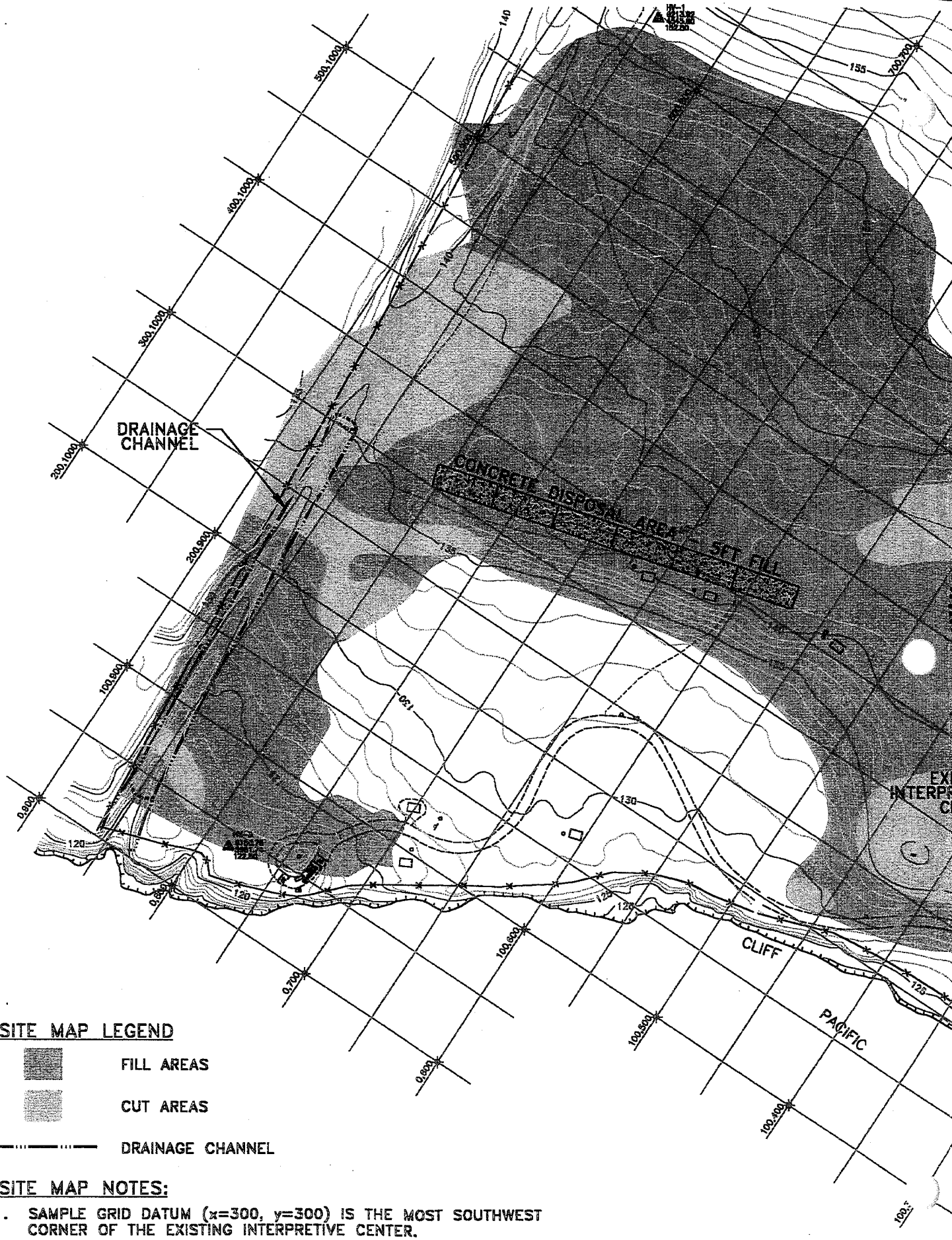
TABLES

FIGURES

APPENDIX A

APPENDIX B

APPENDIX C

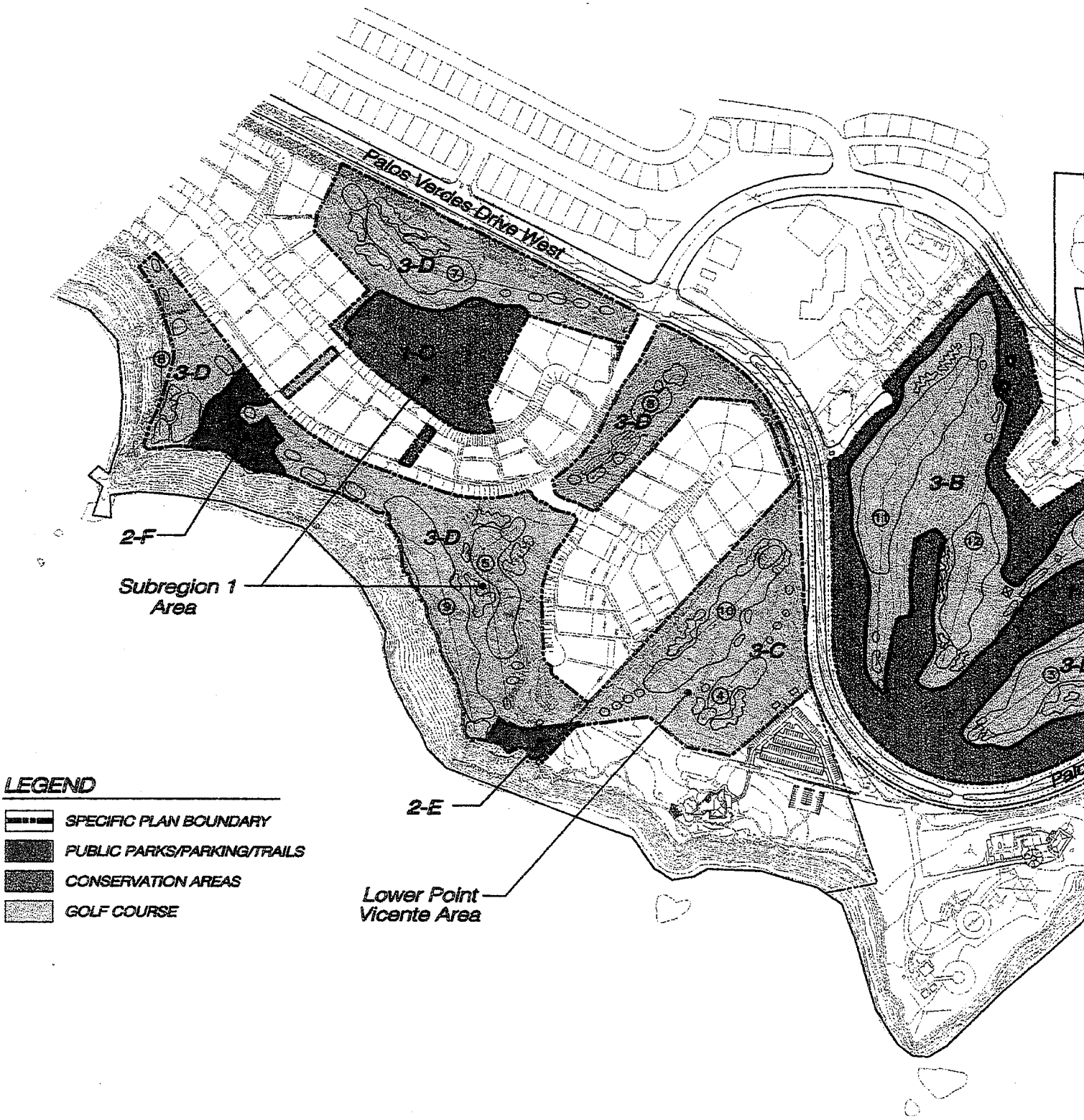


SITE MAP LEGEND

- FILL AREAS
- CUT AREAS
- DRAINAGE CHANNEL

SITE MAP NOTES:

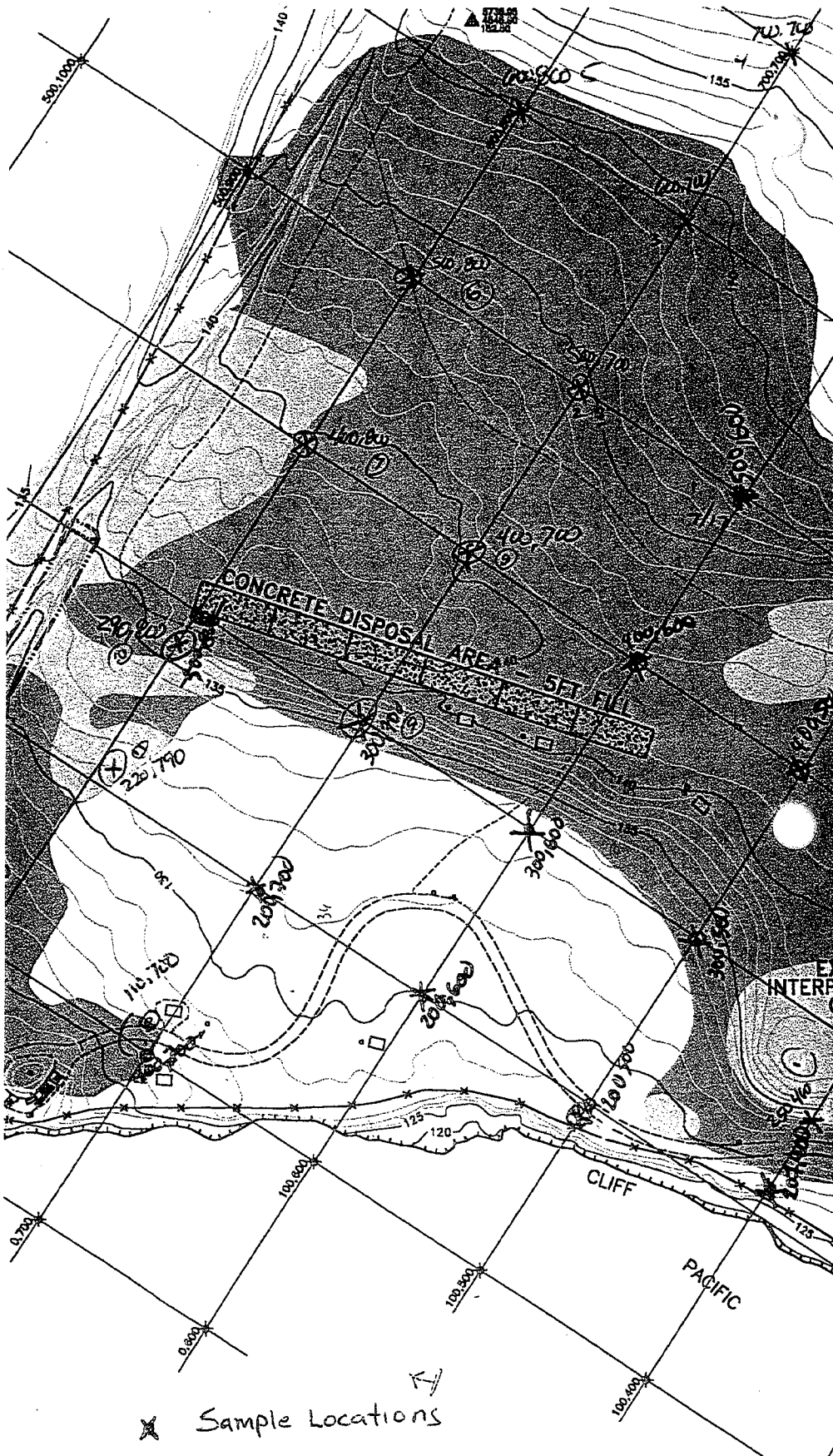
1. SAMPLE GRID DATUM (x=300, y=300) IS THE MOST SOUTHWEST CORNER OF THE EXISTING INTERPRETIVE CENTER.



NOTE: This exhibit depicts a design component of the Long Point Resort. In conjunction with the submittal of construction drawings/specifications to the City of Rancho Palos Verdes or other public agencies for building and similar permits, minor refinements may be made to the design shown on this exhibit, provided they are consistent with the intent and character of this exhibit, and are based upon an increased level of design/engineering information or are in response to legal/agency requirements.

LONG POINT RESORT

City of Rancho Palos Verdes • California



y=300) IS THE MOST SOUTHWEST
RPRETIVE CENTER.

C. Qualifications of Environmental Professionals

QUALIFICATIONS AND EXPERIENCE

RBF Consulting, established in 1944, has over 55 years of experience in providing comprehensive land development services. Some, but not all of the services RBF Consulting provides includes:

- Construction Management
- Entitlement/Governmental Processing
- Environmental Services (CEQA/NEPA documents, permitting)
- Feasibility Studies/Due Diligence Reports
- Infrastructure Planning and Design (circulation, water, wastewater, flood control, dry utilities)
- Land Planning (Site Plans, Landscape Architecture, Specific Plans, Master Plans)
- Media Services (video, newsletters, presentation/marketing materials)
- ***Phase I Environmental Site Assessments***
- Site Engineering (Grading, Structures)
- Surveying, Mapping and Aerial Photogrammetry

FOCUS ON: **Phase I Environmental Site Assessments (ESAs).** Phase I ESA's prepared by RBF Consulting reflect the most current interpretations of industry standards which are the American Society for Testing & Materials (ASTM) standards for commercial real estate transactions (E1527-97 and E1528-97). The comprehensive in-house capabilities and professional experience in completing a wide range of projects allows RBF to effectively and efficiently complete Phase I Environmental Site Assessments for any type of property.

RBF REPRESENTATIVE PROJECTS

RBF Consulting's staff is uniquely qualified to effectively manage complex projects. RBF Consulting has prepared Phase I ESAs on vacant, residential, commercial, industrial and federal properties, for a wide range of clients. Our clients include, but are not limited to, the following:

- Avanti Investment Advisors (multiple sites)
- Bardeen Investment Company
- California Department of Transportation (multiple sites)
- City of Bell Gardens (multiple sites)
- City of Lake Elsinore
- City of Lynwood (multiple sites)
- City of Murrietta (multiple sites)
- City of Palm Desert
- City of Rancho Mirage
- City of Temecula
- City of Watsonville
- Community Southwest
- Kemper Real Estate
- Kredit Toronto Corporation (multiple sites)
- Lear Enterprises (multiple sites)
- Midland Properties (multiple sites)

KEY PERSONNEL

Projects are overseen by Mr. Kevin Thomas, Registered Environmental Assessor/Certified Environmental Inspector (REA/CEI), Senior Director of Environmental Services. Document research and preparation will be provided by Mr. Trevor Smith, REA/CEI and Mr. Bruce R. Grove Jr., REA/CEI.

Kevin G. Thomas, REA #03634, CEI #12317
Senior Director, Environmental Services

Mr. Thomas has forteen years of environmental analysis and CEQA/NEPA experience and a B.A. in Environmental Engineering from the University of California, Los Angeles. Mr. Thomas has expertise in project management and technical study review and preparation for various infrastructure, office/commercial/industrial, residential, recreational, and similar projects. Recent Phase I ESA experience includes the 24-mile long Moulton Parkway Smart Street project, and multiple ESA's for private development projects. Mr. Thomas has extensive knowledge and experience with all issues associated with assessing properties, and is familiar with the regulatory agency requirements. Mr. Thomas' strong technical background and extensive experience allows him to effectively interface with any engineering elements of projects.

Trevor Smith, REA #06161, CEI #12316
Project Manager, Environmental Services

Mr. Smith graduated from the University of California, Santa Barbara, with a degree in Geography and Environmental Studies. Mr. Smith is nearing completion of an Environmental Site Assessment and Remediation Certificate at the University of California, Irvine, and has completed a 40-hour OSHA training course. As an Environmental Analyst at RBF, Mr. Smith's duties include research, analysis, and writing of environmental documents. Mr. Smith has been involved in the research and preparation of each Phase I ESA prepared at RBF. In addition to the preparation of Phase I ESAs, Mr. Smith is responsible for preparing CEQA and NEPA related documents as well as preparing necessary permits for several large scale developments.

Bruce R. Grove Jr., REA #06865, CEI #14551
Senior Environmental Analyst/Project Coordinator, Environmental Services

Mr. Grove graduated from California State University, Chico, with a degree in Geography and Planning. Mr. Grove assists in the preparation of environmental and planning studies for public and private sector clients, in accordance with the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA). Mr. Groves's professional environmental experience includes the management and preparation of Phase I Environmental Site Assessments (ESAs), Initial Site Assessments (ISAs), and Environmental Baseline Surveys (EBSs) consistent with the American Society Testing of Materials (ASTM) Standards for sites located throughout California and Arizona. In addition Mr. Grove serves as Field Analyst for several projects requiring conceptual analysis of flood control issues, including the assessment of existing wetland/habitat areas, opportunities for wetland habitat enhancement, and permit/regulatory services including acquisition of permits from the Army Corps of Engineers (404), California Department of Fish and Game (Streambed Alteration Agreements), State Water Quality Control Board (NPDES Dewatering, NPDES Stormwater Runoff, and Water Quality Certification), and the California Coastal Commission (Coastal Development Permits, Consistency Determinations).

CITY OF RANCHO PALOS VERDES
POINT VICENTE INTERPRETIVE CENTER

Table 3. Lead Concentrations in Soil at the Point Vicente Interpretive Center

Sample Identification	Date Sampled	Total Lead Concentration	Soluble Lead Concentration	
		TTLC (mg/kg)	Title 22 WET (STLC; mg/l)	TCLP (mg/l)
GB-350-200-2.5'	09/14/99	**60**	pending	NA
GB-400-200-1'	09/14/99	**130**	pending	pending
GB-400-250-1'	09/14/99	**120**	pending	pending
GB-400-300-1'	09/14/99	5.2	NA	NA
GB-400-350-0.5'	09/14/99	38	NA	NA
GB-450-200-1.5'	09/14/99	4.8	NA	NA
GB-450-250-1'	09/14/99	5.0	NA	NA
GB-450-289-0.5'	09/14/99	**6,100**	pending	pending
GB-490-250-0.5'	09/14/99	5.8	NA	NA
GB-500-200-0.5'	09/14/99	7.4	NA	NA
GB-550-200-0.5'	09/14/99	40	NA	NA
GB-550-250-0.5	09/14/99	7.5	NA	NA
GB-200-600-0.5'	09/15/99	7.0	NA	NA
GB-200-700-0.5'	09/15/99	11	NA	NA
GB-207-300-0.5'	09/15/99	5.8	NA	NA
GB-250-250-0.5'	09/15/99	18	NA	NA
GB-250-300-0.5'	09/15/99	21	NA	NA
GB-300-200-0.5'	09/15/99	4.2	NA	NA
GB-300-250-0.5'	09/15/99	26	NA	NA
GB-350-150-0.5'	09/15/99	4.8	NA	NA
GB-350-250-1'	09/15/99	42	NA	NA
GB-400-150-0.5'	09/15/99	22	NA	NA
GB-450-100-0.5'	09/15/99	16	NA	NA
GB-450-140-0.5'	09/15/99	23	NA	NA
GB-450-50-0.5'	09/15/99	20	NA	NA
GB-500-150-0.5'	09/15/99	**65**	pending	NA
GB-500-300-0.5'	09/15/99	31	NA	NA
GB-550-100-0.5'	09/15/99	5.6	NA	NA
GB-550-300-0.5'	09/15/99	**70**	pending	NA
GB-600-250-0.5'	09/15/99	16	NA	NA
GB-600-300-0.5'	09/15/99	9.9	NA	NA
GB-600-500-0.5'	09/15/99	8.1	NA	NA
GB-600-600-0.5'	09/15/99	9.9	NA	NA
GB-610-200-0.5'	09/15/99	5.8	NA	NA
GB-650-200-0.5'	09/15/99	9.8	NA	NA
GB-700-400-0.5'	09/15/99	11	NA	NA
GB-700-500-0.5'	09/15/99	9.0	NA	NA
GB-800-300-0.5'	09/15/99	8.1	NA	NA
GB-800-400-0.5'	09/15/99	5.1	NA	NA
GB-800-500-0.5'	09/15/99	8.9	NA	NA
GB-200-500-0.5'	09/16/99	17	NA	NA
GB-300-300-0.5'	09/16/99	2.1	NA	NA
GB-300-350-0.5'	09/16/99	20	NA	NA
GB-300-400-0.5'	09/16/99	**140**	pending	pending
GB-300-500-0.5'	09/16/99	15	NA	NA

CITY OF RANCHO PALOS VERDES
POINT VICENTE INTERPRETIVE CENTER

Table 3. Lead Concentrations in Soil at the Point Vicente Interpretive Center

Sample Identification	Date Sampled	Total Lead Concentration	Soluble Lead Concentration	
		TTLC (mg/kg)	Title 22 WET (STLC; mg/l)	TCLP (mg/l)
GB-300-600-0.5'	09/16/99	29	NA	NA
GB-350-350-0.5'	09/16/99	15	NA	NA
GB-400-400-0.5'	09/16/99	5.3	NA	NA
GB-400-500-0.5'	09/16/99	7.1	NA	NA
GB-400-600-0.5'	09/16/99	12	NA	NA
GB-500-100-0.5'	09/16/99	14	NA	NA
GB-500-415-0.5'	09/16/99	14	NA	NA
GB-500-500-0.5'	09/16/99	18	NA	NA
GB-550-150-1'-2'	09/16/99	**170**	pending	pending
GB-600-100-0.5'	09/16/99	8.8	NA	NA
GB-700-210-0.5'	09/16/99	14	NA	NA
GB-700-300-0.5'	09/16/99	5.3	NA	NA
GB-710-640-0.5'	09/16/99	8.2	NA	NA
GB-800-600-0.5'	09/16/99	8.8	NA	NA
GB-800-700-0.5'	09/16/99	5.0	NA	NA
GB-890-600-0.5'	09/16/99	5.7	NA	NA
GB-900-400-0.5'	09/16/99	4.8	NA	NA
GB-900-500-0.5'	09/16/99	9.5	NA	NA
GB-100-800-0.5'	09/17/99	4.8	NA	NA
GB-110-700-0.5'	09/17/99	6.8	NA	NA
GB-220-790-0.5'	09/17/99	9.1	NA	NA
GB-290-800-0.5'	09/17/99	5.7	NA	NA
GB-300-700-0.5'	09/17/99	5.8	NA	NA
GB-400-700-0.5'	09/17/99	2.4	NA	NA
GB-400-800-0.5'	09/17/99	30	NA	NA
GB-500-600-0.5'	09/17/99	13	NA	NA
GB-500-700-0.5'	09/17/99	8.1	NA	NA
GB-500-800-0.5'	09/17/99	5.2	NA	NA
GB-600-700-0.5'	09/17/99	37	NA	NA
GB-600-800-0.5'	09/17/99	5.3	NA	NA
GB-700-700-0.5'	09/17/99	5.7	NA	NA
Simple Average Concentration		101.4		
Threshold for California Hazardous Waste		≥1,000	≥5	Not Applicable
Threshold for RCRA Hazardous Waste		Not Applicable	Not Applicable	≥5

Notes:

1. Estimated quantity of soil to be remediated ranges from 7,500 to 25,000 cubic yards
2. mg/kg = milligrams per kilogram (parts per million)
3. mg/l = milligrams per liter (analogous to parts per million)
4. NA = Not Analyzed
5. TTLC = Total Threshold Limit Concentration
6. Title 22 WET = California Code of Regulations, Title 22 Waste Extraction Test
7. STLC = Soluble Threshold Limit Concentration
8. TCLP = Toxicity Characteristic Leaching Potential

CITY OF RANCHO PALOS VERDES
POINT VICENTE INTERPRETIVE CENTER

Table 1. Lead Concentrations in Stockpile A (Hiuka Soil)

Sample Identification	Date Sampled	Total Lead Concentration	Soluble Lead Concentration	
		TTLC (mg/kg)	Title 22 WET (STLC; mg/l)	TCLP (mg/l)
PT.F-FILL-1A	08/16/99	275	**7.9**	<0.1
(#1) B-20	08/17/99	435	**31.7**	0.1
(#2) B-23	08/17/99	200	4.9	<0.1
(#3) A-22	08/17/99	453	**17.1**	0.4
(#4) A-13	08/17/99	192	**8.9**	<0.1
RPV-SP1	09/09/99	370	**9.6**	*4.8**
RPV-SP2	09/09/99	280	**4.7**	*2.4**
RPV-SP3	09/09/99	500	**10**	*5.0**
RPV-SP4	09/09/99	610	**12**	***6.0****
RPV-SP5	09/09/99	390	4.6	*2.3**
RPV-SP6	09/09/99	260	**7.4**	*3.7**
RPV-SP7	09/09/99	520	**8.6**	*4.3**
RPV-SP8	09/09/99	220	4.2	*2.1**
RPV-SP9	09/09/99	210	0.65	*0.3**
RPV-SP10	09/09/99	350	0.95	*0.5**
RPV-SP11	09/09/99	170	**14**	***7.0****
RPV-SP12	09/09/99	180	**5.6**	*2.8**
RPV-SP13	09/09/99	240	**6.1**	*3.1**
RPV-SP14	09/09/99	380	**10**	***5.0****
RPV-SP15	09/09/99	290	**5.7**	*2.9**
RPV-SP16	09/09/99	620	**7.9**	*4.0**
RPV-SP17	09/09/99	300	**8.5**	*4.3**
RPV-SP18	09/09/99	640	**9.2**	*4.6**
RPV-SP19	09/09/99	980	**5.2**	*2.6**
RPV-SP20	09/09/99	**3000**	**10**	***5.0****
Simple Average Concentration		613.3	7.0	3.5
Threshold for California Hazardous Waste		≥1,000	≥5	Not Applicable
Threshold for RCRA Hazardous Waste		Not Applicable	Not Applicable	≥5

Notes:

1. Quantity of soil is estimated to be 1,200 cubic yards [1,800 tons]
2. mg/kg = milligrams per kilogram (parts per million)
3. mg/l = milligrams per liter (analogous to parts per million)
4. NA = Not Analyzed
5. TTLC = Total Threshold Limit Concentration
6. Title 22 WET = California Code of Regulations, Title 22 Waste Extraction Test
7. STLC = Soluble Threshold Limit Concentration
8. TCLP = Toxicity Characteristic Leaching Potential
9. Italicized* values in TCLP column are interpolated from STLC values based on an assumed 50% concentration.

CITY OF RANCHO PALOS VERDES
POINT VICENTE INTERPRETIVE CENTER

Table 2. Lead Concentrations in Stockpile B (PVIC Construction Site Soil Pile)

Sample Identification	Date Sampled	Total Lead Concentration	Soluble Lead Concentration	
		TTLC (mg/kg)	Title 22 WET (STLC; mg/l)	TCLP (mg/l)
RPV-1	08/24/99	**1,100**	**90**	**14**
RPV-2	08/24/99	43	4.3	*2.2**
RPV-3	08/24/99	90	3.3	*1.7**
RPV-4	08/24/99	49	4.9	*2.5**
RPV-5	08/24/99	420	**160**	0.026
RPV-6	08/24/99	360	**36**	0.17
RPV-7	08/24/99	980	**47**	**5.2**
RPV-8	08/24/99	46	4.6	*2.3**
RPV-9	08/24/99	180	**12**	1.7
RPV-10	08/24/99	**1,400**	**28**	0.75
RPV-11	08/24/99	98	3.3	*1.7**
RPV-12	08/24/99	550	**51**	0.82
Simple Average Concentration		443.0	37.0	2.7
Threshold for California Hazardous Waste		≥1,000	≥5	Not Applicable
Threshold for RCRA Hazardous Waste		Not Applicable	Not Applicable	≥5

Notes:

1. Quantity of soil is estimated to be 350 cubic yards [525 tons]
2. mg/kg = milligrams per kilogram (parts per million)
3. mg/l = milligrams per liter (analogous to parts per million)
4. NA = Not Analyzed
5. TTLC = Total Threshold Limit Concentration
6. Title 22 WET = California Code of Regulations, Title 22 Waste Extraction Test
7. STLC = Soluble Threshold Limit Concentration
8. TCLP = Toxicity Characteristic Leaching Potential
9. Italicized* values in TCLP column are interpolated from STLC values based on an assumed 50% concentration.

CITY OF RANCHO PALOS VERDES
POINT VICENTE INTERPRETIVE CENTER

Table 4. Lead Concentrations in Soil at the Chandler's Landfill

Sample Identification	Sample Depth (feet below grade)	Date Sampled	Total Lead Concentration	Soluble Lead Concentration	
			TTLC (mg/kg)	Title 22 WET (STLC; mg/l)	TCLP (mg/l)
RPV-CHALF-1	8 to 9	09/15/99	14	NA	NA
RPV-CHALF-2	3 to 4	09/15/99	8.8	NA	NA
RPV-CHALF-3	3 to 4	09/15/99	28	NA	NA
RPV-CHALF-4	9	09/15/99	13	NA	NA
RPV-CHALF-5	4	09/15/99	16	NA	NA
RPV-CHALF-6	3	09/21/99	730.0	pending	pending
Simple Average Concentration			135.0		
Threshold for California Hazardous Waste			≥1,000	≥5	Not Applicable
Threshold for RCRA Hazardous Waste			Not Applicable	Not Applicable	≥5

Notes:

1. Quantity of soil is estimated to be 7,500 cubic yards [11,250 tons]
2. mg/kg = milligrams per kilogram (parts per million)
3. mg/l = milligrams per liter (analogous to parts per million)
4. NA = Not Analyzed
5. TTLC = Total Threshold Limit Concentration
6. Title 22 WET = California Code of Regulations, Title 22 Waste Extraction Test
7. STLC = Soluble Threshold Limit Concentration
8. TCLP = Toxicity Characteristic Leaching Potential

2/7/2000

RPV – Director of Public Works (310) 544-5252
Dean Allison ~~(310) 541-6500~~
(Also Dave Snow) deana@rpv.com
contact (310) 377-4582 fax
(310) 544-5228

30940 Hawthorne Blvd
RPV CA 90275-5391

700 acre site – Long Point Project - Former Marineland Site

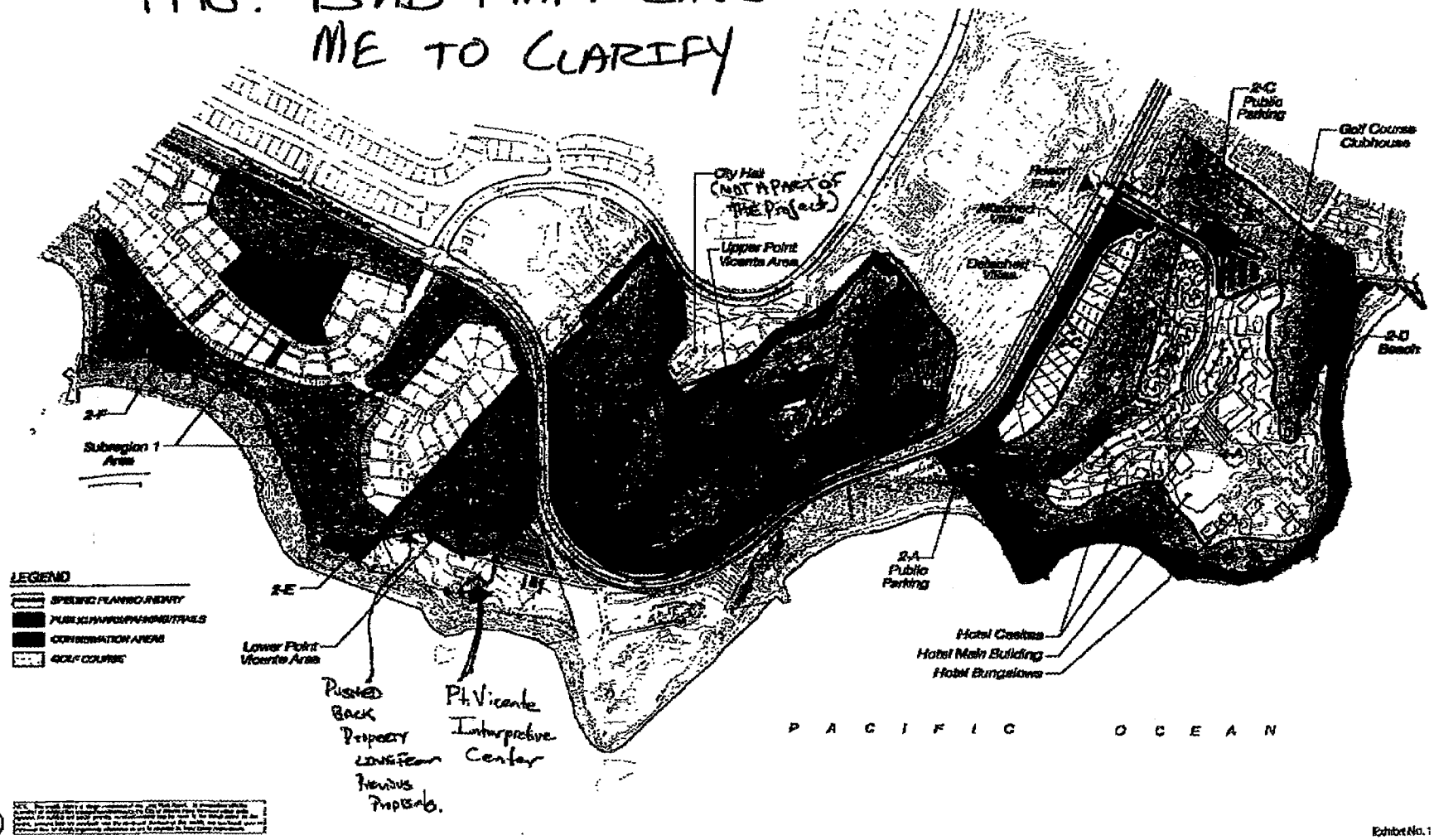
City would like exhaustive search of records.
Gain access to silos, barracks (?), turrets, etc.
Confirm presence or absence of lead on-site.
Any other HazMat concerns.

- UST ?
- Geophysical Survey ?
- Silos ?

Identify "Hotspots". Develop sampling plan.
✓ ① Review 3 binders worth of info for scope + proposal.

→ Thursday, 17th 9:30 AM Dave Snow appt.

NO: BAD MAP. CALL ME TO CLARIFY



LONG POINT RESORT

City of Rancho Palos Verdes • California

Exhibit No. 1
Golf Course, Parks, and Trails COSYO
PROJECT LOCATION MA

15.11 Golf Course Peer Review and Safety Analysis

Kipp Schulties
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TRANSMITTAL LETTER

DATE: September 15, 2000 **TOTAL PAGES:** 1

TO: Glenn Lajoie **FROM:** Kipp Schulties

COMPANY: RBF Consulting

RE: Long Point Resort Golf Course – Peer Review and Safety Analysis

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Glenn –

Please find enclosed the following report:

Peer Review and Safety Analysis for Long Point Resort Golf Course

Please call me if you have questions.

KMS

Peer Review and Safety Analysis for Long Point Resort Golf Course

Rancho Palos Verdes, California

Written by:
Kipp Schulties Golf Design, Inc.
September 12, 2000

The purpose of this report is to review the current plan documents relating to the proposed Long Point Resort Golf Course in Rancho Palos Verdes, California. Specifically, the task is to review the golf course routing and grading plans to insure that the design meets all safety requirements relating to adjacent holes, streets, residential developments and pedestrian walkways. Attention will also be paid to the analysis of site lines from adjacent properties to insure that the grading on the course does not encroach on views from existing residential developments.

Having reviewed all the documentation that has been provided to Kipp Schulties Golf Design (KSGD) to date by RBF Consulting, the following sections are used in the summarization of our findings:

- **General Golf Course Design Description**
- **Analysis of Long Point Resort Golf Course Routing**
- **Hole by Hole Analysis (including Recommendations)**
- **Summary**
- **Appendix**

If there are any questions regarding the information within this report, please contact Kipp Schulties at 561-799-1190 or by e-mail at kschulties@worldnet.att.net. E-mail is preferred if possible.

General Golf Course Design Description

The purpose of this report is to, in a general sense, review everything about the design of the golf course at Long Point Resort. Specifically, we want to make sure that the layout, routing and grading will not be in conflict with safety as it relates to residential units, adjacent holes, streets, and pedestrian traffic. In addition, we will be analyzing the design to insure that no views are infringed upon from existing property owners around the Long Point Resort property.

Even though there are no laws which govern the profession of golf course architecture, several non-written standards and recommendations have been developed which architects will follow when routing and designing a course. One of these standards is the minimum width for golf hole corridors. These standards, more aptly called recommendations, are what most golf course architects consider to be their guidelines. They are not legally binding, but we use them to form the basis for our designs. These are the guidelines that we will use to evaluate the Long Point Golf Course Resort layout.

We contacted several organizations to try and locate any written documentation for the guidelines that were mentioned in the prior paragraph. These organizations included the American Society of Golf Course Architects (ASGCA), the National Golf Foundation (NGF), the Urban Land Institute (ULI), and the United States Golf Association (USGA). Only the ULI has written recommendations on corridor width per a book that they co-authored with golf course architect Desmond Muirhead. The ASGCA refused to provide anything in written form for liability reasons, and the NGF simply sent excerpts from the aforementioned book by the ULI. This information is seen in the Appendix at the back of this report. The information provided in these excerpts is highly informative for this purposes of this report and should be strongly considered. The USGA provided a chart on Accuracy Patterns, which we have also included in the Appendix, but nothing on corridor widths.

Analysis of Long Point Resort Golf Course Routing

The Long Point Resort Golf Course was routed using a standard method for golf hole corridor widths that was developed during the 1960's and 1970's. Many architects still use these standards today. This standard makes specific recommendations for the areas around tees, fairway landing areas and greens. These widths, to which the Long point Resort Golf Course was designed from, are as follows:

> **Tees:** 150 feet for minimal corridor width (75 feet from the center of the tee to the adjacent property boundary or edge of adjacent fairway). This is measured from the center of the back tee.
>
> **Fairway Landing Areas:** 300 feet for minimal corridor widths (150 feet from the center of the landing area to the adjacent property or to interface with the widths of adjacent fairways).

Greens: 300 feet for minimal corridor width (150 feet from the center of the green to the adjacent property boundary or to interface with the widths of adjacent golf hole corridors.)

Note: The edge of the corridor width expands on a straight-line tangent from the 150-foot wide width at the tees to the 300-foot width at fairway landing area.

The minimal distance is more critical as the hole relates to the property boundary than as it relates to an adjacent hole. Therefore, when adequate space is not available, corridor widths on adjacent fairways tend to overlap rather than each fairway being pushed toward the property line. This may make the corridor width of one hole less than the 150 feet from the center of the fairway. While this may create more of a safety concern for golfers on the course, it has no impact on the safety of those outside the perimeter of the course.

The Long Point Resort Golf Course has a few areas where adjacent fairways, tees, and greens infringe on each other. However, it is typically the feeling of both the architect and developer that errant golf balls remain on the golf course property than to go off property. To compensate for the reduction in width between adjacent holes, the architect will typically design more mounding between the holes that may be covered in landscaping to "knock down" errant shots from going into opposite fairways.

In recent years, however, the ULI has increased their recommended width for golf hole corridors. This is due to the tightening relationship between golf course and residential areas and because golfers are now hitting shots much further than they have in the past – mainly due to new technology in golf equipment. We again reference the Appendix at the end of this report. These new standards increase the corridor widths around tees from 150 feet to at least 200 feet, around fairway landing areas from 300 feet to at least 350 feet, and around greens from 300 feet to at least 350 feet.

Due to that fact that the golf course at Long Point Resort Golf Course was routed using the old standard of corridor width (which can still be considered acceptable), we will base this peer review and safety analysis on these standards. However, if the newer standard of corridor widths is desired, then several areas of this golf course routing will need to be modified.

Each hole within the Long Point Resort Golf Course fits within the accepted standard lengths for each par. These typical lengths are as follows:

Par 3's	235 yards or less
Par 4's	270 yards to 470 yards
Par 5's	471 yards or more (not exceeding approximately 630 yards)

Par 4's and Par 5's typically have the landing area at a distance of 800 feet off the center of the back tee. The second landing area on par 5's is typically 600 feet from the center of the first landing.

Hole by Hole Analysis and Recommendations

Hole # 1 The first hole is par four that runs due West. The tees are staggered out slightly to the left off of the back tee. By staggering these tees off-center and next to the adjacent property boundary, players will be more apt to direct their shots to out to the fairway on more of an angle away from the property boundary (in this case, the proposed parking area). The distance between the first tee (back tee) and the sixth green is a little close, but should not be a real problem. There is a fairway bunker on the left side of the landing area to better direct shots away from the property boundary. The fairway bunker long and right is slightly past the landing area and will serve more as a target for direction rather than a hazard.

The grading of the hole shows containment around the landing area (slightly higher on the edges) which will help collect errant shots. A natural draw or drainage swale along the right will help catch errant shots to the right off the tee from going into the sixth fairway. The higher contouring along the cart path on the left of the hole will aid in containing shots that are pulled or hooked off the tee.

The shot from the back tee (elevation 135+) is slightly uphill to a landing area at elevation 143 (app.). There is support behind the bunker right to create backdrop from the tee, create direction, and to block the view to the sixth tees. The approach shot is slightly uphill to a green at elevation 147 (app.). Even though the first green and the sixth tee are rather close together, there is adequate support back and right of the green to contain most errant shots.

Recommendation: Any additional support along the parking area with some vegetation on top will better contain errant shots from hitting parked cars. Consider moving the back tee slightly to the left for two reasons: First, there is very little containment on the grading plan to collect errant shots from the elevated sixth hole which may roll down toward the first tee area. Secondly, the more that the tee shot can be angled towards the left side property boundary (aiming the tee shot back to the center of the landing area), the less likely that players will hit shots into the parking area left of the hole. This may help avoid conflicts with both vehicles and pedestrians.

Hole # 2 The second hole also runs due West after crossing Palos Verdes Drive South. The back tee is at an elevation of 350+ and plays nearly 120 feet downhill to a landing area at elevation 232 which slopes strongly from right to left. When shots are played from such a high elevation, the landing area corridor should be wider than the standard 300 feet. This is because the longer a shot is in flight, the more an errant it will travel left or right. The center of the second landing area on plan is nearly 300 feet away from the edge of the road on the left. This should be considered an acceptable distance.

There is a large sand bunker short and left of the landing area to help contain errant shots. This same bunker will tend to direct players to hit more to the right off the tee to avoid this hazard. The hole is well contained on the right with the hillside. There is light containment on the left. The green is nearly level with the landing area. The approach to the green along the left side falls off very quickly into the native areas. There is small grass depression left of the approach and a large bunker running left of the green to help collect errant shots.

Recommendation: We can see that there may be a slight concern with errant shots landing on Palos Verdes Drive South to the left of the hole. To help this situation, consider moving the back two tee complexes more to the left and down the slope. This will create more of an angle into the containing slope on the right and better direct shots away from the road. However, while still good, the golf course will have to sacrifice a great view from the tees.

Additionally, because the hole is so far downhill, many longer hitters may be able to drive the ball over the bunker on the inside left of the landing area. Consider sliding the sand bunker more toward the green. This way it will truly serve as a containment or saving bunker rather than an obstacle for longer hitters to play over with their tee shots.

Hole # 3 The third hole is a long par five that plays to the East further up the hill from the second hole. The back tee is at elevation 345+ and is located just to the north of the Coast Guard property. The forward tees are staggered out to the left to promote play away from the property boundary. The landing area is at an elevation of nearly 360 which means the tee shot is played uphill (the rest of the hole is not seen from the tee past the first landing area). The fairway is graded to contain shots by being higher on each side. There is adequate containment via support mounding to the right of the landing area, which separates the first landing area from the fourth green.

The second shot plays to a landing area that is really unacceptable from width standpoint (some 60 to 70 feet from the property boundary). This is a danger to adjacent property owners and any pedestrians using the paths for walking. To compound the matter, any player that hits short of the first landing area will have a blind shot to the second landing area. This is due to the fact that the highest point in the fairway on the plan (elevation approaching 365) is located well past the first landing area. Any player hitting a tee shot that lands 50 yards short of the first landing area will be at elevation 350 to 355 – 10 to 15 feet less than the crest of the hill. This will cause players to guess where they are to hit their second shots which will only multiply the error factor in the shot.

Those that do hit the ball far enough to see over the hill with their drive off the tee will be forced to play more to the right with their second shot. This will happen because golfers will try and avoid the property boundary on the left of the second landing area (a two stoke penalty for going out of bounds). The location of this property boundary will tend to steer play directly into fourth tee area – a potentially dangerous situation.

Recommendation: Use Alternate A (w/ Coast Guard Site Alternative)

Hole # 3 – Alternate A This is also a par five but it plays from the south point in the Coast Guard area. The elevation of the back tee is approximately 315+. The tee shot is played uphill to a landing area at an elevation of approximately 337. The landing area has adequate corridor widths relating to the adjacent property boundary left. The forward two tees play from the center of the Coast Guard area at elevation of 340+, making it level with the landing area. The first landing area is graded to adequately contain shots by having higher elevations on each side. The left side is higher in order to direct shots to the right and contain balls from leaving the golf course property.

While this alternate works much better from a safety standpoint, the second shot is still blind with the high point somewhere near elevation 357 almost halfway between the first and second landing areas. There is a small sand trap at the top of the hill between the first and second landing area, which can be seen from the first landing area. This will help players direct their shots away from the fourth fairway. There is a token bunker to the left of the second landing area to stop errant shots, but it cannot be seen from the first landing area. The green complex is just on the other side of a deep drainage draw tucked next to the property line with support behind and to the left

Recommendation: While not perfect, this Alternate A is much better than the original layout – which really should not even be considered. The blind second shot and the green next to the property boundary area are a concern, but not unacceptable.

Consider elevating the back two tees for better vision to the first landing area. Also, on a much bigger scale, consider cutting much of the area between the first and second landing area out (as much as 15 feet lower). To tie this together, the cut will have to go through much of the fourth hole from the landing area to the green. By cutting this area down, players will be able to see the second landing area on the third hole from the first landing area (taking some of the guesswork and error out of the shot) as well creating containment via support on the left. By cutting the inside corner of the fourth hole, support on the outside of the landing area (left side) of the fourth hole will be established making for better containment and better visual appeal. This will also create better views for those looking from the city buildings above the third hole.

Where to put all earth from the "cut" we discussed? Better let your golf course architect decide that one.

Hole # 4 The fourth hole is a dogleg right par four that plays slightly uphill to the Southwest on the drive and continues uphill to elevated green. The back tee is at an elevation of approximately 345 with the landing area at nearly 355. The shot is played over a large draw that expands from the second landing area on the third hole and widens (and deepens) until it falls off the slope that is adjacent to the fourth tees.

The landing area is graded to fall from right to left with a small amount of containment just past the landing area on the left to help hold shots and direct the players' focus to the right. The grading plan does not indicate any sand bunkers around the landing area. The corridor width at the landing area is tight but adequate as it relates to the fifth and second hole tee locations.

There may be some safety concern with players on the third hole even using Alternate A. The second landing area on the third hole and the landing area on the fourth hole are directly across from each other. Golfers on the right side of the third fairway may be in danger from shots off the fourth tees.

The corridor around the green is tight but acceptable as it relates to the second tee and third fairway. The green is at an elevation of between 360 and 365. A deep bunker on the inside right will help keep shots to the left and away from the third fairway. The green is well supported on the back left to help contain errant shots. There is a large landform that runs along the right side of the hole from the landing area to the green. This will aid in hole separation and containment for errant shots.

Recommendation: The grading on the "Upper Point Vicente Area Grading Plan" – Exhibit No. 5.6 – is different from the grading on the map indicating "Golf Course Safety Corridors for Upper Point Vicente Including Coast Guard Parcel". The grading on the Exhibit 5.6 favors better containment in the fairway by having the outside edge of the dogleg (left edge) much higher than the landing area. This will help keep shots away from the fifth tee location. We would recommend the grading in Exhibit 5.6.

There is more room (per Exhibit 5.6) to move the fifth tee location the South by 35 to 40 feet if a retaining wall is used similar to that around the fourth tees. By doing this, the landing area on the fourth could move over by 30 feet or so and would better the relationship with the third hole's second landing area. Consider some signage on the fourth tee to let players on the right of the third fairway play first prior to playing shots off the fourth tee.

Also, consider what we discussed on the third hole regarding lowering the overall profile of the entire third and fourth fairways for better vision with each shot.

Hole # 5 The fifth hole is a long par three that plays directly to the East and down a steep slope. The back tee elevation is around elevation 350 while the green is near 250 (the forward tees are down the slope at elevations of 265 and 260). The green area falls very strongly from left to right. The green is supported by a deep bunker on the right side to help contain errant shots.

The corridor widths, as the hole is designed, meet all of the acceptable standards – if the hole were level. However, on this particular hole, the architect must consider that the tee shot is nearly 100 feet downhill. Because of this large change in elevation, many players will hit the shot longer than normal. Thus, more shots will miss this green long and long right than a hole that is level (this should not be a problem from the lower two tee locations). The concern is with pedestrians using the walking paths behind the green.

Recommendation: Consider shortening the hole slightly by moving the green back towards the tee. Otherwise, consider adding some dense vegetation of medium height to help screen against long shots landing near the pedestrian trails. For playability, consider adding two or three more bunkers down the slope to the right of the green. The majority of players will slice the ball (hit it to the right). If they miss the greenside bunker, there is nothing to keep golf balls from going all the way down the slope. The additional bunkers might help the speed of play and also create a very exciting green complex (visually) from the upper tees. Also, consider moving the back tee to the South as discussed on the previous hole.

Hole # 6 Players go back under Palos Verdes Drive South to get to the sixth hole. The hole is long par four that doglegs to the right at the landing area. The corridor widths at the tee, landing area, and green are acceptable as they relate to the property boundary on the left. The corridor widths on the right are tight but still acceptable as they relate to the adjacent first hole.

The forward tees stagger out to the left, which will help direct shots into the landing area and away from the property line. The back tee elevation is just higher than 150. The shot from the tee is nearly level to a landing area at approximately 157. There is a small bunker on the left to direct shots away from the residential units. There is a large bunker that runs along the landing area on the right to collect errant shots before they go into the first fairway. In addition, there is a drainage draw (low area) to the right of this bunker to contain shots from entering the first fairway. The fairway is graded to fall from left to right. There is large support behind the bunker left to turn the hole and protect the residential units from errant shots.

The second shot is played downhill to a green at elevation 137 with a greenside bunker on the left. The grading indicates that the fairway falls strong from left to right between the landing area and the green. This will set a good visual look into the green complex from the landing area. There is ample containment left of the green with the hillside and the grading indicates light containment in back to separate the road from the golf course.

Recommendation: Consider a bunker or strong shaping (grass hollows) between the sixth green and first tee. Errant shots to the right of the green have nothing to contain them from rolling down toward the first tee complex. Also, consider moving the back tee on the first hole to the left slightly (closer to the property boundary).

Hole # 7 The seventh hole is the second of two par threes on the course. The hole plays SSW and is a shorter par three than the fifth hole. The hole plays downhill from a back tee elevation of approximately 153 to a green at around 125. This will be a good-looking hole from both the Clubhouse area and from the tee. There is adequate corridor width as the hole relates to the Clubhouse area right and parking behind. At only 25 to 30 feet downhill, the tee shot is really not much of a concern to go too long. The relationship (width wise) is a little tight with the eighth tee, but not really a major concern.

There is a small strategic bunker on the front right of the green. There is a drainage swale that runs the length of the hole down the right side that should adequately collect errant shots. In addition, there is mild support left and back of the green to separate the green from the eighth tee location.

Recommendation: Consider a little more support on the back left if possible. Also, consider taking the cart path behind the back tee and down the left-hand side. The cart path in front of these tees will take away from the visual aesthetic beauty of this hole from both the tees and Clubhouse area.

Hole # 8 The eighth hole is a short, but uphill, par four that runs due North from the Clubhouse area. The tees are built up to an elevation of approximately 125 and are staggered out to the left from the back. Because of the landform that exists between the seventh green and eighth tees, there should not be too much a problem interfacing with these two holes (however, any additional support would help). More of a concern is the landing area on the adjacent ninth fairway that encroaches toward the eighth tees.

The tee shot is played uphill to landing area at elevation 165. Because of the dramatic increase in elevation, many tee shots will likely fall well short of the landing area as indicated on the plans. This is just the opposite of the tee shots on both the downhill second and seventh holes where the tendency will be to hit the shot long. The fairway is graded to provide good containment by funneling shots toward the center of the fairway.

There is a small bunker short and right of the landing area that will steer many players to the left. The architect has placed two small bunkers in the left-hand support to collect any shots that hook too far to the left. Due to the containment style of grading and the uphill nature of the hole, there really is very little threat of players hitting shots into the street left of the hole.

The corridor width around both the green and the landing area is adequate. The green is uphill even further from the landing area at elevation 180 with strong containment left, back and right. There is a small greenside bunker right to collect errant shots and steer players away from the ninth tee.

Recommendation: Consider landscaping the landform to the right of the eighth tees to protect players from shots off the ninth tee. The ninth tee shot is from a high elevation causing the ball to carry much father than if play were to a landing area that was level with the tees. These tees (eighth) will be in play from longer hitters off the ninth tees.

Hole # 9 The finishing hole on the course is the par four ninth that is a slight dogleg to the left. The hole certainly has one the most dramatic views on the course as it plays down from its highest point at the tees to the green near the edge of the ocean.

The back tee is at an elevation of nearly 185 while the landing area is at 130. The tees are well protected from the eighth green via a landform that separates the two holes. The tees stagger out to the left so that players will direct their shots toward the fairway and away from the property boundary and walking trails on the left. A small bunker on the inside left corner also deters play away from the left side. There is support on the right to turn the hole to help contain errant shots. The fairway is graded to collect balls into the center. However, this is a downhill hole and players will likely hit the ball much farther here – quite possibly past the indicated landing area.

The green is approximately ten feet further down the hill at an elevation of 120. The green complex falls from left to right. There is a large collection bunker and a grass depression on the right side to keep errant shots away from the eighth tees. There is decent support on the left to contain shots and keep play away from the walking trails.

The hole has adequate corridor widths throughout as it relates to property boundaries and pedestrian trails. The only real concern is the landing area because of the downhill shot, as the ball will likely travel much further in the air than if the hole were level.

Recommendation: Add vegetation to the right hand support just past the landing area to create separation and protect players on the eighth tees from long shots off the ninth. Taller (15 –20 feet), denser vegetation in this location should have no effect on views from the surrounding hillsides. Consider screening the walking trails with small to medium height vegetation near the landing to help avoid any potential problems from shots pulled to the left.

Driving Range: The driving range at the Long Point Resort Golf Course is in the far Northwest corner of the Upper Vicente portion of the property. The range runs directly to the West from a tee at elevation 240 (app.). Golfers using the range will hit shots uphill to a number of target greens evenly spaced throughout the range.

The range is shorter than normal at only 700 feet from the front of the tee to the back of the range. However, because of the vertical rise from tee to landing area, the majority of golf balls will never reach the opposite end. If they do, the native vegetation and continued rise in vertical elevation will certainly knock them down from having any potential of reaching the street.

The range is graded to contain shots. The architect more or less "cut" the range into the hillside, which created the natural containment left and right. The right side is well framed by the existing hillside. If this ground where this range was planned was level, the greatest concern that we would have is for the City buildings to the right as the majority of golfers slice the ball (hit it to the right). However, because there is nearly 120 feet of vertical elevation, it is extremely unlikely that that any one could hit a ball that far and right.

We aware that there is some concern from the residential units far to the left of the range about golf balls entering their property. By "cutting" in the range, the architect has naturally created a berm or landform along the left edge of the driving range. This light berming will help contain errant shots. If there were no homes left of the range, the architect would simply push this berm out to the left, raise it 10 to 15 feet, and then plant vegetation on top of the berm. This would collect just about every errant shot. However, in the case of this particular driving range, any kind a tall berm would be unacceptable because it would encroach on the site lines from the residential units.

There is an existing low area running along the left side between the proposed range and the residential units. It appears to be some sort of service road that sits in a small valley with the floor of the residential units approximately 10 feet above it (as one would look straight West from each unit). This low, or draw as it is sometimes called, will go along way to insuring that no golf balls reach the residential units (especially if the area between the edge of the range and the property boundary is revegetated with low growing dense materials. Any ball that does happen to get over the berm on the left edge of the range will not get much further once it lands in this area.

There is one other beneficial buffer, that being elevation. The lowest elevation of the residential units is at least 20 to 25 feet higher than the driving range tee. Hitting uphill will make for shorter shots off the tee creating less of a likelihood that shots will reach residential home sites.

The driving range tees are laid out so that they play away from the residential units on the left as much possible. With the tee on the left in the shape of an arc (away from the left side), it will be nearly impossible for anyone from this tee to hit a shot towards the residential units. The only real concern, if there is one, will be from players on the right side tee that can hit the ball a long way and pull it or hook it at the same time.

The corridor width of the driving range is adequate as measured from the edge of the range to the property boundaries. There is 150 feet from the left edge of the range to the residential units at its closest point. From the center of the range to the property boundary is nearly 300 feet (the golf course uses 150 feet from the center of the fairway to the residential property line).

Recommendation: There is really no way that the range in this location could be designed much given all the constraints (and frankly there is no other place on the property where this could really go). The range plays into a steep hillside, is graded to collect balls toward the center and there is adequate buffer distance between the left edge of the range and the property boundary.

Still, there may be some things that can be done which might better the relationship between the range and the residential home sites. One possibility might be to excavate out the low area between the range and property boundary. Take it down 10 to 15 feet and then revegetate it with native materials. While this may only be a small benefit to aid in the containment of shots, any little bit might help.

It may be more worthwhile to lower the elevation of the driving range tee to around 230. The increased difference in elevation between the tee and the residential home sites will certainly decrease the chances of shots reaching the property boundary.

Summary:

In general, the golf course as designed works very well from a both a safety and playability point of view assuming that we use the old standard for recommended corridor width. Again, if the new width is required as seen in Appendix #1, then several slight modifications will need to be made to the routing of the course.

We have tried to be very specific about making slight adjustments to the golf course throughout our recommendations on each hole. But, in reality, there are only four or five items that we feel should be considered for safety reasons. Those would be as follows:

- Use Alternate A for the third hole.
- Consider moving the back tees to the South (down the slope) on the second hole for a better angle into the fairway and away from the Palos Verdes Drive South
- Lower the driving range tees by 5 to 10 feet – if possible
- Create a better buffer between the eighth tees and ninth landing area
- Consider making the "cut" through the third and fourth fairways to better overall vision throughout these two holes

Appendix

Long Point Resort Golf Course

1150 US Highway One, Suite 401
Jupiter, FL 33277
Phone: Day:(561) 744-6006 x 54

National Golf Foundation

Fax

To:	Kipp Schulties [redacted]	**From:**	Darrin B. Davis
Fax:	212-967-4623	**Date:**	September 18, 2000
Phone:		**Pages:**	8 (incl. Cover page)
Re:	Golf Course Safety Corridors	**CC:**	

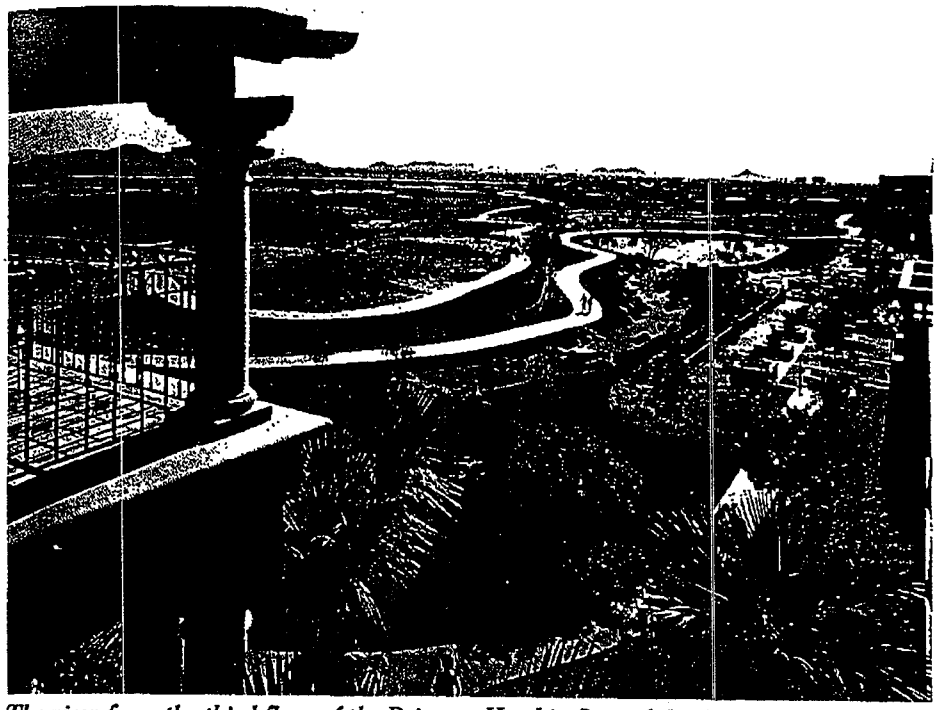
☐ **Urgent** ☑ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

•Comments:

Glad we could be of assistance. Text was taken from "Golf Course Development and Real Estate" published by Urban Land Institute, authors Desmond Muirhead and Guy L. Rando.

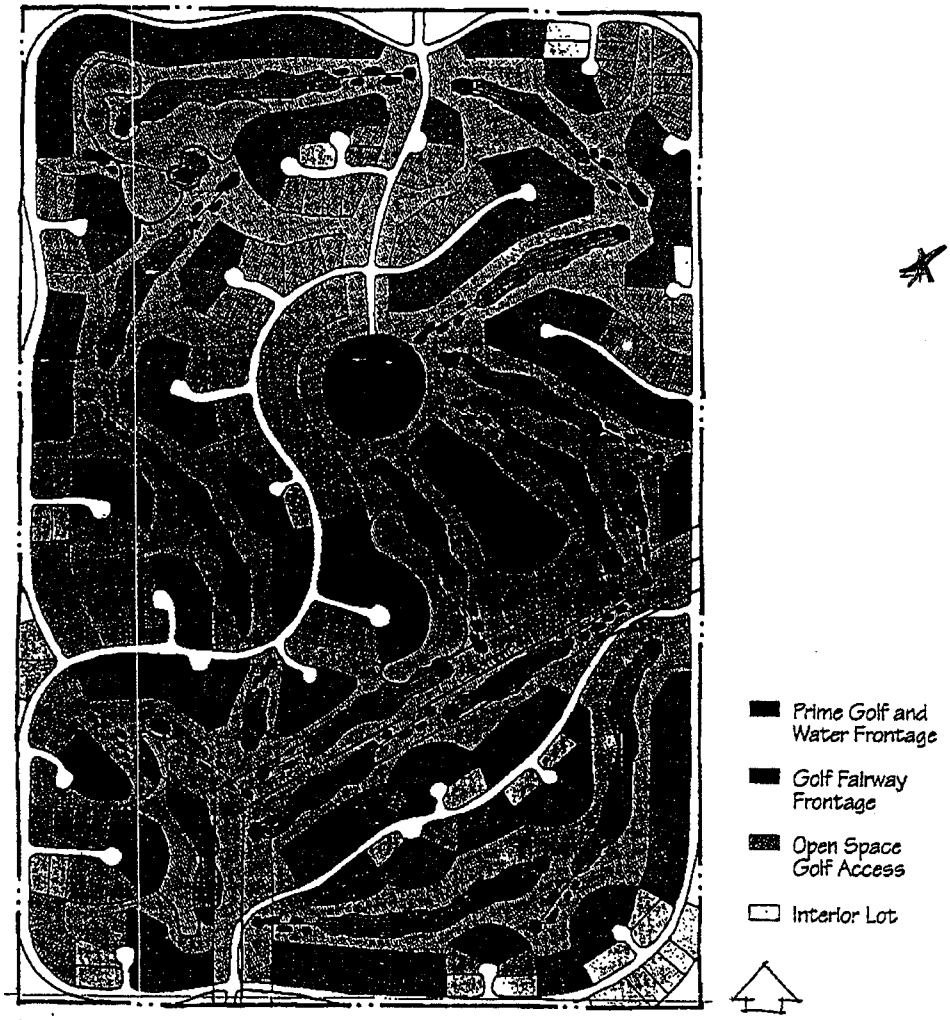
As you encounter clients in need of conducting market & financial feasibility studies, don't hesitate to have them call us in our Jupiter, FL office.

Good Luck on the project!



© MICK WALES/COURTESY, PRINCESS HOTEL, SCOTTSDALE, ARIZONA

The view from the third floor of the Princess Hotel in Scottsdale, Arizona, illustrates the course's visual access.



A typical diagram used for analyzing real estate premiums.
Source: Desmond Muirhead, Inc.

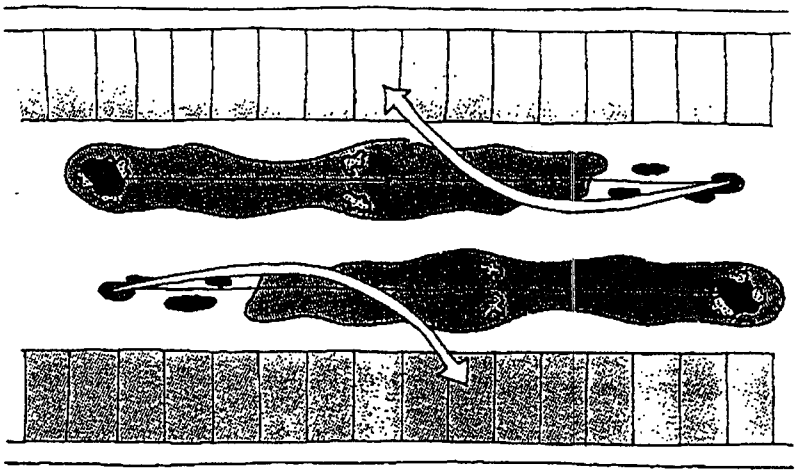
ferred. This combination provides the preferred length for the golf course with moderate flexibility in operations and maintenance and maximum golf frontage for real estate development.

Land use plans that are designed merely to maximize golf frontage do not necessarily maximize overall real estate values. A number of other factors must be considered when integrating golf and real estate. The single-fairway, returning nines configuration for an 18-hole golf course is ideal for maximizing golf frontage and therefore maximizing the opportunity to enhance real estate values. In some cases—a hotel resort or high-density development, for example—where real estate values are enhanced by views of the golf course from a high-rise building rather than actual frontage, a core course might provide greater advantages.

Whatever strategy is used to place a value on golf-oriented real estate, valuation must consider local market factors. Comparative marketability studies can aid in determining real estate values and which pricing strategies yield the best results in a particular location.

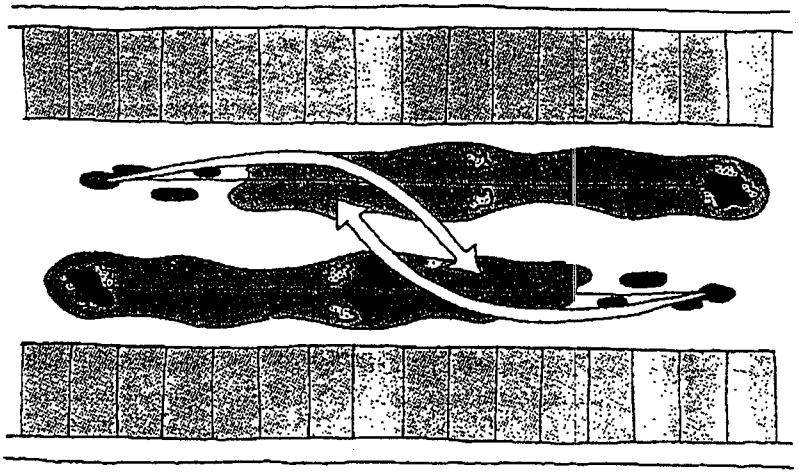
Safety in the Golf Corridor

One of the most significant factors to consider in delineating the golf corridor is safety. Like many sports, golf is not inherently safe. A well-hit golf ball can reach an initial velocity of 250 feet per second or over 170 miles per hour, and a range of 250 yards or more. The golf ball thus has the potential for greater speed and range than a bullet from a shotgun, and the potential for injury can be considerable. This factor is augmented by the wide range of physical and psychological variables inherent in any golf course and the range of players' abilities. Golf is not easily mastered, and even the most accomplished players can hit a ball poorly. People have been seriously, even fatally, injured by errant golf balls, golf clubs, and golf cars. Being on a golf course during an electrical storm has resulted in many players' being struck by lightning. And the threats are not confined to golfers: pedestri-



NOTE THIS

This relationship between fairway and lot should be avoided, because most golfers are right-handed and tend to slice the ball to the right.
Source: Desmond Muirhead, Inc.



AS PER USED BEFORE

The preferred relationship between fairway and lot allows holes to "slice" into each other rather than into houses.
Source: Desmond Muirhead, Inc.

ans and motorists walking or driving by a course have been struck by errant golf balls. Golf, like life, is a challenge with risks. Thus, safety is a critical concern to anyone involved in the design, development, construction, maintenance, and operation of a golf course, or to anyone charged with responsibility for the safety of people on or near the course, or to anyone who could be injured or suffer damages from golf.

To design a totally risk-free, "safe" golf course is impossible, because numerous factors simply are beyond the control of the designer: the climate, the weather, the ability and skill of individual players. Even if a list of safety criteria could be determined for the design of a totally "safe" golf course, the cost of building such a course would be prohibitive. It is possible, however, to anticipate a few factors that can present an undue hazard. And it is possible to find economically feasible ways to mitigate the danger.

No hard and fast rules can be associated with safety in golf course design simply because the range of variables from course to course, hole to hole, and even player to player is so vast. The increasing integration of golf courses with adjacent real estate results in conflicts in land use, and safety becomes a greater concern. Today, all areas of the golf course industry, including owners, developers, design professionals, operations and maintenance personnel, managers, material suppliers, equipment manufacturers, and individual players, must address it. Further, technical advances in the design of golf balls and golf clubs have translated into greater speed and distances, with the attendant greater potential for danger from poorly hit balls or slices, hooks, and shanks. All of these factors have influenced the way golf courses are designed today, and a prudent developer would keep the following points in mind:

- *Recognize and understand that land planning and the design of golf courses are intricately related to each other.* The potential impact of one on the other can significantly enhance or diminish the value of a golf-oriented real estate development.
- *The developer or its agent is involved as a key member in planning and design.* The integration of various disciplines is ultimately the developer's responsibility.
- *Regular safety reviews are part of the planning process.* Additional reviews are required after any major change. Safety reviews should be made part of standard operating procedures, and they should involve all members of the design team.
- *Recognize that safety is ongoing.* Include allowances for fine-tuning play of the course in the budget to address any unanticipated issues after the course is put into play.

"Golf course safety" is a relative term, requiring judgment based on some mutually agreed criteria. The following brief overview summarizes a few basic, common-sense criteria for safety in designing golf courses.[1] The design standards developed from these criteria or from the consensus of experienced designers and developers serve only as *guidelines* and must be weighed case by case for specific sites.

- Golfers must use *reasonable care* commensurate with the known hazards inherent in the game.[2]
- Golfers assume *reasonable risk.*[3]
- The design of the golf course should reflect standards that do not expose golfers to undue risk.[4]
- The public has a right to free and unmolested use of the highways. Golf balls landing on or across a highway render the owner liable for maintaining a public nuisance that resulted in injuries from the hazardous condition.[5]
- A golf ball in flight beyond the perimeter of the golf course is the same as

an object falling from a structure, and the liability is comparable.[6]

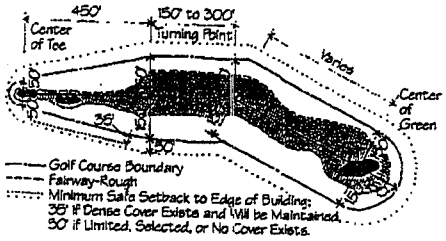
- A pivotal standard cited in many court cases renders a liability *if the possibility of an accident was clear to the ordinarily prudent eye.*[7]
- Golf-related restrictions on adjacent private property are justifiable for reasons of safety. It is therefore reasonable to restrict the use of private property (building setback lines and so on) adjacent to a golf course.
- Owners of houses and other real estate fronting a golf course assume more risk than the public on a highway but less risk than golfers. The homeowner's uninformed and unsuspecting guests are not included, however.
- Spectators at a golf tournament assume more risk than homeowners but less risk than golfers.

Legal terms like "reasonable care," "reasonable" or "undue" risk, "foreseeable" hazards, and "ordinarily prudent eye" provide criteria for defining and judging safety and for allocating liability. Beyond these legal concepts, however, no measurable design standards can be applied in a blanket formula that satisfies legally defined criteria for safety.

The standard 300-foot through-the-green width that became a rule of thumb in design of a single-fairway layout during the 1960s and 1970s is seriously outdated in terms of current safety concerns. It was rationalized by two concepts:

- The average golfer who hit a ball poorly (did not follow the ideal path as reflected by the centerline) did not hit the ball as forcefully as possible; therefore, the ball would not travel as fast and as far as it might.
- The farther away from the centerline, the less force powering the ball, and therefore the ball will travel even less distance.

In the double-fairway layout, the rule of thumb was that, where possible, the parallel centerlines should be no fewer than 200 feet apart. These dimensional standards are now outdated, however, with the advent of new technology and new designs for golf equipment (particularly golf clubs) to gain more distance and the desire of many golfers to "smack the ball" as far as they can without regard for safety.



Outdated 1970s single-fairway standards.
Courtesy: Patrick Shane Mulligan.

The standards of the 1960s and 1970s were coupled with caveats to consider such factors as topography, vegetation, elevation, temperature, humidity, wind, location of hazards, and elevated features like tees and greens. They are still critical, but *safety is not a cookie-cutter process*. Defining parameters for safety on a golf course could be a major issue confronting today's golf course developers, and any member of the team could make a decision that would directly affect safety. Golf integrated with real estate development requires the establishment of a team to review every stage of planning and design. The temptation to encroach on the safety perimeter for the golf course to gain frontage for real estate, enhance real estate values, or economize on the golf course is always considerable, and it is heightened by the fact that contemporary golf courses require substantially larger areas of land to accommodate safety in an age of high-tech equipment. Golf course architects and land planners must work with the development team to resolve the problems involved in siting a golf course next to real estate. The professional expertise, knowledge, and experience of every member of the design team must be applied toward ensuring that the public is not exposed to undue risk. In a society prone to litigation, it is in the best interests of any development project to establish the best standards and criteria for safety. Because design and construction often span long periods of time, the intent of the design and safety considerations developed during the planning process should be carefully documented to ensure that it is not compromised by later decisions.

The Safety Perimeter

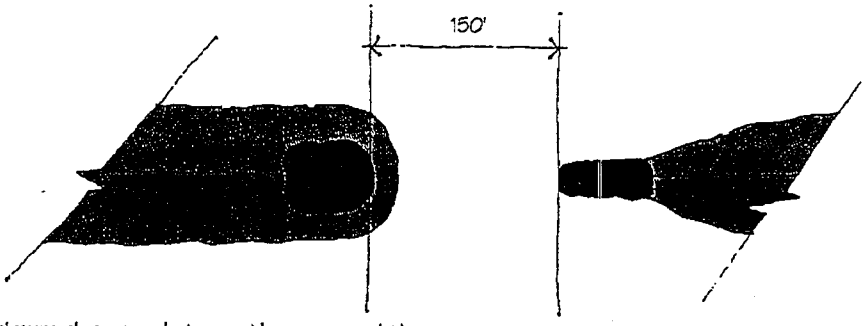
Defining the safety corridor for a golf course is not necessarily synonymous with establishing the boundary of the golf course, although the two can be related. The following definitions are used in this text. The *golf course boundary* is the legal description of the property boundary for that area of land dedicated to the golf course and its facilities. If the operation were to be sold, this legal description would be used to describe the property in the sales documents. The *golf course safety corridor* is that area of land required to play the game plus the area of land that can be affected or threatened by golfing such that limits are placed on the use of that area. For example, the golf course safety corridor might include the area within the golf course boundary plus an area around that boundary where construction of any buildings is restricted (often called a building setback line or building restriction line). The restrictions on use within the setback area must be clearly stated in legal documents (covenants, for example) describing the affected properties.

NOTE THIS

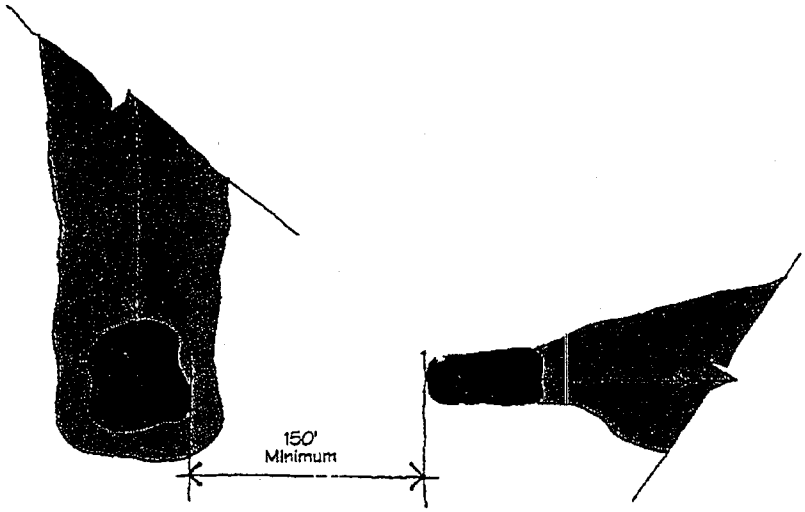
Largely because of legal implications, professionals and their attendant organizations have been reluctant to adopt any specific written criteria for golf course safety corridors. The official approach of the American Society of Golf Course Architects (ASGCA) is verbal and very general, and strongly emphasizes site-specific criteria. The prudent course of action is to contract with an experienced, reputable golf course architect early during the planning process.

The following dimensions for the golf course safety corridor are provided solely to illustrate this discussion; *they are not to be applied arbitrarily*. The dimensions are based on an unrestricted flat site, and they must be adjusted to accommodate site-specific features like topography, vegetation, and elevation. Applicable local building and land use regulations could preclude the use of any dimension used in the illustrations, and this information is not a substitute for consultation

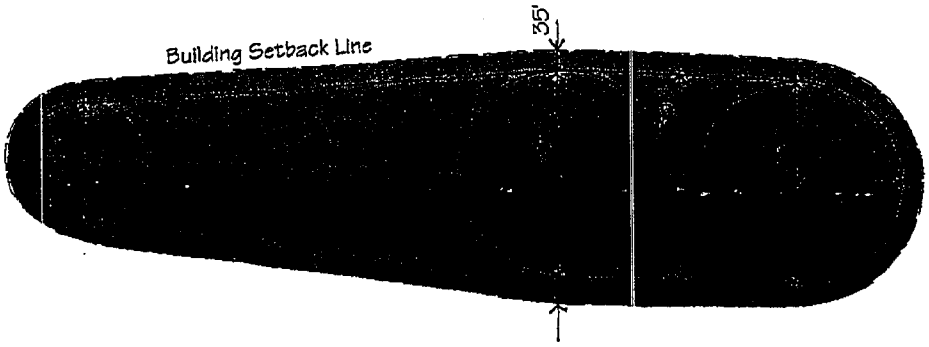
NOTE FOR #2, #5 AND #9



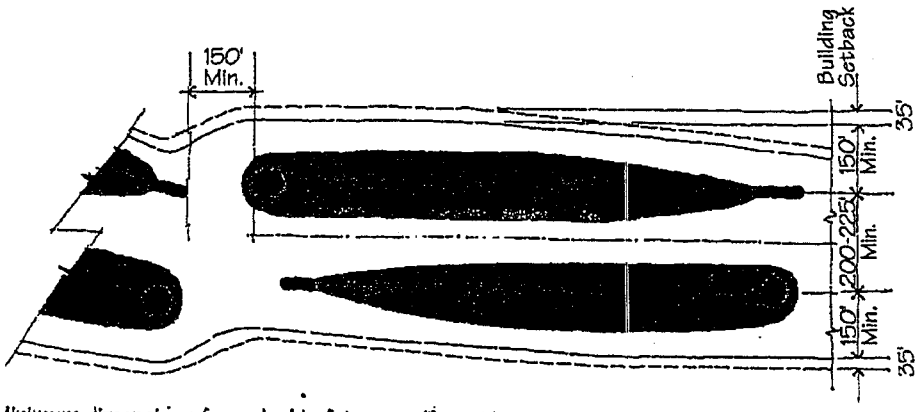
Minimum clearance between the green and the next tee.



Minimum clearance between adjacent tees and greens.



Minimum dimensions for a single-fairway golf corridor.



Minimum dimensions for a double-fairway golf corridor.

Minimum safety guidelines for a windless site on flat topography. Other conditions require additional clearances.

Source: Nicklaus Design.

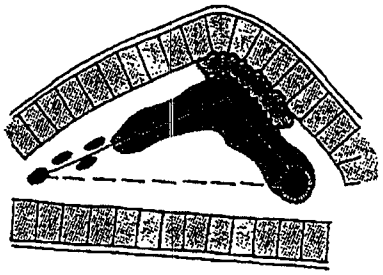
with a qualified, experienced golf course architect.

- Minimum horizontal clearance between the green and the next tee is 150 feet. If the adjacent green and tees are separated by a change in elevation, the distance might be greater or less.
- Minimum clearance between adjacent tees and greens is 150 feet.
- Adjacent landing areas should be no less than 200 to 250 feet apart (from centerline to centerline).
- The centerline of a golf hole should be no less than 150 feet from any road right-of-way or boundary.
- The centerline of a golf hole should be no less than 175 feet from any boundary with adjacent development. A setback of no less than 35 feet from the boundary line should also be added.
- The minimum safety corridor for a single-fairway course with development on both sides of the fairway is 420 feet between any building in the landing and greens areas. The minimum safety corridor for a course with surrounding development in other than the landing and greens areas is 370 feet, which allows for a 300-foot corridor with 35-foot building setbacks on either side.
- On a double-fairway course, the centerlines of parallel fairways should be no less than 200 to 225 feet apart in wooded areas (where vegetation is present between the fairways) and no less than 250 feet apart in open areas (no buffering vegetation between fairways). Adding a minimum of 150 feet from each centerline to the property line yields a minimum corridor of 500 to 550 feet for a double-fairway course. If the course is surrounded by development, a building setback of 35 feet from the property line on either side yields a total minimum safety corridor of 570 to 620 feet. The safety corridor can be narrower in the area between the green and the next tee—approximately 400 feet (a 100-foot buffer off the center point of the tee, a 150-foot minimum on the green's centerline, and 150 feet between the green and the next tee).[8]

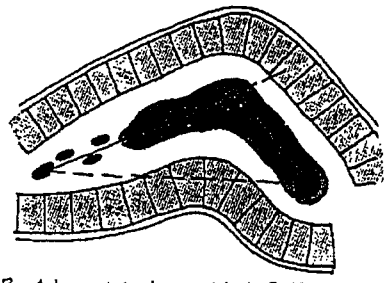
Safety on the Golf Course

The responsibility of a golfer for the safety of others, such as shouting "Fore!" to warn that a ball is approaching, is defined by rules of etiquette and enforced by golf associations. These rules and responsibilities should be posted in a readily visible location on the golf course. Handbooks specifically addressing rules and responsibilities should also be made available to every golfer and key points printed directly on scorecards. Designing a safe golf course includes not only concern for the safety of players, but also for guests, maintenance personnel, and spectators. Many design guidelines involve common sense:

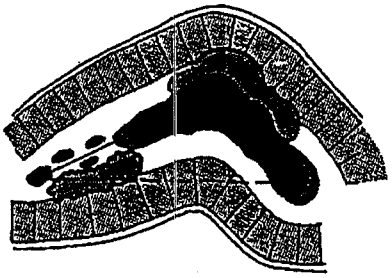
- Blind shots should be avoided, and holes should be designed so that players can clearly see the target area, hazards, and other players on the course. While several mitigating measures to reduce the risk of blind shots have been developed—special flags, caddies as target indicators, and even traffic lights—they are at best only mitigating measures.
- Shelters should be provided at key locations on the course for golfers seeking safe shelter from inclement weather, particularly lightning storms.
- Specific safety guidelines and procedures regarding lightning storms should be readily visible to every golfer, employee, or visitor.
- Circulation patterns should be readily apparent and organized to minimize conflicts between autos and pedestrians, golf cars and pedestrians, maintenance vehicles or equipment and golfers, and golfers and nongolfers, for example. A golf course, for example, is not a safe or appropriate place for a nature walk while play is in progress. Security measures should be in place to prevent intentional or unintentional trespassing on the golf course by nongolfers while play is in progress.
- Paths for golf cars should be specifically engineered as *roads* for vehicular traffic, not sidewalks, but the fact that the path is often a hard surface (usually asphalt or concrete) should be given due consideration when locating it. Such paths are potentially dangerous if a ball bounces or ricochets off the pavement, and for this reason it is inadvisable to have the car path cross the fairway. The path should be out of the area of play (see further discussion later in this chapter).
- If spectator galleries are anticipated, the course's design should specifically provide for them. Measures should be implemented to make the inherent risks of watching golf on the golf course readily apparent to the ordinarily prudent eye.
- Buildings of any type should not be used as the obstacle that forces a dogleg hole, and the inside angle of a dogleg hole should be treated as a hazardous zone. Obstacles or barriers of sufficient height, density, and width should be located on the inside angle of the dogleg to prevent players from attempting to hit the ball across the inside angle. Housing or any other buildings, playgrounds, recreational facilities, paths, or parking lots should *never* be located on the inside angle of a dogleg where injury or damage to property is possible!
- Clear sightlines and visibility of players on the course should be maintained, particularly near landing areas and paths for golf cars.
- Signs, benches, tee markers, and other furnishings can cause a ball to ricochet, injuring people or damaging property. Their placement on the golf course and design should be seriously considered and constantly reviewed for safety.



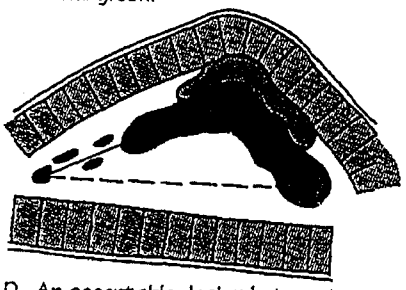
A. An acceptable design but wastes land. Trees protect lots, but golfers are likely to drive the green.



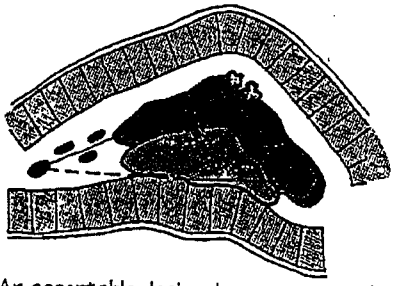
B. A layout to be avoided. Golfers are likely to overshoot the landing area or drive the green.



C. An acceptable layout if trees are large and dense. Some golfers might still drive the green, putting lots at risk.



D. An acceptable design but wastes land. Lake protects lots, but most golfers are likely to drive the green.



E. An acceptable design, because traps discourage overshooting the landing area and the lake adds value while discouraging driving the green.

Hazards must be considered when development surrounds a dogleg hole.
Source: Walter Stewart/Desmond Muirhead, Inc.

- Trees should not be considered an effective means of catching errant balls, particularly between the golf course and adjacent real estate development.

Topography and Safety

A sloped lie directly affects the distance and direction a golf ball will fly. The more severe the slope, the greater the impact on the distance and direction of the ball. Therefore, the design of a golf hole and its associated safety corridor must be adjusted to accommodate the tendencies for balls to fly right, left, short, or long despite a golfer's best efforts.

On long approach shots, the ball's trajectory tends to be low, and the ball tends to bounce and roll on impact unless the golfer can put a backspin on the ball. If a long approach shot is coupled with a downhill lie, the ball tends to travel lower and farther than if the lie is flat. The inherent danger of overshooting the target must be considered and the safety clearance between the green and the next tee or land use beyond the green increased accordingly. On short approach shots, the ball's trajectory tends to be high and to bounce and roll little on impact. If a short approach shot is coupled with a downhill lie, the ball tends to fly lower and farther than for a flat lie. Again, the margin of safety must be increased.

On side-sloping lies, the ball tends to fly left or right, depending on whether the ball is above or below, respectively, the golfer's feet. The margin of safety between adjacent fairways and between the golf course and adjacent land uses must be increased and configured to accommodate the ball's flight pattern.

Paths for Golf Cars

The driving ability of golfers varies with the number of individuals playing golf, and it is virtually impossible to judge their ability to drive a golf car on appearance alone. Understanding the abilities, limitations, and tendencies of both vehicles and drivers provides some basis for planning and designing safe paths for golf cars.

Golfers tend to drive golf cars along the path of least resistance—along the most direct route to where the ball lands, whether paved or not—and sometimes the chosen route is not the safest route. The sensible guideline therefore is to align the path where most golfers will find it convenient and to provide physical and regulatory means to encourage golfers to stay on the path. A majority of players are right-handed and tend to slice the ball (to the right), particularly off the first tee. Therefore, paths for golf cars should generally be aligned to the right side of the fairway, where most golfers hit their shots. An exception occurs when the hole is designed to encourage play toward the left of the fairway—where a water hazard is located on the right side of the fairway, for example. In this case, aligning the path to the left side of the fairway would be more convenient. The National Golf Foundation suggests that the path be located at least 25 feet from the edge of the fairway, a compromise between keeping the path out of play but close enough for convenient use.

The shared use of a path between two adjacent golf holes might appear to be an economical and more cost-efficient means of accommodating golf cars, but it is highly unadvisable. Shared use of a path presents a higher risk of unsafe conditions, and rarely does the shared path serve both holes with the same convenience for both golfers. If the path is not conveniently

Additional Thoughts on Safety

Include an insurance underwriter as a member of the development team.

The developer might wish to forge a link with the insurance company that will provide public liability insurance for the golf course. While no substitute exists for safe design criteria, to the extent that risks are unavoidable, perhaps they can also be insurable. Having a representative of an insurance company involved at the inception increases the likelihood that appropriate coverage can be obtained. Input from the insurance company can shed light on safety criteria based on actual claims as well as information about costs for budgeting. It is important to select a representative who is actually involved in underwriting and claims rather than a sales broker whose primary interest is a commission.

Give thought during planning to defenses for negligence.

Part of the application for a golf course adjacent to a public road, for example, should point out the issue of errant golf balls and the built-in safety criteria to minimize this risk. After entitlements are received, a planning department's signing off can be characterized as an impartial judgment of a safe design. Similarly, regarding the sale of houses adjoining a golf course, a part of the purchase agreement should be the acknowledgment of the proximity of the golf course and an assumption of the buyer's risk and/or waiver of claims. This type of provision can also be built into a community's covenants and restrictions, which attach to the title and bind succeeding owners.

Publish rules and regulations governing conduct on the course.

Consider prohibiting or limiting the consumption of alcoholic beverages on the course. Post signs prohibiting nonlicensed drivers from operating golf cars.

Alert golfers to potentially unsafe areas without admitting to an unsafe condition.

For example, a sign might say "Reduce Speed–Downhill Grade" rather than "Dangerous Grade" or "Snakes in Stream" rather than "Watch for Poisonous Snakes."

Physical safety features are generally more effective than cautionary signs alone.

Speed bumps or textured rumble strips should be considered where control of golf cars' speed is needed. On long downhill grades, safety features like "turnouts" for runaway golf cars should be considered, similar to gravel turnouts for runaway tractor-trailers on long downhill grades.

The factory's safety criteria and performance specifications for golf cars should be considered during design of the course.

If a manufacturer has published safety guidelines for the operation of its product, then the design team should consider them during design.

Safety should be an integral part of employee training programs.

Employees should be required to attend regular meetings on safety policies and practices. They should provide written acknowledgment that they understand all policies, procedures, and rules, including wearing hard hats on the course, who is permitted to handle chemicals, and the procedures for handling them.

Source: John B. Miles, McDermott, Will & Emery, Newport Beach, California.

Web site: www.ngf.org

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Golf Course Development and Real Estate

Desmond Muirhead
and
Guy L. Rando

the Urban Land Institute

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ULI sponsors educational programs and forums to encourage an open international exchange of ideas and sharing of experience; initiates research that anticipates emerging land use trends and issues and proposes creative solutions based on this research; provides advisory services; and publishes a wide variety of materials to disseminate information on land use and development.

Established in 1936, the Institute today has some 13,000 members and associates from 46 countries representing the entire spectrum of the land use and development disciplines. They include developers, builders, property owners, investors, architects, public officials, planners, real estate brokers, appraisers, attorneys, engineers, financiers, academics, students, and librarians. ULI members contribute to higher standards of land use by sharing their knowledge and experience. The Institute has long been recognized as one of the country's most respected and widely quoted sources of objective information on urban planning, growth, and development.

Richard M. Rosan
Executive Vice President

This book is dedicated to my children, Marco, Tony, and Gaetano, with special thanks to my colleague Desmond Muirhead for his trust and support.—G.L.R.

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the hole length falls outside the Transition Zone, then the Transition Zone concept should be applied.

4. Accuracy Pattern

The Accuracy Table below prescribes the dimensions of the area into which a scratch or bogey golfer is expected to hit shots of various lengths 67 percent of the time. It is used to assist in evaluating the effect of obstacles around the target (*e.g.*, if the scratch golfer has a 160-yard [130-yard] approach shot, an obstacle within 8½ yards of the center of the green is considered a significant factor).

ACCURACY TABLE -- Men and [Women]
(Dimensions of Expected Landing Area 2/3 of the Time -- in Yards)

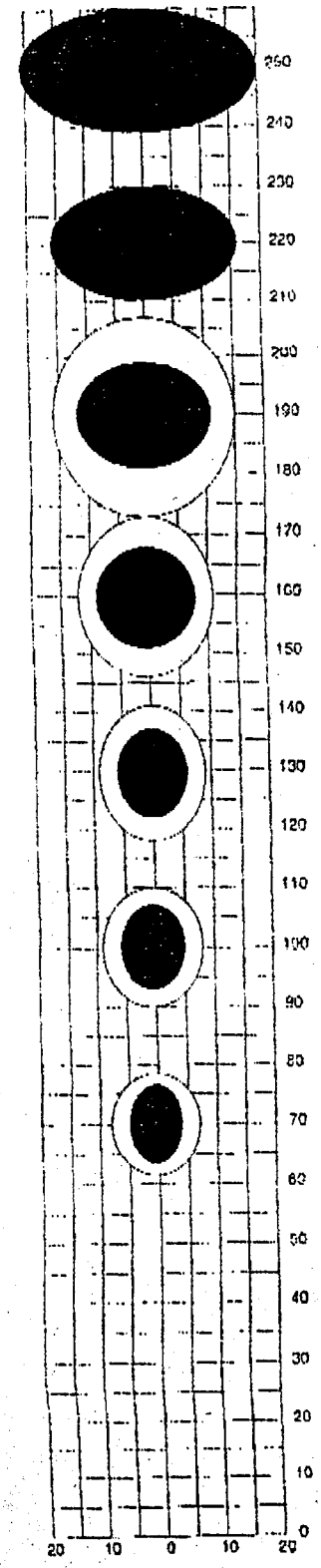
	Scratch Golfer				Bogey Golfer			
Length	Men		[Women]		Men		[Women]	
of Shot	Width	Depth	Width	Depth	Width	Depth	Width	Depth
40	--	--	[9]	[13]	--	--	[14]	[17]
50	--	--	[10]	[14]	--	--	[15]	[18]
60	--	--	[11]	[14]	--	--	[16]	[19]
70	9	13	[11]	[14]	14	17	[16]	[18]
80	10	14	[12]	[15]	15	18	[17]	[21]
90	11	14	[12]	[15]	16	19	[17]	[22]
100	11	14	[13]	[15]	16	20	[18]	[23]
110	12	15	[14]	[16]	17	21	[19]	[24]
120	12	15	[15]	[16]	17	22	[20]	[25]
130	13	15	[17]	[17]	18	23	[21]	[27]
140	14	16	[18]	[17]	19	24	[22]	[28]
150	15	16	[20]	[18]	20	25	[24]	[30]
160	17	17	[23]	[19]	22	27	--	--
170	18	17	[26]	[20]	24	28	--	--
180	20	18	[28]	[22]	26	30	--	--
190	23	18	[30]	[24]	29	34	--	--
200	26	19	[32]	[26]	33	37	--	--
210	29	19	[34]	[28]	--	--	--	--
220	32	20	--	--	--	--	--	--
230	35	20	--	--	--	--	--	--
240	38	20	--	--	--	--	--	--
250	41	21	--	--	--	--	--	--

5. Obstacles "Do Not Exist"

Obstacle values normally decrease as their distance from the target increases. If an obstacle is 60 [50] yards to the left or right of the line of play or 50 [40] yards to the left, right or beyond the center of the green, generally it should not be considered a factor for the scratch golfer (*i.e.*, it "does not exist" on the hole and should be rated zero). For the bogey golfer, these distances are 75 [60] yards from the line of play and 65 [50] yards from the center of the green.

ACCURACY PATTERNS

MEN



ALL SHOTS HIT FROM HERE

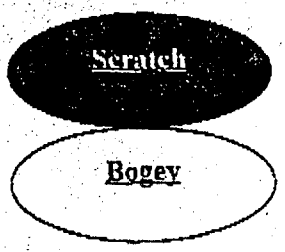
SHOT PATTERN WIDTH (YARDS)

Shot length and shot pattern width and depth (yards)

Each square = 5 yards

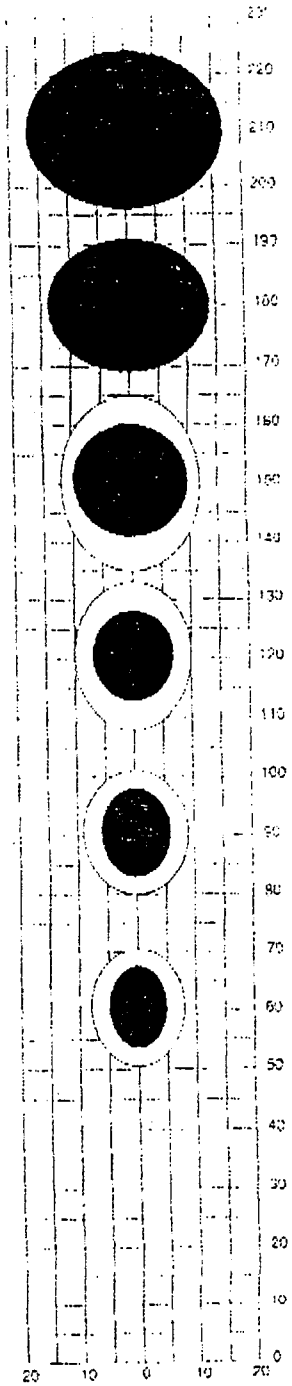
Maximum Scratch Golfer tee shot is 250 [210] yards

Maximum Bogey Golfer tee shot is 200 [150] yards



SHOT PATTERN WIDTH (YARDS)

WOMEN



ALL SHOTS HIT FROM HERE

FAX

To:	Rita Garcia
Company:	
Fax number:	+1 (949) 4728373
Business phone:	
From:	Kipp Michael Schulties
Fax number:	+1 (212) 286-8978
Business phone:	
Home phone:	
Date & Time:	11/5/00 10:30:32 PM
Pages:	3
Re:	Comments - Long Point

Kipp Schulties
Golf Design, Inc.

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November 5, 2000 VIA FAX

Ms. Rita Garcia
RBF Consulting
14725 Alton Parkway
Irvine CA 92618-2027

Dear Rita –

This letter is in response to your request for comments relating Mr. Mike Mohler's response to the golf course safety analysis for the Long Point Resort Golf Course. Mr. Mohler's response letter is dated October 17, 2000. The safety analysis was dated September 12, 2000.

Hole # 1: Mr. Mohler's comments are noted.

Hole # 2: The fairway bunker past the landing area should help ease many of the concerns about errant shots to the left. Any additional berming along the left side will help as well

Simply changing the angle of the tees in their current location does very little to better the situation as the target area (the center of the landing area) remains the same. Moving the tees down the slope (directly to the left of the current location on the plan) will better the situation if there is still as concern.

Hole # 3: I am assuming that the tees cannot be pushed back into the Coast Guard property. If this is true, and the tees must stay where they are on the most recent plan (dated 10/02/00), then this hole really should be a par four. The green should be located just past the shallow draw near what is now the second landing area. As the plan is currently drawn, the second landing area is 85 feet from the property boundary to the left and 100 feet from the centerline of the 4th hole. That is really unacceptable using today's guidelines for golf hole corridor widths. If there are any questions about this, please see the initial safety report that I did (dated 9/12/00) Look in the appendix in the section that is copied from the National Golf Foundation (NGF). Read pages 49 through 51 that discusses the safety perimeter and safety on the golf course.

In that same section (NGF), it discusses blind shots. The revised grading of the 3rd fairway still does not address the issue of the blind shot. If there were no other holes or property boundaries on either side of this hole, the blind shot would not matter, but that is not the case at Long Point.

I noticed that the support that was to the right of the first landing area (separating the landing area from the 4th green complex) was removed. I believe this was to "balance" the earthwork quantities. This was one of the better landforms (most useful) on the course. Why was this removed? If you want to better the hole, keep the landform to the right as it use to be on plan, but cut the fairway area by 5 to 10 feet through the areas that are currently at elevation of 360. That would make the highest point in the fairway at 355 while the sides (rough areas) may be 5 to 10 feet higher. This will help remove the "blind" shot in the process.

In the safety analysis, I recommended lowering the entire area between the 3rd and 4th holes I did not mean for the support to the right of the first landing area to be removed. If this does make sense in writing, let me know and I will grade it for you.

Hole # 4: I'm trying to imagine what a long linear trap would look like along the outside of the dogleg. Instead, consider adding fill (mounding and landforms) to support the outside turn of the dogleg, which will help contain shots. The outside of the turn (left side) should be noticeably higher than the middle of the fairway for containment and for the basic visual aesthetic value of the turn from the tee locations.

Hole # 5: Mr. Mohler's comments are noted

Hole # 6: Mr. Mohler's comments are noted

Hole # 7: I disagree about the cart path – but this is purely a design characteristic that has no effect on the safety of players or the surroundings. Other comments are noted.

Hole # 8: Mr. Mohler's comments are noted.

Hole # 9: Mr. Mohler's comments are noted.

Range: Mr. Mohler's comments are noted.

Please call me if you have any questions about the information in this letter.

Sincerely,

Kipp Schulties

Peer Review and Safety Analysis for Long Point Resort Golf Course

Rancho Palos Verdes, California

Second Edition

Written by:
Kipp Schulties Golf Design, Inc.
January 23, 2001

Kipp Schulties
Golf Design, Inc.

Golf Course Design &
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January 23, 2001

Mr. Glenn Lajoie
Ms. Rita Garcia
RBF Consulting
14725 Alton Parkway
Irvine, CA 92618-2027

Subject: ***Long Point Resort – Safety Analysis (Second version)***

Dear Glenn and Rita:

This letter is in response to your request for an additional Long Point Resort safety analysis. More specifically, this analysis will relate to the two (2) alternatives to the original plan evaluated in a report entitled "Peer Review and Safety Analysis for Long Point Resort Golf Course" and dated September 12, 2000. In addition, based on your request, I will clarify my recommendations for the proposed third and fourth holes based on the aforementioned report.

Clarification of holes 3 and 4

The purpose for this clarification is due the inability to use the Coast Guard Property for the 3rd hole's tee complex. To clarify my earlier statements about this hole, I have included an excerpt from the September 12, 2000 report. This excerpt is as follows:

Hole # 3 *The third hole is a long par five that plays to the East further up the hill from the second hole. The back tee is at elevation 345+ and is located just to the north of the Coast Guard property. The forward tees are staggered out to the left to promote play away from the property boundary. The landing area is at an elevation of nearly 360 which means the tee shot is played uphill (the rest of the hole is not seen from the tee past the first landing area). The fairway is graded to contain shots by being higher on each side. There is adequate containment via support mounding to the right of the landing area, which separates the first landing area from the fourth green.*

The second shot plays to a landing area that is really unacceptable from width standpoint (some 60 to 70 feet from the property boundary). This is a danger to adjacent property owners and any pedestrians using the paths for walking. To compound the matter, any player that hits short of the first landing area will have a blind shot to the second landing area. This is due to the fact that the highest point in the fairway on the plan (elevation approaching 365) is located well past the first landing area. Any player hitting a tee shot that lands 50 yards short of the first landing area will be at elevation 350 to 355 – 10 to 15 feet less than the crest of the hill. This will cause players to guess where they are to hit their second shots which will only multiply the error factor in the shot.

Those that do hit the ball far enough to see over the hill with their drive off the tee will be forced to play more to the right with their second shot. This will happen because golfers will try and avoid the property boundary on the left of the second landing area (a two stoke penalty for going out of bounds). The location of this property boundary will tend to steer play directly into fourth tee area – a potentially dangerous situation.

Recommendation: *Use Alternate A*

Hole # 3 – Alternate A *This is also a par five but it plays from the south point in the Coast Guard area. The elevation of the back tee is approximately 315+. The tee shot is played uphill to a landing area at an elevation of approximately 337. The landing area has adequate corridor widths relating to the adjacent property boundary left. The forward two tees play from the center of the Coast Guard area at elevation of 340+, making it level with the landing area. The first landing area is graded to adequately contain shots by having higher elevations on each side. The left side is higher in order to direct shots to the right and contain balls from leaving the golf course property.*

While this alternate works much better from a safety standpoint, the second shot is still blind with the high point somewhere near elevation 357 almost halfway between the first and second landing areas. There is a small sand trap at the top of the hill between the first and second landing area, which can be seen from the first landing area. This will help players direct their shots away from the fourth fairway. There is a token bunker to the left of the second landing area to stop errant shots, but it cannot be seen from the first landing area. The green complex is just on the other side of a deep drainage draw tucked next to the property line with support behind and to the left

Recommendation: *While not perfect, this Alternate A is much better than the original layout – which really should not even be considered. The blind second shot and the green next to the property boundary area are a concern, but not unacceptable.*

Consider elevating the back two tees for better vision to the first landing area. Also, on a much bigger scale, consider cutting much of the area between the first and second landing area out (as much as 15 feet lower). To tie this together, the cut will have to go through much of the fourth hole from the landing area to the green. By cutting this area down, players will be able to see the second landing area on the third hole from the first landing area (taking some of the guesswork and error out of the shot) as well creating containment via support on the left. By cutting the inside corner of the fourth hole, support on the outside of the landing area (left side) of the fourth hole will be established

making for better containment and better visual appeal. This will also create better views for those looking from the city buildings above the third hole.

Where to put all earth from the "cut" we discussed? Better let your golf course architect decide that one.

Reading through the excerpt, I think it is clear that the first landing area should be lowered by 10 to 15 feet (leaving the support that separates the 3rd fairway from the 4th green).

To be frankly honest, there is just not enough room to get the third hole's second landing area and green complex in the same small area as the 4th tee complex. This is due to the property boundary left of the third hole and the steep slope to the left of the 4th tee complex. As it is shown, the second landing area of the third hole is less than 100 feet from the property boundary (the center line gets as close as 70 feet from the property boundary just short of this landing area). To determine this, I have been using the AutoCAD drawing from Admundson and Company entitled "Golf Course Safety Corridors for Upper Point Vicente Not Including Coast Guard Parcel".

Complicating matters, there is a pedestrian trail (and cart path) proposed between the property boundary and the third hole all within this 100 foot area separating the second landing area and the property boundary. There is entirely too much potential conflict with errant shots landing on or near the pedestrian trail in this area.

To avoid conflicts with shots going into the pedestrian area or off the property, the second landing area would need to be moved to the right approximately 80 to 100 feet (at the very least). However, by moving this over to the right, the second landing area would then be in the direct flight path of shots off the fourth tee – a very dangerous situation for players on the third hole.

Recommendation:

I wish that I could find a way to make the relationship between the third and fourth holes a workable one. I have looked at this several times, but cannot find an acceptable solution to this problem. This in mind, I am recommending two possible options:

> **Option # 1** - The third hole becomes a par four with the green just short of where the original second landing area is. The fourth tees remain where they are.
>
> **Option # 2** – The third hole's second landing area moves out to the right (to a distance at least 150 feet – ideally 175 feet – away from the property boundary). This way the hole would remain as a par five. The fourth hole would become a par three (about 185 yards from the back tee). I prefer this option myself for the integrity of the course.

Now, I realize that it is likely the developer will not be favorable to either of these options and I can sympathize with him/her. The golf course, as it is routed, is struggling to maintain its legitimacy as a regulation nine-hole golf course and not an executive course. However, he/she must understand that there is more long-term liability with injury to pedestrians and other golfers if you build the course as it has been routed.

While there are very few written rules that set minimum widths for golf holes, there are some written (and learned) guidelines in accordance with which most architects design their golf courses. I included this information in the last safety analysis that I did on September 12. For the purpose of explanation, I will include this information again as an attachment to this report. The information that I am including on safety corridors was provided by the National Golf Foundation (NGF) from a book that was published by the Urban Land Institute (ULI) and authored by golf course architect Desmond Muirhead entitled "Golf Course Development and Real Estate". I strongly recommend that you review this information because it directly relates to the concerns surrounding the Long Point Resort project.

Evaluation of two new Alternatives: No Resort Villas Option "B" Alternative and Relocated Practice Center Option B Alternative

First, let me begin by saying that, in my professional opinion, the best place to locate the driving range is where it was located on prior routings (in the UPVA parcel). I feel very strongly about this. It was a perfect area given the constraints of the site. In fact, I think I may have mentioned in my last safety analysis (9/12/00) that the UPVA parcel was the only area on the site that could support a driving range from a safety standpoint. I think that anyone having opposition to the location of the range in the UPVA parcel is making an issue of it because they do not want it there – not because of the threat of golf balls hitting their homes. The way it was designed meet all the necessary safety constraints.

In summary, I think it is a mistake to move it from this location.

No Resort Villas Option B Alternative

The only information that I have to evaluate this is a 7 page facsimile (8.5 x 11) that includes some descriptions of the two alternatives and a routing map of each alternative. I have included a copy of this facsimile (fax from this point forward) with this response so that you may be familiar with the resource from which I have drawn my conclusions.

Looking at the first page of the fax in the "Impact Comparisons to the Proposed Project" subtopic – Paragraph 2: I do not see on the associated routing plan for this alternative that the first hole is a par three running north-south as the writing indicates. I will assume that this is a misprint and that the first hole remains as par four running more East-West as it always has been routed.

Looking at the fourth paragraph (within the same aforementioned subtopic) describing the width of the of the practice range: It is mentioned that "a golf ball would have to travel some 250 to 300 yards and be off-line by a minimum of 80 yards from the furthest right-hand portion of the range in order to exit the property". It also says "while the prevailing winds originate out of the west, there would be more than adequate separation from the eastern boundary of the project". I agree this is plenty of distance to keep golf balls from exiting the eastern boundary of the property. However, what happens to the ninth hole?

The ninth hole as drawn has a corridor width of 300 feet off the eastern property boundary. According the previous quote in the last paragraph a golf ball has to travel 80 yards (240 feet) to get off the property from the right hand portion of the range. That means that the edge of the range is 240 feet from the eastern property boundary. The western edge of the ninth hole is 300 feet away from the eastern boundary. What this means is that the driving range and the ninth hole overlap. If this stays as planned, golf balls will be all over the ninth fairway from the range, particularly given the fact that most golfers slice the ball (hit it to the right). To compound matters, the prevailing wind is out of the west, which would carry errant shots even more toward the ninth fairway. As the developer of this golf course, I would be very concerned (from a liability standpoint) with this relationship. I would be very interested to see the physical separation that will "be enhanced through grading and strategic deign in the final product" as the sixth paragraph discusses.

The newly proposed par three 8th hole seems to be fine (there is no grading to look at).

The newly proposed par four 3rd hole (formerly the practice area) seems to be fine. I will say, however, that the shots from the tee are now more apparently directed toward the residential units to the left of this hole than the practice range shots ever were. For what it is worth.

Recommendation:

I would put the practice range back onto the UPVA parcel where it was initially located. It works best in that location.

There is certainly no threat of golf balls flying off property with the rest of the routing (a little concern with the new 3rd hole – only potentially knowing the topography left of the hole). The newly proposed practice range and 8th hole do not provide much of a concern of balls flying off property. However, there is great concern for overlap with other holes/amenities on the property. I would want to see more information upon a more detailed design.

One clear negative about this overall routing (besides moving the range), is the amount of distance between the green complex and the following tee on many holes. The amount of walking/or riding time between green and tee is really going to have an impact on the pace of flow (and ultimately on the amount of players that can use the course).

The relationship between the 4th and 5th holes (previously the 3rd and 4th holes) was discussed at the beginning of this letter.

Consider moving the landing area on the third hole to the east and more directly into the containing slope. Cut a deep low along the left side of the fairway. The hole will become a dogleg left rather than one to the right. Otherwise, the landing area will be falling away from the turn to the right (by looking at the existing topography). The green will become much more dramatic with the low in front of the green and it will keep the landing area farther away from the property boundary. Just a thought.

Relocated Practice Center - Option B Alternative

The relocated practice facility was addressed in the last section.

The only difference between this plan and other alternative is the two holes (#3 and #4) that are located were the practice area was previously (in the UPVA). In addition, the 8th hole (7th hole in the other alternative), is proposed as par 5. If it supposed to be a par five in the first alternative, I cannot tell that. There was only a scorecard provided for the second alternative. I will address this hole first.

A concern that I have is the proposed 8th hole (formerly the 6th hole - 7th hole in the aforementioned alternative) becoming a par five. I pulled out my routing templates to see how this would work given the property constraints. It appears to me that in order to make this hole a par five, the entry road to the resort will have to move to the west slightly (this appears to be the case in the drawing that I have in the fax). Even at that, there is little separation between the green and the entry road. In addition, any movement of the entry road to the west only compounds matters with the proposed driving range (concern of golf balls landing on the entry road).

You can see my opinions on the proposed 3rd hole in the last section. Those would still apply here. The only difference is the introduction of the par three 4th hole that parallels the 3rd hole. Once again, I pulled out my routing templates using the existing topographic mapping. I am not sure how you can, safely, get both of those holes in that space as they are shown on the plan. If the area were flat, I could understand it. However, the slope along which this proposed hole parallels is very steep. The tees are not a problem. It is the green that concerns me. I have my doubts that the green (at the length that it is shown on the plan) can actually be constructed and not interfere with the 3rd hole. Most certainly there will be errant shots in the 3rd fairway because the tees are likely to be 50 feet higher than the green with the slope falling away to toward the third hole.

Recommendations:

My recommendations are the same as the last alternative for the driving range. Otherwise, I would have to reserve any other comments on building the proposed 3rd and 4th holes until a grading plan can be completed. I would like to see how the architect proposes to create separation between these holes.

As an additional comment – for golf course aesthetic purposes – I would not recommend crossing the fairway with the cart path between the landing area and the green as the description indicates in the fax. This would really take away from the appearance of the hole. The path could be taken around the back of the green and pitched into the slope. That way, it would serve as a drainage channel to collect water from running onto the green during the rainy season and would not been seen (because it is pitched into the hillside). I have used this method for cart path construction in California in the past very successfully. In addition, Pelican Hill in Irvine also uses this same concept to collect surface run off. Something to consider.

In General

These two options do not introduce any new concerns to the property owners around the golf course as compared to the initial routing for which I made an evaluation back on 9/12/00. However, both of these two options increase potential conflict with other golfers and pedestrians around the resort. This concerns me much more than anything I saw in the prior safety evaluation.

Please feel free to contact me should you have any questions about this report

Sincerely

Kipp Schulties

Report Resource Information

Facsimile from RBF Consulting

RBF CONSULTING

FAX COVER SHEET

Date: December 29, 2000 **JN 34194**

To: Kipp Schulties **Company** KS Golf Design
FAX: 561.694.0712

From: Rita Garcia **Department:** Environmental Services
Phone/Ext.: 949.472.3454
FAX: 949.837.4122

Subject: Long Point Resort EIR

Please give copies of this transmission to:

Total pages (including Cover Sheet):

MESSAGE:

Kipp:

Hope you had a wonderful Christmas. Best wishes for a healthy and prosperous new year.

Attached are the descriptions of two project alternatives along with a golf safety analysis for each. Please review and submit to RBF a scope and budget for conducting a peer review of each analysis. Please submit to RBF no later than January 4.

RG

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION. NO PORTION OF THIS DOCUMENT MAY BE EXTRACTED OR REPRODUCED FOR ANY PURPOSES WITHOUT THE ADVANCE PERMISSION OF RBF CONSULTING

If there are any questions, or if you do not receive all documents, please call us.

14725 Alton Parkway, Irvine, CA 92618-2027 ■ P.O. Box 57057, Irvine, CA 92619-7057 ■ 949.472.3505 ■ FAX 949.472.8373
Offices located throughout California, Arizona & Nevada ■ www.RBF.com

7.6 NO RESORT VILLAS OPTION B ALTERNATIVE

DESCRIPTION OF ALTERNATIVE

The "No Resort Villas Option B" Alternative would exclude the Resort Villas proposed for development in the northeastern portion of the RHA (refer to Exhibit 7-4, *No Resort Villas Option B Alternative*). The golf practice facility would be "switched" with Hole 8, relocated from the UPVA to the eastern portion of the RHA and it would be replaced by relocating Hole 8 to the UPVA vacated by the practice facility. Hole 7 would be relocated to the area vacated by the Resort Villas. The portion of the UPVA vacated by the practice facility not used for a golf hole would be used for the creation of new habitat, creating a larger conservation zone inthe northwestern portion of the UPVA.

IMPACT COMPARISON TO THE PROPOSED PROJECT

Public Health and Safet

The potential golf safety impacts associated with the golf practice facility on the UPVA would not occur with this Alternative since the facility would be developed on the RHA. The proposed relocation site possesses characteristics similar to that o the proposed project: adjacent residential area and roadway. Therefore, impacts associated with the proposed project's golf practice facility would simply be relocated to the RHA. Relocation of the proposed practice facility from the UPVA to the eastern portion of the RHA would result in potential golf safety impacts similar to those identified for the proposed project. As a result, a Golf Safety Analysis was conducted by Asmundson and Company, Inc. (October 31, 2000) to assess the potential impacts of the relocated practice facility.

The revised practice range is proposed on the eastern portion of the RHA between Holes 1 and 9. It would be oriented in a predominantly north-south direction with the teeing area in the southern portion. Hole No. 1 is a par three playing to the north and Hole 9 is a par four playing in the opposite direction.

The practice range has a proposed tee width of approximately 250 to 280 feet and a depth of approximately 100 to 120 feet. The tee would be constructed in a curvilinear orientation to direct shots to the interior of the practice landing area to well defined target greens. The tee would be depressed from the existing grade with containment berms along the perimeter to contain errant golf shots. Berms would be elevated to the maximum height allowable relative to adjacent vie corridor requirements.

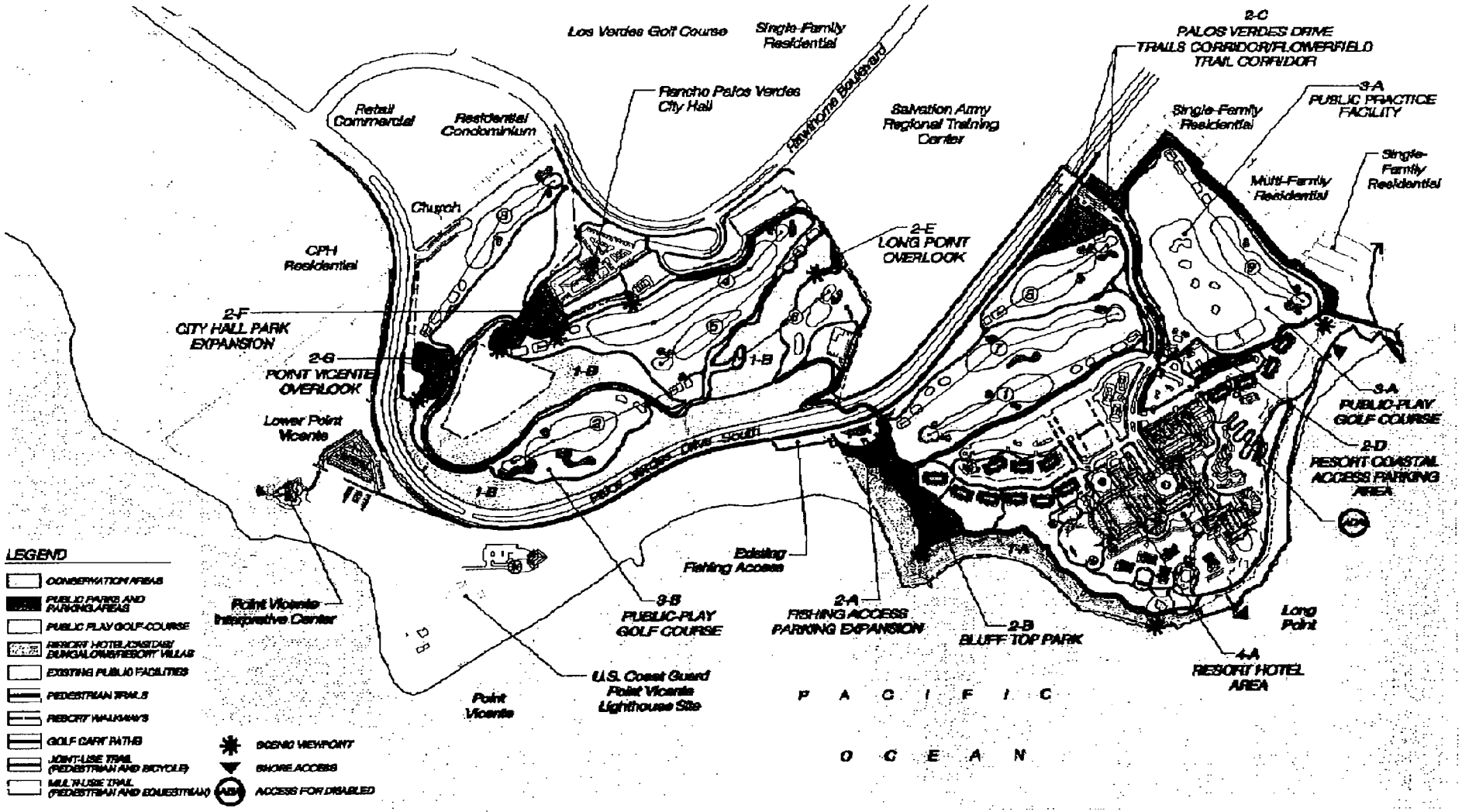
The practice landing area would be a minimum of 100 yards in width with an overall depth of 280 to 290 yards. While prevailing winds originate out of the west, there would be more than adequate separation from the eastern boundary of the project.

A golf ball would have to travel some 250 to 300 yards and be off line by a minimum of 80 yards from the furthest right hand portion of the range in order for it to exit the property.

A relocated drainage swale/arroyo would divide the practice range from the first hole and entry drive. This would be naturally landscaped with trees and shrubs for both function and aesthetic appeal further defining the practice range and enhancing separation. Tees on Hole 9 would be oriented adjacent to the eastern boundary to encourage golf shots to the interior. The proposed landing area for this hole would begin at an area some 150 yards in depth from the center of the practice tee and extending to within 100 yards. Lateral separation would be approximately 40 to 50 yards between the edge of the fairway and practice range. Berms would be constructed for separation as would sand bunkers on the right side of Hole 9 for collection of errant shots and strategic playability.

While containment of every errant golf ball would not be guaranteed, adequate physical separation would exist between these golf elements that would further be enhanced through grading and strategic design in the final product.

As with the proposed project, impacts associated with golf safety would be considered less than significant with mitigation.



LONG POINT RESORT
PROGRAM EIR

No Resort Villas
Option "B" Alternative

Exhibit 7.4

Long Point Resort
Relocated Practice Facility – Option B Alternative

Holes 3 and 4 have been relocated to the northwestern meadow portion of the Upper Point Vicente site. Hole 3 is a mid-length Par 4 playing slightly uphill as a dogleg right. The fairway will be concave with low broad mounds constructed along the left with sand bunkers incorporated for deterring and containing golf shots. Coupled with prevailing winds there is more than adequate safety from the adjacent road cul-de-sac and the residential areas since the majority of golfers have a similar left to right shot pattern. Ideally, the cart path would be routed up the left side crossing the fairway between the landing area and green approach to eliminate conflict with Hole 4.

Hole 4 is a relatively long downhill Par 3. Prevailing winds and the position of green-side bunkers will reinforce safety from Hole 3. The hole may have to shift slightly to the east and north to increase the safety separation between the pedestrian trail access from the proposed lookout to the expansion pad.

In conclusion, there is sufficient area for Holes 3 and 4 to be designed and constructed assuring adequate internal and external safety.

In this alternative the Practice Facility has been relocated to the Resort Hotel site in an area where there is both sufficient depth and width. The teeing surface will be depressed and be oriented with a curvilinear shape to direct shots to the interior of the landing area to a well defined target greens. Large broad mounds will be constructed along both sides to enhance separation and the collection of golf balls. Tree and shrub plantings along the entry drive will provide further safety.

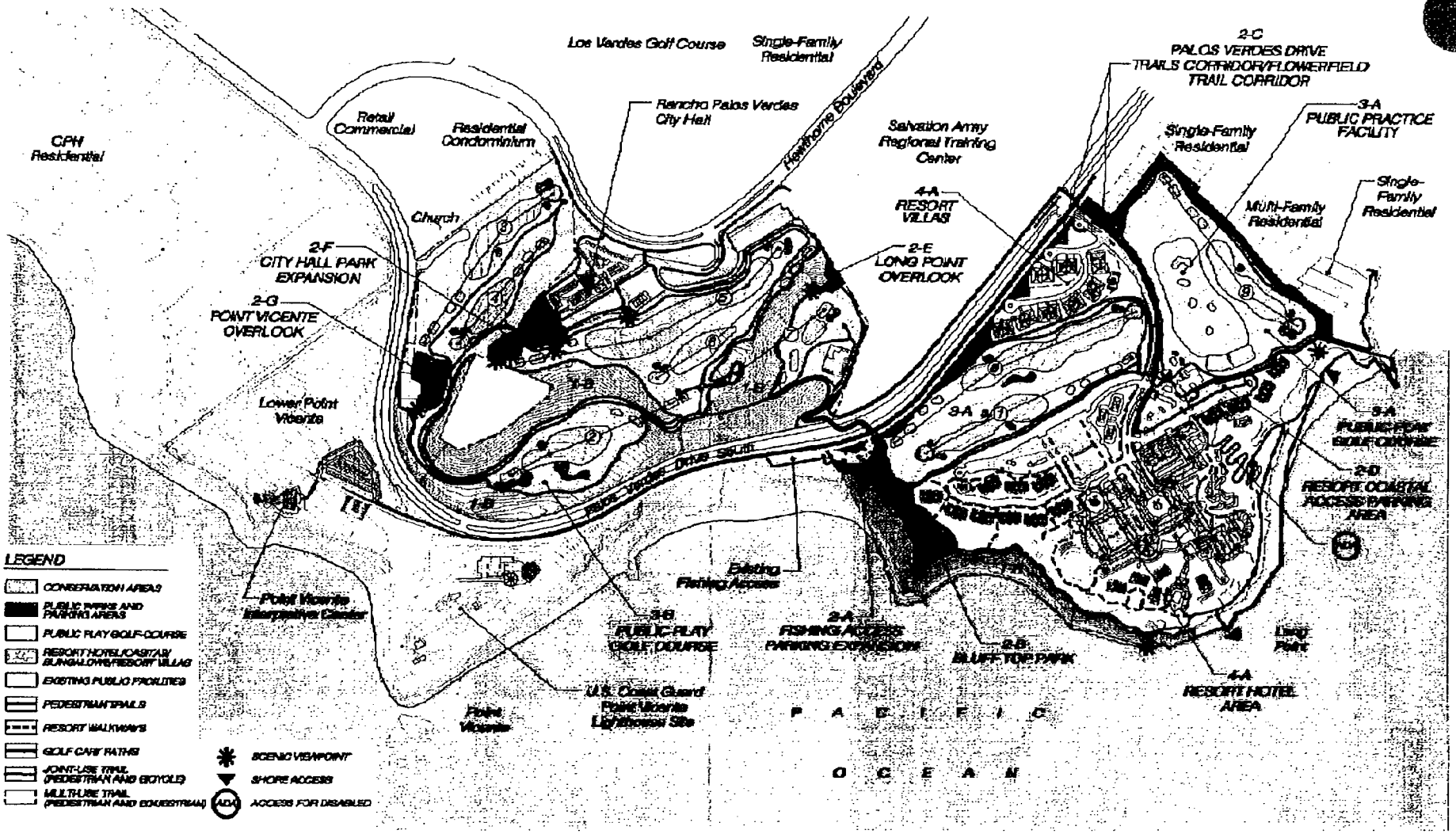
Hole 9 is another mid-length Par 4 that parallels the right side of the practice facility playing to the southeast towards the ocean. Teeing areas are positioned along the adjacent property to internalize the flight of the golf ball. Mounds and bunkers will be positioned along the right and left side of the fairway for collection and containment. In addition the fairway will be concave.

Again, there is more than sufficient area available to construct both the practice facility and the ninth hole. Tee elevation and orientation, fairway contouring, playing strategy, sand bunkers positions, the location of the cart path - not to mention landscaping will all tend to provide adequate internal and external safety consistent with industry standards.

RELOCATED PRACTICE CENTER
"OPTION B" ALTERNATIVE SCORECARD

Hole	Par	Length (yards)
1	4	412
2	4	348
3	4	364
4	4	242
5	5	538
6	4	369
7	3	203
8	5	502
9	4	365
TOTAL	37	3343

The "Relocate Practice Center Option B" Alternative involves relocation of the project's proposed golf practice facility to the eastern portion of the RHA, between the Entry Road and Hole #9. The golf practice facility would displace Golf Holes 7 and 8 in the RHA. The displaced golf holes would replace the golf practice facility in the UPVA.



LONG POINT RESORT

City of Rancho Palos Verdes • California

RELOCATED PRACTICE CENTER
OPTION B ALTERNATIVE

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May 7, 2001

Mr. Glenn Lajoie
Ms. Rita Garcia
RBF Consulting
14725 Alton Parkway
Irvine, CA 92618-2027

Subject: ***Long Point Resort – Safety Analysis (Third version)***

Dear Glenn and Rita:

This letter is in response to your request for an additional Long Point Resort safety analysis. More specifically, this analysis will relate to the modifications that have been presented to me via the rough grading plan dated March 26, 2001. This analysis directly relates to the first analysis that was completed on September 12, 2000 entitled "Peer Review and Safety Analysis for Long Point Resort Golf Course" and the second safety analysis by the same title (second version) dated January 23, 2001.

For the purpose of this analysis, I will only focus on those things which have been modified from the second analysis that was done on January 23, 2001. Specifically this would relate to the northwest portion of the UPVA parcel where holes number 3 and 4 are shown on the aforementioned rough grading plan. In addition, I will make comment on the relationship between the 1st and 8th holes on this plan as well as well as the ninth hole and the driving range.

I am assuming that all of my other statements from the second report dated January 23, 2001 have been noted and addressed. Thus, I need not bring them up again.

The standards by which I am doing this analysis are the same as for the other two versions that I did on September 12, 2000 and January 23, 2001. For clarification, I have provided an excerpt from the January 23, 2001 report:

...there are very few written rules that set minimum widths for golf holes, there are some written (and learned) guidelines in accordance with which most architects design their golf courses. I included this information in the last safety analysis that I did on September 12. For the purpose of explanation, I will include this information again as an attachment to this report. The information that I am including on safety corridors was provided by the National Golf Foundation (NGF) from a book that was published by the Urban Land Institute (ULI) and authored by golf course architect Desmond Muirhead entitled "Golf Course Development and Real Estate".

For more information about these guidelines, please refer to the appendix in either one of these two aforementioned reports of September 12, 2000 or January 23, 2001.

Holes # 3 (as of March 26, 2001):

The third hole is in the northwest portion of the UPVA parcel. The hole is a very steep uphill par four that plays due east. The tee is located at an elevation of approximately 240 and the green is at 290. With this kind of rise in elevation, it will be nearly impossible to see the green surface from the fairway.

The fairway, while going uphill, is crowned near the middle and generally falls off from right to left. A bunker is shown about 120 yards off the tee between the third and fourth holes. The purpose for this is unknown, as it has no bearing on either hole in the location that it is shown. The green is protected by bunkers front right and front left.

There is no problem with this hole as it relates to the property boundary to the north, but there is an issue relating the adjacent fourth hole to the south. At the widest point, there is only 150 feet between the centerlines of these two holes (recommended minimum would between 200 and 225 feet). Compounding this is the fact that the fourth hole is played severely downhill which falls toward the third hole. Under this scenario, many golfers will be errant on the fourth hole to the right and long (toward the third hole).

Recommendation:

Move the landing area out to the west about 50 to 60 feet. This will still put the center of the landing area at least 185 feet away from the property boundary of the homes to the north of the hole. This will meet all safety guidelines for distances away from property boundaries. At the same time, the tees need to stagger out to the left (off the centerline) more to stay away from errant shots off the 4th hole. By doing these two things, it is likely that some length may be added to the hole as well as relieving a safety concern.

Doing this will have some impact on the area of land that is to be conserved/protected. It will have to be mitigated elsewhere on the course. (or possibly around the tees on this hole).

Hole # 4 (as of March 26, 2001):

The fourth hole is long downhill par 3 (nearly 200 yards) that plays in a westerly direction parallel to the third hole. The tee is at an elevation of 300 and the green at 250. The hole has a strong slope between the tee and green that falls from left to right towards the third hole. There is a "saving" bunker behind the green to collect longer shots. The green, as drawn, has 10 feet of fall away from the shot. There is no way the green can be built in this fashion.

There is a genuine concern with this hole as it relates to the third hole. Because of its strong downhill nature, many players will tend to miss this green long and to the right. As it is drawn, there is not sufficient separation between this hole and the third hole.

Recommendation:

First, the third hole must be modified as per my last recommendation (which it can be) as the fourth hole cannot move because of the slope that it is built upon.

The back of the green must be elevated as much as 10 feet to support the downhill shot. This amount of fill will impact a large area behind the green (through the third tees) in order to tie the slopes in properly. The fill should not be an issue as plenty can be generated by "cutting-in" the third hole for better containment (and removal of the crown in the fairway).

Holes # 8 and # 1:

The only point that I wanted to make on the 8th hole was that the second landing area is a little too close to the property boundary on the north side of the hole. This can be "tweaked" a little with the first hole to get the proper hole widths.

To expand on the "tweaked" comment (a common design term), the second landing area should be moved at least 60 feet to the right of where it is drawn on the rough grading plan. That will allow for there to be the minimum width of 150 feet from the property line while also leaving a little room for an additional buffer area. The only thing that will need to happen on the 1st hole is for the tees to move a little to the south to make sure that there is a minimum of 200 feet between the revised centerline of the 8th hole and the tee on the first hole. Having the tees a little closer to property boundary on # 1 will only help because it will aim shots off the first tee even more away from the property line to the south of the first hole.

To reiterate what I said in the report of January 23, 2001, the 8th green needs to be pulled back away from the road by about 100 more feet than it is shown. Otherwise, many shots will end up on the entry drive. To make up for that, it is possible to move the tees on the 8th hole back slightly without interfering with the first green.

Hole # 9:

The first part of the ninth hole is an ideal model to work from. The tees are lined up to hit away from the property line, the landing area is approximately 175 feet away from the property boundary, and there is light berming (as seen on the grading plan) separating the cart path from the pedestrian trail. I might recommend some light vegetation on this berm for added separation.

There is good size berming down the right side at the landing area to support (contain) the shot and turn the hole. The fairway is graded to contain the shots by being lower in the middle and higher on the sides. This is a good hole from the tee.

The only problem is around the green. It is a little too close to the property boundary (only about 100 feet away). However, I think that this is easily remedied.

Recommendation:

Move the green about 50 to 60 feet to the right and back toward the fairway by about 20 feet. This will then meet the minimal distance requirements away from the boundary. Any chance of taking the bridge behind the green a little closer toward the ocean (to make a little more room for the green complex)?

Driving Range:

The driving range is also graded well (at least as well as it can be). The range is graded to be lower in the middle to benefit golf ball containment. It has higher berming around the outside that separates the range from the ninth fairway to the east and the entry road to the west. This berming is about as high as it can be without being a visual distraction on the property.

The biggest problem that the developer has is with the width of the range. There will be some shots that land on the entry drive and on the ninth fairway (especially given the current layout of the driving range tees). Granted, many ranges have been built on smaller pieces of property, but they are usually well framed with dense vegetation and possibly even netting. If dense vegetation (with some height to it) is an option to be planted on the berming on both sides of the range, then it might just fit (with an adjustment to the tees).

Recommendation:

My recommendation, if the range is to be left in this location, is the following: Move the tees up the slope about 150 feet and then slide them to the west about 100 to 120 feet so that the left edge of the tee is close to the sand trap for the chipping green that the nearest to the clubhouse. This will relieve much of the problem with the relationship between the range and # 9 landing area. By moving these tees forward and to the left, the landing area for the range is offset from that of the ninth hole. This will straighten up the angle of the range to be more in parallel with the entry road and the ninth hole. I still would recommend some dense vegetative screening on the berm that frames the range at the very least.

A benefit of this is that it will open up more room around the clubhouse where the range tees use to be. Also, I might recommend that you turn some of the area at the top end of the range (near #9 tee) into conservation area. Use this conservation area to mitigate any other area where you could use more space (i.e. – adjusting the aforementioned third hole).

One last note, the sand traps around the chipping green should be on the other side of the green so that players will hit out of them toward the range and not toward the clubhouse or other areas where people may be walking. Also, consider turning the ends of the range tees in slightly (toe them in) so that the range tee is on a slight arc. This will direct players that are using either the left or right side of the range tee to more direct their shots toward the center and away from the entry road or ninth fairway.

Please feel free to call me should you have any questions with what I have written. Otherwise, I look forward to seeing you next week and studying this course more in detail while on property.

Sincerely,

Kipp Schulties

Peer Review and Safety Analysis for Long Point Resort Golf Course

Fourth Version

Rancho Palos Verdes, California

Written by:
Kipp Schulties Golf Design, Inc.
June 12, 2001

The purpose of this report is to review the current plan documents relating to the proposed Long Point Resort Golf Course in Rancho Palos Verdes, California. Specifically, the task is to review the golf course routing and grading plans to insure that the design meets all safety requirements relating to adjacent holes, streets, residential developments and pedestrian walkways. Attention will also be paid to the analysis of site lines from adjacent properties to insure that the grading on the course does not encroach on views from existing residential developments.

More specifically, this analysis will relate to the modifications that have been presented via the rough grading plan dated March 26, 2001. This analysis directly relates to the first analysis that was completed on September 12, 2000 entitled "Peer Review and Safety Analysis for Long Point Resort Golf Course", the second safety analysis by the same title (second version) dated January 23, 2001 and the third version of the same analysis dated May 7, 2001.

Having reviewed all the documentation that has been provided to Kipp Schulties Golf Design (KSGD) to date by RBF Consulting, the following sections are used in the summarization of our findings:

- **General Golf Course Design Description**
- **Analysis of Long Point Resort Golf Course Routing**
- **Hole by Hole Analysis (including Recommendations)**
- **Appendix**

General Golf Course Design Description

The purpose of this report is to, in a general sense, review everything about the design of the golf course at Long Point Resort. Specifically, we want to make sure that the layout, routing and grading will not be in conflict with safety as it relates to residential units, adjacent holes, streets, and pedestrian traffic. In addition, we will be analyzing the design to insure that no views are infringed upon from existing property owners around the Long Point Resort property.

Even though there are no laws which govern the profession of golf course architecture, several non-written standards and recommendations have been developed which architects will follow when routing and designing a course. One of these standards is the minimum width for golf hole corridors. These standards, more aptly called recommendations, are what most golf course architects consider to be their guidelines. They are not legally binding, but we use them to form the basis for our designs. These are the guidelines that we will use to evaluate the Long Point Golf Course Resort layout.

We contacted several organizations to try and locate any written documentation for the guidelines that were mentioned in the prior paragraph. These organizations included the American Society of Golf Course Architects (ASGCA), the National Golf Foundation (NGF), the Urban Land Institute (ULI), and the United States Golf Association (USGA). The ULI has written recommendations on corridor width per a book that they co-authored with golf course architect Desmond Muirhead. In addition, one highly recognized golf course architect, Michael Hurdzan, has published a book entitled Golf Course Architecture in which some basic guidelines are recommended.

ASGCA refused to provide anything in written form for liability reasons, and the NGF simply sent excerpts from the aforementioned book by the ULI. This information is seen in the Appendix at the back of this report along with excerpts form Michael Hurdzan's book. The information provided in these excerpts is highly informative for this purpose of this report. The USGA provided a chart on Accuracy Patterns, which we have also included in the Appendix, but nothing on corridor widths.

Analysis of Long Point Resort Golf Course Routing

The Long Point Resort Golf Course was routed using a standard method for golf hole corridor widths that was developed during the 1960's and 1970's. Many architects still use this standard today. This standard makes specific recommendations for the areas around tees, fairway landing areas and greens. These widths, to which the Long point Resort Golf Course was designed from, are as follows:

> **Tees:** 150 feet for minimal corridor width (75 feet from the center of the tee to the adjacent property boundary or edge of adjacent fairway). This is measured from the center of the back tee.

Fairway Landing Areas: 300 feet for minimal corridor widths (150 feet from the center of the landing area to the adjacent property or to interface with the widths of adjacent fairways).

Greens: 300 feet for minimal corridor width (150 feet from the center of the green to the adjacent property boundary or to interface with the widths of adjacent golf hole corridors.)

Buffers: In addition to the 150 foot distance from the centerline at the landing areas and green, an additional buffer may be necessary to account of the impacts of topography, vegetation, altitude, prevailing winds, adjacent land uses and anticipated play level. Based on these factors, the architect may increase or decrease the minimal distances between holes and adjacent properties. There is no exact dimension for these buffers as they are usually subject to the golf course architect's recommendation.

Note: The edge of the corridor width expands on a straight-line tangent from the 150-foot wide width at the tees to the 300-foot width at fairway landing area. The standard 300-foot corridor width assumes a flat site with no other impacts as mentioned in the buffer section above.

The minimal distance is more critical as the hole relates to the property boundary than as it relates to an adjacent hole. Therefore, when adequate space is not available, corridor widths on adjacent fairways tend to overlap rather than each fairway being pushed toward the property line. This may make the corridor width of one hole less than the 150 feet from the center of the fairway. While this may create more of a safety concern for golfers on the course, it has no impact on the safety of those outside the perimeter of the course.

The Long Point Resort Golf Course has a few areas where adjacent fairways, tees, and greens infringe on each other. However, it is typically the feeling of both the architect and developer that errant golf balls remain on the golf course property than to go off property. To compensate for the reduction in width between adjacent holes, the architect will typically design more mounding between the holes that may be covered in landscaping to "knock down" errant shots from going into opposite fairways.

In recent years, however, the ULI has increased their recommended width for golf hole corridors. This is due to the tightening relationship between golf course and residential areas and because golfers are now hitting shots much further than they have in the past – mainly due to new technology in golf equipment. We again reference the Appendix at the end of this report. These new standards increase the corridor widths around tees from 150 feet to at least 200 feet, around fairway landing areas from 300 feet to at least 350 feet, and around greens from 300 feet to at least 350 feet.

Due to that fact that the golf course at Long Point Resort Golf Course was routed using the 300-foot standard of corridor width (which can still be considered acceptable), we will base this peer review and safety analysis on these standards.

Hole by Hole Analysis and Recommendations

This analysis will relate to the modifications that have been presented via the rough grading plan dated March 26, 2001.

Hole # 1 The first hole is par four that runs due west. The tees are staggered out slightly to the left off of the back tee. By staggering these tees off-center and next to the adjacent property boundary, players will be more apt to direct their shots to out to the fairway on more of an angle away from the property boundary (in this case, the proposed parking area). There is a fairway bunker on the left side of the landing area to better direct shots away from the property boundary. The fairway bunker long and right is slightly past the landing area and will serve more as a target for direction rather than a hazard.

The grading of the hole shows containment around the landing area (slightly higher on the edges) which will help collect errant shots. A natural draw or drainage swale along the right will help catch errant shots to the right off the tee from going into the eighth fairway. The higher contouring along the cart path on the left of the hole will aid in containing shots that are pulled or hooked off the tee.

The shot from the back tee (elevation 135+) is slightly uphill to a landing area at elevation 143 (app.). There is support behind the bunker right to create backdrop from the tee, create direction, and to block the view to the eighth tees. The approach shot is slightly uphill to a green at elevation 147 (app.). Even though the first green and the eighth tee are rather close together, there is adequate support back and right of the green to contain errant shots.

Recommendation: The tees on this hole will need to move slightly to the south so that the eighth hole can move to the south as well (see the recommendation for the eighth hole). This can be done by moving the tees to within 75 or 80 feet of the property boundary to the south.

Hole # 2 The second hole also runs due west after crossing Palos Verdes Drive South. The back tee is at an elevation of 350+ and plays nearly 120 feet downhill to a landing area at elevation 227 that slopes strongly from right to left. When shots are played from such a high elevation, the landing area corridor should be wider than the standard 300 feet. This is because the longer a shot is in flight, the more an errant it will travel left or right. The center of the second landing area on plan is nearly 300 feet away from the edge of the road on the left. This should be considered an acceptable distance.

There is a large sand bunker short and left of the landing area to help contain errant shots. This same bunker will tend to direct players to hit more to the right off the tee to avoid this hazard. The hole is well contained on the right with the hillside. There is additional containment on the left as a second sand bunker is shown long left to collect any longer errant shots. The green is nearly level with the landing area. The approach to the green along the left side falls off very quickly into the native areas.

Recommendation: Good hole. Only thing to consider would be the addition of some collection bunkers of grass depressions left of the green to contain shots from going into the native areas left of the green complex.

Hole # 3 The third hole is in the northwest portion of the UPVA parcel. The hole is an uphill par four that plays due east. The tee is located at an elevation of approximately 240 and the green is at 290.

The fairway, while going uphill, is crowned near the middle and generally falls off from right to left. A bunker is shown about 120 yards off the tee between the third and fourth holes. The purpose for this is unknown, as it has no bearing on either hole in the location that it is shown. The green is protected by bunkers front right and front left.

There is no problem with this hole as it relates to the property boundary to the north, but there is an issue relating the adjacent fourth hole to the south. At the widest point, there is only 150 feet between the centerlines of these two holes (recommended minimum would between 200 and 225 feet). Even though there is only 165 feet between the landing area of the third hole and the centerline of the fourth hole, the elevation differential and existing vegetation act as an adequate buffer separation allowing these two holes to co-exist in a tighter environment.

The problem is adjacent to the fourth green. This is due to the fact that the fourth hole is played severely downhill which falls toward the third hole. Under this scenario, many golfers will be errant on the fourth hole to the right and long (toward the third hole).

Recommendation:

Consider moving the landing area out to the west by about 40 feet. This will still put the center of the landing area more than 200 away from the property boundary of the homes to the north of the hole while accounting for other factors such as prevailing winds. This will meet all safety guidelines for distances away from property boundaries. Doing this will have some impact on the area of land that is to be conserved/protected. It will have to be mitigated elsewhere on the course. (or possibly around the tees on this hole).

More importantly, the tees need to stagger out to the left (off the centerline) to stay away from errant shots off the fourth hole. By doing these two things, it is likely that some length may be added to the hole as well as relieving a safety concern. Also, the fairway needs to be graded to better contain shots by making the landing area concave rather than convex.

One other option may be to reverse the routing of the third and fourth holes to better the relationship with the topography, and the adjacent property. This would make the third hole a par four playing in the same corridor as the existing fourth hole. The new fourth hole would then be a par three playing downhill in roughly the same corridor as the existing third hole. Only problem with this option is that it will likely put a strain on the flow of the course from an operations standpoint by creating a very long walk from the fourth green to the fifth tee. Just a consideration.

Hole # 4 The fourth hole is long downhill par 3 (nearly 200 yards) that plays in a westerly direction parallel to the third hole. The tee is at an elevation of 300 and the green at 250.

The hole has a strong slope between the tee and green that falls from left to right towards the third hole. There is a "saving" bunker behind the green to collect longer shots. The green, as drawn, has 10 feet of fall away from the shot. There is no way the green can be built in this fashion.

There is a genuine concern with this hole as it relates to the third hole. Because of its strong downhill nature, many players will tend to miss this green long and to the right. As it is drawn, there is not sufficient separation between this hole and the third hole.

Recommendation:

First, the third hole can be modified as per my last recommendation. In addition, shortening the fourth hole slightly will also help the situation of longer shots over the this green that are potentially in conflict with the third hole.

The back of the green must be elevated as much as 10 feet to support the downhill shot. This amount of fill will impact a large area behind the green (through the third tees) in order to tie the slopes in properly. The fill should not be an issue as plenty can be generated by "cutting-in" the third hole for better containment (and removal of the crown in the fairway).

Hole # 5 The fifth hole is a long par five that plays to the east further up the hill from the second hole. The back tee is at elevation 345+ and is located just to the north of the Coast Guard property. The forward tees are staggered out to the left to promote play away from the property boundary. The landing area is at an elevation of nearly 360 which means the tee shot is played uphill (the rest of the hole is not seen from the tee past the first landing area). The fairway is graded to be a flat consistent slope back toward the tees. There is little in the way of earthen separation between the first landing area and the sixth green.

The second shot plays to a landing area that is really unacceptable from a width standpoint (within 80 feet of the property boundary). This is a danger to adjacent property owners and any pedestrians using the paths for walking. To compound the matter, any player that hits short of the first landing area will have a blind shot to the

second landing area. This is due to the fact that the highest point in the fairway on the plan (elevation approaching 365) is located well past the first landing area. Any player hitting a tee shot that lands 50 yards short of the first landing area will be at elevation 350 to 355 – 10 to 15 feet less than the crest of the hill. This will cause players to "guess" where they are to hit their second shots, which will only multiply the error factor in the shot.

Those that do hit the ball far enough to see over the hill with their drive will be forced to play more to the right with their second shot. This will happen because golfers will try and avoid the property boundary on the left of the second landing area (a two stoke penalty for going out of bounds). The location of this property boundary will tend to steer play directly into the sixth tee area – a potentially dangerous situation.

Recommendation:

Move the second landing area to the south so that it is at least 150 feet away from the property boundary. The green should also move to south to be at least 150 feet away from the property boundary. If the centerline is kept at the minimum distance away (150 feet) then earth and vegetation will be necessary near the property boundary to screen out the pedestrian trial that is proposed in that area. The result of moving this hole over will require that the sixth hole become a par three instead of a par four.

Consider elevating the back two tees for better vision to the first landing area. Also, on a much bigger scale, consider cutting much of the area between the first and second landing area out (as much as 5 to 10 feet lower). By cutting this area down, players will be able to see the second landing area on the fifth hole from the first landing area (taking some of the guesswork and error out of the shot) as well creating containment via support on the left. Use some of the cut from the fairway to create an earthen separation between the fifth landing and the sixth green to block any errant shots on either hole.

Hole # 6: The sixth hole is a dogleg right par four that plays slightly uphill to the southwest on the drive and continues uphill to elevated green. The back tee is at an elevation of approximately 347 with the landing area at nearly 355. The shot is played over a draw (swale) that expands from the second landing area on the fifth hole and widens (and deepens) until it falls off the slope that is adjacent to the sixth tees.

The corridor around the green is tight but acceptable as it relates to the second hole's tee complex and the fifth fairway. The green is at an elevation of approximately 355. A deep bunker on the inside right will help keep shots to the left and away from the fifth fairway.

Recommendation:

Make this hole a par three (as per the reasoning for the adjustments to the prior hole). The green will remain in the same location. The tees will be located just beyond the natural draw (swale) that starts between the first and second landing area on the fifth hole and falls through the sixth hole just short of the existing fairway. This par three would be approximately 195 yards in length from the back tees.

Hole # 7 The seventh hole is a long par three that plays directly to the east and down a steep slope. The back tee elevation is around elevation 350 while the green is near 250 (the forward tees are down the slope at elevations of 265 and 260). The green area falls very strongly from left to right. The green is supported by a deep bunker on the right side to help contain errant shots.

The corridor widths, as the hole is designed, meet all of the acceptable standards – if the hole were level. However, on this particular hole, the architect must consider that the tee shot is nearly 100 feet downhill. Because of this large change in elevation, many players will hit the shot longer than normal. Thus, more shots will miss this green long and right than a hole that is level (this should not be a problem from the lower two tee locations). The concern is with pedestrians using the walking paths behind the green. To help with this situation, the grading plan indicates light berming behind the green that will help screen off the path from the course directly behind the green.

Recommendation:

Consider adding some dense vegetation of medium height (5 to 10 feet) to help screen against long shots landing near the pedestrian trails. For playability, consider adding two or three more bunkers down the slope to the right of the green. The majority of players will slice the ball (hit it to the right). If they miss the greenside bunker, there is nothing to keep golf balls from going all the way down the slope. The additional bunkers might help the speed of play and also create a very exciting green complex (visually) from the upper tees.

Hole # 8 Players go back under Palos Verdes Drive South to get to the eighth hole. The hole appears to be a short par five that doglegs to the right at the landing area. The corridor widths at the tee, landing area, and green are acceptable as they relate to the property boundary on the left. However, it may be beneficial to slide the first landing area to the south (toward the first hole) by about 25 feet to allow for some additional separation between the course and the residential units to the left of the hole.

The forward tees stagger out to the left, which will help direct shots into the landing area and away from the property line. The back tee elevation is just higher than 150. The shot from the tee is slightly uphill to a landing area at approximately 160. There is a small bunker on the left to direct shots away from the residential units. There is a large bunker that runs along the landing area on the right to collect errant shots before they go into the first fairway. In addition, there is a drainage draw (low area) to the right of this bunker to contain shots from entering the first fairway. The fairway is graded to fall from left to right. There is large earthen support behind the bunker left to turn the hole and protect the residential units from errant shots.

The second shot is played slightly downhill towards a landing area and green at elevation 150 with a greenside bunker on the left. The grading indicates that the fairway falls strong from left to right between the landing area and the green. This will set a good visual look into the green complex from the landing area.

The area just short of the second landing area is within 120 feet of the property boundary causing a concern with errant shots hitting the residential units. In addition, the green is too close to the road (less than 70 feet). Under these conditions, there is a great concern for shots landing on or near the entry road.

Recommendation:

The second landing area should be moved at least 60 feet to the right of where it is drawn on the rough grading plan. That will allow for there to be the minimum width of 150 feet from the property line while also leaving a little room for an additional buffer area. The only thing that will need to happen on the first hole is for the tees to move a little to the south to make sure that there is a minimum of 200 feet between the revised centerline of the eighth hole and the tee on the first hole. Having the tees a little closer to property boundary on the first hole will only help because it will aim shots off the first tee even more away from the property line to the south of the first hole.

The eighth green needs to be pulled back away from the road by about 100 feet or more. Otherwise, many shots will end up on the entry drive. To make up for that, it may be possible to move the tees on the eighth hole back slightly without interfering with the first green. Otherwise, this hole will have to shorten from a par five to a par four.

Hole # 9: The finishing hole on the course is the par four ninth that is a slight dogleg to the left. The hole certainly has one the most dramatic views on the course as it plays down from its highest point at the tees to the green near the edge of the ocean.

The back tee is at an elevation of nearly 185 while the landing area is at 130. The tees are well protected from the eighth green via a landform that separates the two holes. The tees stagger out to the left so that players will direct their shots toward the fairway and away from the property boundary and walking trails on the left. A small bunker on the inside left corner also deters play away from the left side. There is support on the right to turn the hole to help contain errant shots. The fairway is graded to collect balls into the center.

The first part of the ninth hole is an ideal model to work from. The tees are lined up to hit away from the property line, the landing area is approximately 175 feet away from the property boundary, and there is light berming (as seen on the grading plan) separating the cart path from the pedestrian trail. I might recommend some light vegetation on this berm for added separation.

There is good size berming down the right side at the landing area to support (contain) the shot and turn the hole. The fairway is graded to contain the shots by being lower in the middle and higher on the sides. This is a good hole from the tee.

The only problem is around the green. It is a little too close to the property boundary (only about 100 feet away). However, that this is easily remedied.

Recommendation:

Move the green about 50 to 60 feet to the right and back toward the fairway by about 20 feet. This will then meet the minimal distance requirements away from the boundary. Any chance of taking the bridge behind the green a little closer toward the ocean (to make a little more room for the green complex)?

Driving Range:

The driving range is also graded well (at least as well as it can be). The range is graded to be lower in the middle to benefit golf ball containment. It has higher berming around the outside that separates the range from the ninth fairway to the east and the entry road to the west. This berming is about as high as it can be without being a visual distraction on the property.

The biggest problem that the developer has is with the width of the range. There will be some shots that land on the entry drive and on the ninth fairway (especially given the current layout of the driving range tees). Granted, many ranges have been built on smaller pieces of property, but they are usually well framed with dense vegetation and possibly even netting. If dense vegetation (with some height to it) is an option to be planted on the berming on both sides of the range, then it might just fit (with an adjustment to the tees).

Recommendation:

My recommendation, if the range is to be left in this location, is the following: Move the tees up the slope about 150 feet and then slide them to the west about 100 to 120 feet so that the left edge of the tee is close to the sand trap for the chipping green that the nearest to the clubhouse. This will relieve much of the problem with the relationship between the range and # 9 landing area. By moving these tees forward and to the left, the landing area for the range is offset from that of the ninth hole. This will straighten up the angle of the range to be more in parallel with the entry road and the ninth hole. I still would recommend some dense vegetative screening on the berm that frames the range at the very least.

A benefit of this is that it will open up more room around the clubhouse where the range tees use to be. Also, I might recommend that you turn some of the area at the top end of the range (near #9 tee) into conservation area. Use this conservation area to mitigate any other area where you could use more space (i.e. – adjusting the aforementioned third hole).

One last note, the sand traps around the chipping green should be on the other side of the green so that players will hit out of them toward the range and not toward the clubhouse or other areas where people may be walking. Also, consider turning the ends of the range tees in slightly (toe them in) so that the range tee is on a slight arc. This will direct players that are using either the left or right side of the range tee to more direct their shots toward the center of the range and away from the entry road or ninth fairway.

Appendix

Long Point Resort Golf Course

Golf Course Safety Corridor Information

National Golf Foundation

1150 US Highway One, Suite 401
Jupiter, FL 33277
Phone: Day:(561) 744-6006 x 54

National Golf Foundation

Fax

To:	Kipp Schulties [redacted]	**From:**	Darrin B. Davis
Fax:	212-967-4623	**Date:**	September 18, 2000
Phone:		**Pages:**	8 (incl. Cover page)
Re:	Golf Course Safety Corridors	**CC:**	

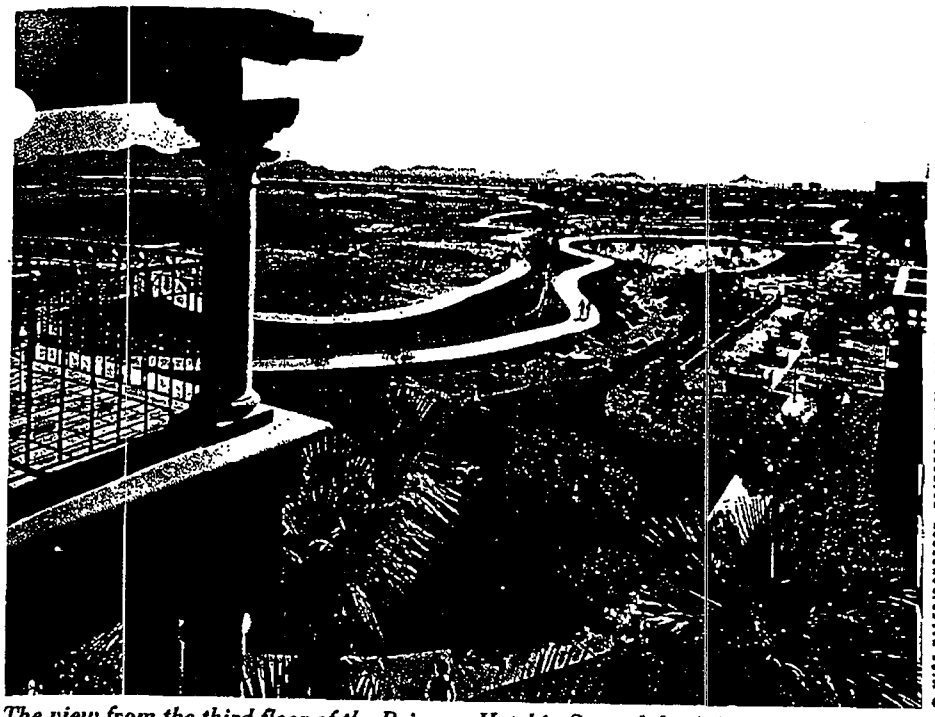
☐ **Urgent** ☑ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

•Comments:

Glad we could be of assistance. Text was taken from "Golf Course Development and Real Estate" published by Urban Land Institute, authors Desmond Muirhead and Guy L. Rando.

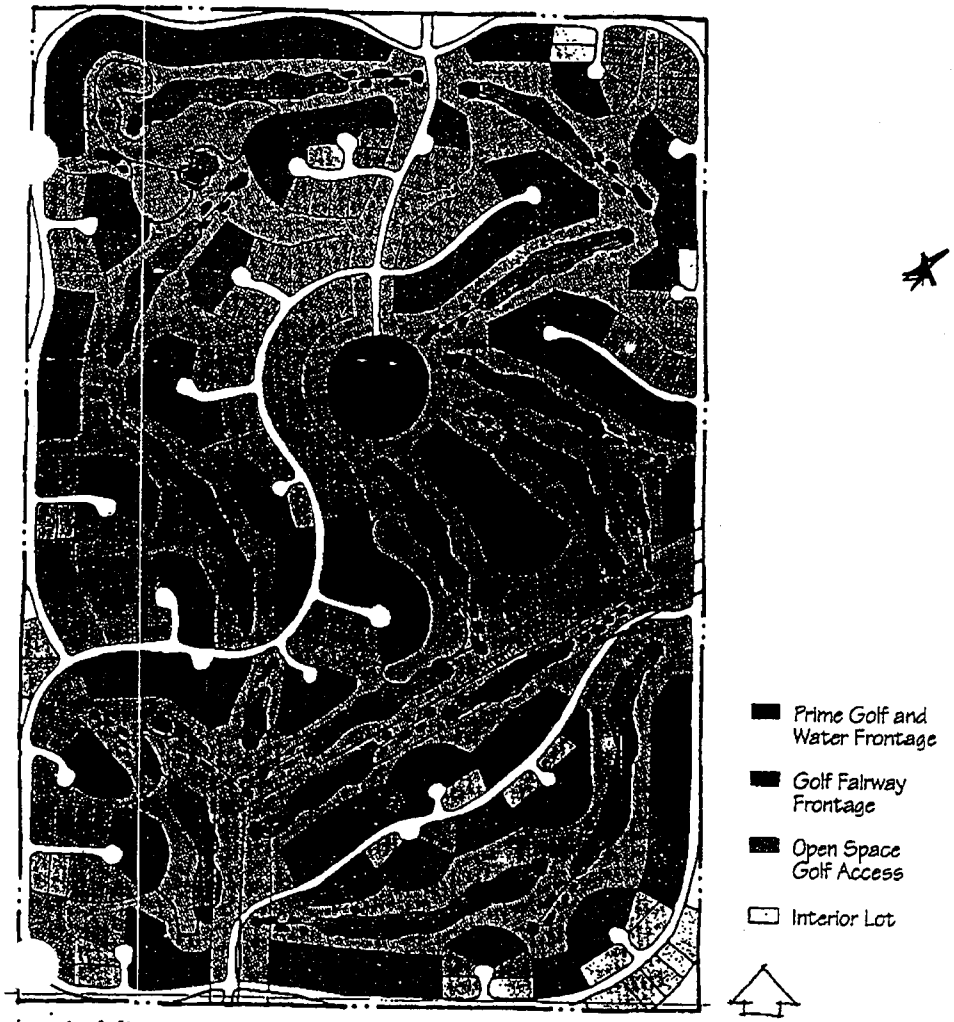
As you encounter clients in need of conducting market & financial feasibility studies, don't hesitate to have them call us in our Jupiter, FL office.

Good Luck on the project!



© NICK WALES/COURTESY: PRINCESS HOTEL, SCOTTSDALE, ARIZONA

The view from the third floor of the Princess Hotel in Scottsdale, Arizona, illustrates the course's visual access.



A typical diagram used for analyzing real estate premiums.
Source: Desmond Muirhead, Inc.

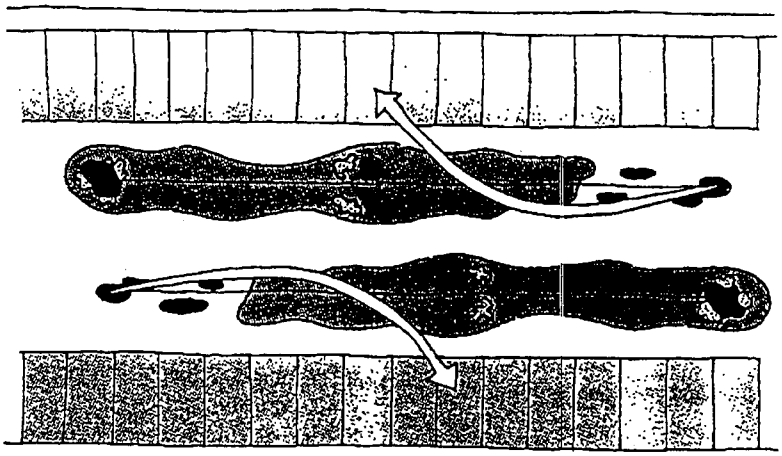
ferred. This combination provides the preferred length for the golf course with moderate flexibility in operations and maintenance and maximum golf frontage for real estate development.

Land use plans that are designed merely to maximize golf frontage do not necessarily maximize overall real estate values. A number of other factors must be considered when integrating golf and real estate. The single-fairway, returning nines configuration for an 18-hole golf course is ideal for maximizing golf frontage and therefore maximizing the opportunity to enhance real estate values. In some cases—a hotel resort or high-density development, for example—where real estate values are enhanced by views of the golf course from a high-rise building rather than actual frontage, a core course might provide greater advantages.

Whatever strategy is used to place a value on golf-oriented real estate, valuation must consider local market factors. Comparative marketability studies can aid in determining real estate values and which pricing strategies yield the best results in a particular location.

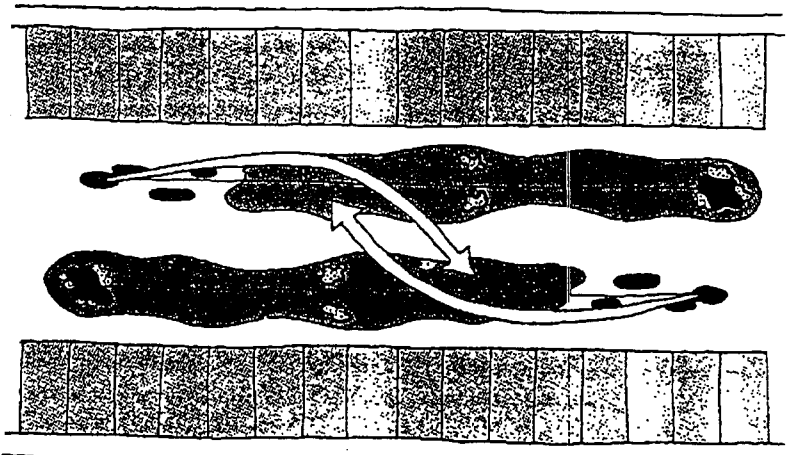
Safety in the Golf Corridor

One of the most significant factors to consider in delineating the golf corridor is safety. Like many sports, golf is not inherently safe. A well-hit golf ball can reach an initial velocity of 250 feet per second or over 170 miles per hour, and a range of 250 yards or more. The golf ball thus has the potential for greater speed and range than a bullet from a shotgun, and the potential for injury can be considerable. This factor is augmented by the wide range of physical and psychological variables inherent in any golf course and the range of players' abilities. Golf is not easily mastered, and even the most accomplished players can hit a ball poorly. People have been seriously, even fatally, injured by errant golf balls, golf clubs, and golf cars. Being on a golf course during an electrical storm has resulted in many players' being struck by lightning. And the threats are not confined to golfers: pedestri-



NOTE THIS

This relationship between fairway and lot should be avoided, because most golfers are right-handed and tend to slice the ball to the right.
Source: Desmond Muirhead, Inc.



AS PER USED BEFORE

The preferred relationship between fairway and lot allows holes to "slice" into each other rather than into houses.
Source: Desmond Muirhead, Inc.

ans and motorists walking or driving by a course have been struck by errant golf balls. Golf, like life, is a challenge with risks. Thus, safety is a critical concern to anyone involved in the design, development, construction, maintenance, and operation of a golf course, or to anyone charged with responsibility for the safety of people on or near the course, or to anyone who could be injured or suffer damages from golf.

To design a totally risk-free, "safe" golf course is impossible, because numerous factors simply are beyond the control of the designer: the climate, the weather, the ability and skill of individual players. Even if a list of safety criteria could be determined for the design of a totally "safe" golf course, the cost of building such a course would be prohibitive. It is possible, however, to anticipate a few factors that can present an undue hazard. And it is possible to find economically feasible ways to mitigate the danger.

No hard and fast rules can be associated with safety in golf course design simply because the range of variables from course to course, hole to hole, and even player to player is so vast. The increasing integration of golf courses with adjacent real estate results in conflicts in land use, and safety becomes a greater concern. Today, all areas of the golf course industry, including owners, developers, design professionals, operations and maintenance personnel, managers, material suppliers, equipment manufacturers, and individual players, must address it. Further, technical advances in the design of golf balls and golf clubs have translated into greater speed and distances, with the attendant greater potential for danger from poorly hit balls or slices, hooks, and shanks. All of these factors have influenced the way golf courses are designed today, and a prudent developer would keep the following points in mind:

- *Recognize and understand that land planning and the design of golf courses are intricately related to each other.* The potential impact of one on the other can significantly enhance or diminish the value of a golf-oriented real estate development.
- *The developer or its agent is involved as a key member in planning and design.* The integration of various disciplines is ultimately the developer's responsibility.
- *Regular safety reviews are part of the planning process.* Additional reviews are required after any major change. Safety reviews should be made part of standard operating procedures, and they should involve all members of the design team.
- *Recognize that safety is ongoing.* Include allowances for fine-tuning play of the course in the budget to address any unanticipated issues after the course is put into play.

"Golf course safety" is a relative term, requiring judgment based on some mutually agreed criteria. The following brief overview summarizes a few basic, common-sense criteria for safety in designing golf courses.[1] The design standards developed from these criteria or from the consensus of experienced designers and developers serve only as *guidelines* and must be weighed case by case for specific sites.

- Golfers must use *reasonable care* commensurate with the known hazards inherent in the game.[2]
- Golfers assume *reasonable risk.*[3]
- The design of the golf course should reflect standards that do not expose golfers to undue risk.[4]
- The public has a right to free and unmolested use of the highways. Golf balls landing on or across a highway render the owner liable for maintaining a public nuisance that resulted in injuries from the hazardous condition.[5]
- A golf ball in flight beyond the perimeter of the golf course is the same as

an object falling from a structure, and the liability is comparable.[6] A pivotal standard cited in many court cases renders a liability *if the possibility of an accident was clear to the ordinarily prudent eye.*[7]

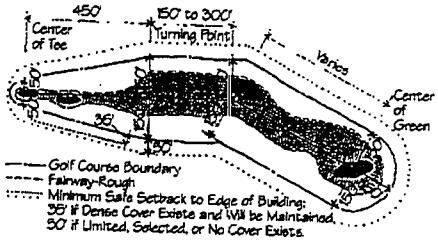
- Golf-related restrictions on adjacent private property are justifiable for reasons of safety. It is therefore reasonable to restrict the use of private property (building setback lines and so on) adjacent to a golf course.
- Owners of houses and other real estate fronting a golf course assume more risk than the public on a highway but less risk than golfers. The homeowner's uninformed and unsuspecting guests are not included, however.
- Spectators at a golf tournament assume more risk than homeowners but less risk than golfers.

Legal terms like "reasonable care," "reasonable" or "undue" risk, "foreseeable" hazards, and "ordinarily prudent eye" provide criteria for defining and judging safety and for allocating ' bility. Beyond these legal concepts, vever, no measurable design standards can be applied in a blanket formula that satisfies legally defined criteria for safety.

The standard 300-foot through-the-green width that became a rule of thumb in design of a single-fairway layout during the 1960s and 1970s is seriously outdated in terms of current safety concerns. It was rationalized by two concepts:

- The average golfer who hit a ball poorly (did not follow the ideal path as reflected by the centerline) did not hit the ball as forcefully as possible; therefore, the ball would not travel as fast and as far as it might.
- The farther away from the centerline, the less force powering the ball, and therefore the ball will travel even less distance.

In the double-fairway layout, the rule of thumb was that, where possible, the parallel centerlines should be no f than 200 feet apart. These dimensional standards are now outdated, however, with the advent of new technology and new designs for golf equipment (particularly golf clubs) to gain more distance and the desire of many golfers to "smack the ball" as far as they can without regard for safety.



Outdated 1970s single-fairway standards.
Courtesy: Patrick Shane Mulligan.

The standards of the 1960s and 1970s were coupled with caveats to consider such factors as topography, vegetation, elevation, temperature, humidity, wind, location of hazards, and elevated features like tees and greens. They are still critical, but *safety is not a cookie-cutter process.* Defining parameters for safety on a golf course could be a major issue confronting today's golf course developers, and any member of the team could make a decision that would directly affect safety. Golf integrated with real estate development requires the establishment of a team to review every stage of planning and design. The temptation to encroach on the safety perimeter for the golf course to gain frontage for real estate, enhance real estate values, or economize on the golf course is always considerable, and it is heightened by the fact that contemporary golf courses require substantially larger areas of land to accommodate safety in an age of high-tech equipment. Golf course architects and land planners must work with the development team to resolve the problems involved in siting a golf course next to real estate. The professional expertise, knowledge, and experience of every member of the design team must be applied toward ensuring that the public is not exposed to undue risk. In a society prone to litigation, it is in the best interests of any development project to establish the best standards and criteria for safety. Because design and construction often span long periods of time, the intent of the design and safety considerations developed during the planning process should be carefully documented to ensure that it is not compromised by later decisions.

The Safety Perimeter

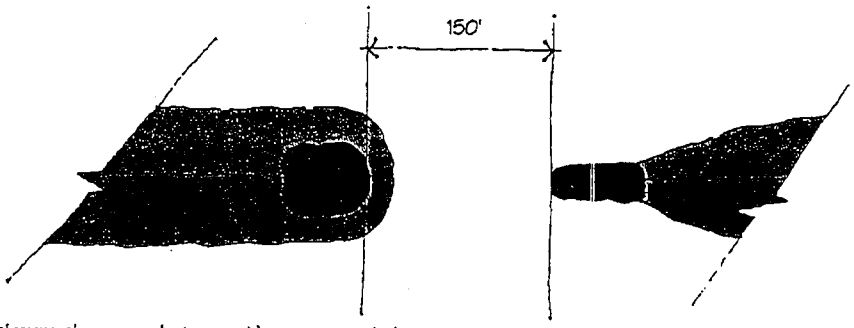
Defining the safety corridor for a golf course is not necessarily synonymous with establishing the boundary of the golf course, although the two can be related. The following definitions are used in this text. The *golf course boundary* is the legal description of the property boundary for that area of land dedicated to the golf course and its facilities. If the operation were to be sold, this legal description would be used to describe the property in the sales documents. The *golf course safety corridor* is that area of land required to play the game plus the area of land that can be affected or threatened by golfing such that limits are placed on the use of that area. For example, the golf course safety corridor might include the area within the golf course boundary plus an area around that boundary where construction of any buildings is restricted (often called a building setback line or building restriction line). The restrictions on use within the setback area must be clearly stated in legal documents (covenants, for example) describing the affected properties.

NOTE THIS

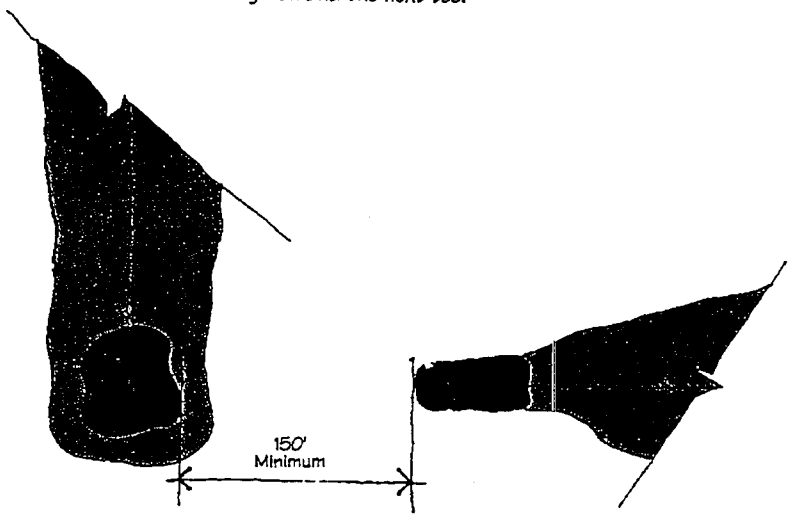
Largely because of legal implications, professionals and their attendant organizations have been reluctant to adopt any specific written criteria for golf course safety corridors. The official approach of the American Society of Golf Course Architects (ASGCA) is verbal and very general, and strongly emphasizes site-specific criteria. The prudent course of action is to contract with an experienced, reputable golf course architect early during the planning process.

The following dimensions for the golf course safety corridor are provided solely to illustrate this discussion; *they are not to be applied arbitrarily.* The dimensions are based on an unrestricted flat site, and they must be adjusted to accommodate site-specific features like topography, vegetation, and elevation. Applicable local building and land use regulations could preclude the use of any dimension used in the illustrations, and this information is not a substitute for consultation

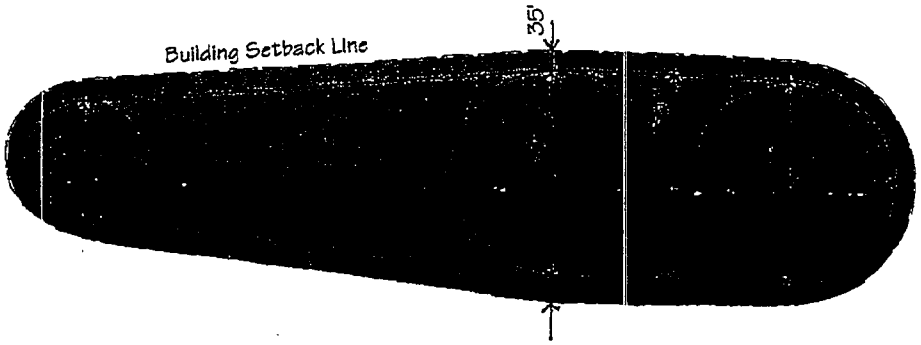
NOTE FOR #2, #5 AND #9



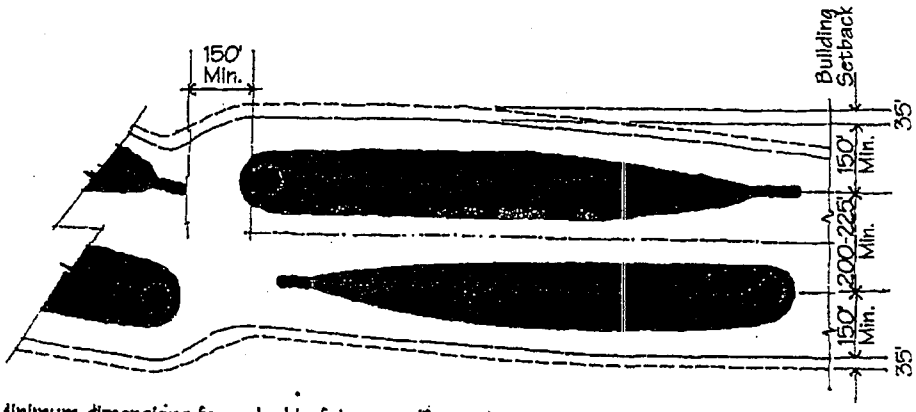
Minimum clearance between the green and the next tee.



Minimum clearance between adjacent tees and greens.



Minimum dimensions for a single-fairway golf corridor.



Minimum dimensions for a double-fairway golf corridor.

Minimum safety guidelines for a windless site on flat topography. Other conditions require additional clearances.

Source: Nicklaus Design.

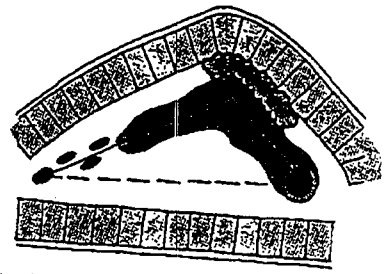
with a qualified, experienced golf course architect.

- Minimum horizontal clearance between the green and the next tee is 150 feet. If the adjacent green and tees are separated by a change in elevation, the distance might be greater or less.
- Minimum clearance between adjacent tees and greens is 150 feet.
- Adjacent landing areas should be no less than 200 to 250 feet apart (from centerline to centerline).
- The centerline of a golf hole should be no less than 150 feet from any road right-of-way or boundary.
- The centerline of a golf hole should be no less than 175 feet from any boundary with adjacent development. A setback of no less than 35 feet from the boundary line should also be added.
- The minimum safety corridor for a single-fairway course with development on both sides of the fairway is 420 feet between any building in the landing and greens areas. The minimum safety corridor for a course with surrounding development in other than the landing and greens areas is 370 feet, which allows for a 300-foot corridor with 35-foot building setbacks on either side.
- On a double-fairway course, the centerlines of parallel fairways should be no less than 200 to 225 feet apart in wooded areas (where vegetation is present between the fairways) and no less than 250 feet apart in open areas (no buffering vegetation between fairways). Adding a minimum of 150 feet from each centerline to the property line yields a minimum corridor of 500 to 550 feet for a double-fairway course. If the course is surrounded by development, a building setback of 35 feet from the property line on either side yields a total minimum safety corridor of 570 to 620 feet. The safety corridor can be narrower in the area between the green and the next tee—approximately 400 feet (a 100-foot buffer off the center point of the tee, a 150-foot minimum on the green's centerline, and 150 feet between the green and the next tee).[8]

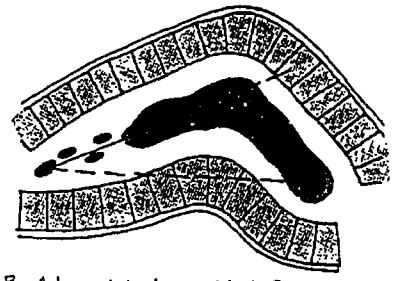
Safety on the Golf Course

The responsibility of a golfer for the safety of others, such as shouting "Fore!" to warn that a ball is approaching, is defined by rules of etiquette and enforced by golf associations. These rules and responsibilities should be posted in a readily visible location on the golf course. Handbooks specifically addressing rules and responsibilities should also be made available to every golfer and key points printed directly on scorecards. Designing a safe golf course includes not only concern for the safety of players, but also for guests, maintenance personnel, and spectators. Many design guidelines involve common sense:

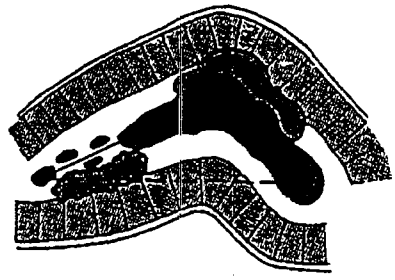
- Blind shots should be avoided, and holes should be designed so that players can clearly see the target area, hazards, and other players on the course. While several mitigating measures to reduce the risk of blind shots have been developed—special flags, caddies as target indicators, and even traffic lights—they are at best only mitigating measures.
- Shelters should be provided at key locations on the course for golfers seeking safe shelter from inclement weather, particularly lightning storms.
- Specific safety guidelines and procedures regarding lightning storms should be readily visible to every golfer, employee, or visitor.
- Circulation patterns should be readily apparent and organized to minimize conflicts between autos and pedestrians, golf cars and pedestrians, maintenance vehicles or equipment and golfers, and golfers and non-golfers, for example. A golf course, for example, is not a safe or appropriate place for a nature walk while play is in progress. Security measures should be in place to prevent intentional or unintentional trespassing on the golf course by non-golfers while play is in progress.
- Paths for golf cars should be specifically engineered as *roads* for vehicular traffic, not sidewalks, but the fact that the path is often a hard surface (usually asphalt or concrete) should be given due consideration when locating it. Such paths are potentially dangerous if a ball bounces or ricochets off the pavement, and for this reason it is inadvisable to have the car path cross the fairway. The path should be out of the area of play (see further discussion later in this chapter).
- If spectator galleries are anticipated, the course's design should specifically provide for them. Measures should be implemented to make the inherent risks of watching golf on the golf course readily apparent to the ordinarily prudent eye.
- Buildings of any type should not be used as the obstacle that forces a dogleg hole, and the inside angle of a dogleg hole should be treated as a hazardous zone.Obstacles or barriers of sufficient height, density, and width should be located on the inside angle of the dogleg to prevent players from attempting to hit the ball across the inside angle. Housing or any other buildings, playgrounds, recreational facilities, paths, or parking lots should *never* be located on the inside angle of a dogleg where injury or damage to property is possible!
- Clear sightlines and visibility of players on the course should be maintained, particularly near landing areas and paths for golf cars.
- Signs, benches, tee markers, and other furnishings can cause a ball to ricochet, injuring people or damaging property. Their placement on the golf course and design should be seriously considered and constantly reviewed for safety.



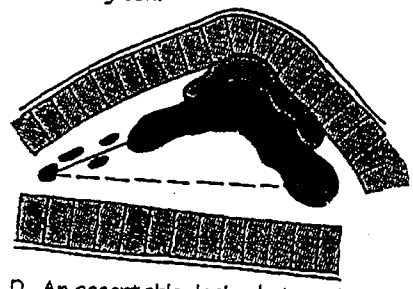
A. An acceptable design but wastes land. Trees protect lots, but golfers are likely to drive the green.



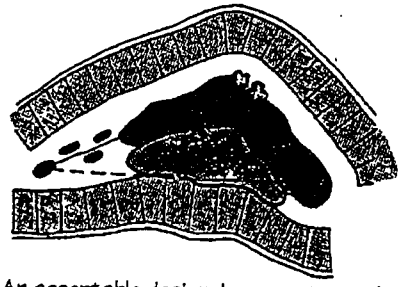
B. A layout to be avoided. Golfers are likely to overshoot the landing area or drive the green.



C. An acceptable layout if trees are large and dense. Some golfers might still drive the green, putting lots at risk.



D. An acceptable design but wastes land. Lake protects lots, but most golfers are likely to drive the green.



E. An acceptable design, because traps discourage overshooting the landing area and the lake adds value while discouraging driving the green.

Hazards must be considered when development surrounds a dogleg hole.
Source: Walter Stewart/Desmond Muirhead, Inc.

- Trees should not be considered an effective means of catching errant balls, particularly between the golf course and adjacent real estate development.

Topography and Safety

A sloped lie directly affects the distance and direction a golf ball will fly. The more severe the slope, the greater the impact on the distance and direction of the ball. Therefore, the design of a golf hole and its associated safety corridor must be adjusted to accommodate the tendencies for balls to fly right, left, short, or long despite a golfer's best efforts.

On long approach shots, the ball's trajectory tends to be low, and the ball tends to bounce and roll on impact unless the golfer can put a backspin on the ball. If a long approach shot is coupled with a downhill lie, the ball tends to travel lower and farther than if the lie is flat. The inherent danger of overshooting the target must be considered and the safety clearance between the green and the next tee or land use beyond the green increased accordingly. On short approach shots, the ball's trajectory tends to be high and to bounce and roll little on impact. If a short approach shot is coupled with a downhill lie, the ball tends to fly lower and farther than for a flat lie. Again, the margin of safety must be increased.

On side-sloping lies, the ball tends to fly left or right, depending on whether the ball is above or below, respectively, the golfer's feet. The margin of safety between adjacent fairways and between the golf course and adjacent land uses must be increased and configured to accommodate the ball's flight pattern.

Paths for Golf Cars

The driving ability of golfers varies with the number of individuals playing golf, and it is virtually impossible to judge their ability to drive a golf car on appearance alone. Understanding the abilities, limitations, and tendencies of both vehicles and drivers provides some basis for planning and designing safe paths for golf cars.

Golfers tend to drive golf cars along the path of least resistance—along the most direct route to where the ball lands, whether paved or not—and sometimes the chosen route is not the safest route. The sensible guideline therefore is to align the path where most golfers will find it convenient and to provide physical and regulatory means to encourage golfers to stay on the path. A majority of players are right-handed and tend to slice the ball (to the right), particularly off the first tee. Therefore, paths for golf cars should generally be aligned to the right side of the fairway, where most golfers hit their shots. An exception occurs when the hole is designed to encourage play toward the left of the fairway—where a water hazard is located on the right side of the fairway, for example. In this case, aligning the path to the left side of the fairway would be more convenient. The National Golf Foundation suggests that the path be located at least 25 feet from the edge of the fairway, a compromise between keeping the path out of play but close enough for convenient use.

The shared use of a path between two adjacent golf holes might appear to be an economical and more cost-efficient means of accommodating golf cars, but it is highly unadvisable. Shared use of a path presents a higher risk of unsafe conditions, and rarely does the shared path serve both holes with the same convenience for both golfers. If the path is not conveniently

Additional Thoughts on Safety

Include an insurance underwriter as a member of the development team.

The developer might wish to forge a link with the insurance company that will provide public liability insurance for the golf course. While no substitute exists for safe design criteria, to the extent that risks are unavoidable, perhaps they can also be insurable. Having a representative of an insurance company involved at the inception increases the likelihood that appropriate coverage can be obtained. Input from the insurance company can shed light on safety criteria based on actual claims as well as information about costs for budgeting. It is important to select a representative who is actually involved in underwriting and claims rather than a sales broker whose primary interest is a commission.

Give thought during planning to defenses for negligence.

Part of the application for a golf course adjacent to a public road, for example, should point out the issue of errant golf balls and the built-in safety criteria to minimize this risk. After entitlements are received, a planning department's signing off can be characterized as an impartial judgment of a safe design. Similarly, regarding the sale of houses adjoining a golf course, a part of the purchase agreement should be the acknowledgment of the proximity of the golf course and an assumption of the buyer's risk and/or waiver of claims. This type of provision can also be built into a community's covenants and restrictions, which attach to the title and bind succeeding owners.

Publish rules and regulations governing conduct on the course.

Consider prohibiting or limiting the consumption of alcoholic beverages on the course. Post signs prohibiting nonlicensed drivers from operating golf cars.

Alert golfers to potentially unsafe areas without admitting to an unsafe condition.

For example, a sign might say "Reduce Speed–Downhill Grade" rather than "Dangerous Grade" or "Snakes in Stream" rather than "Watch for Poisonous Snakes."

Physical safety features are generally more effective than cautionary signs alone.

Speed bumps or textured rumble strips should be considered where control of golf cars' speed is needed. On long downhill grades, safety features like "turnouts" for runaway golf cars should be considered, similar to gravel turnouts for runaway tractor-trailers on long downhill grades.

The factory's safety criteria and performance specifications for golf cars should be considered during design of the course.

If a manufacturer has published safety guidelines for the operation of its product, then the design team should consider them during design.

Safety should be an integral part of employee training programs.

Employees should be required to attend regular meetings on safety policies and practices. They should provide written acknowledgment that they understand all policies, procedures, and rules, including wearing hard hats on the course, who is permitted to handle chemicals, and the procedures for handling them.

Source: John B. Miles, McDermott, Will & Emery, Newport Beach, California.

Golf Course Development and Real Estate

Desmond Muirhead
and
Guy L. Rando

the Urban Land Institute

About ULI–the Urban Land Institute

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ULI sponsors educational programs and forums to encourage an open international exchange of ideas and sharing of experience; initiates research that anticipates emerging land use trends and issues and proposes creative solutions based on this research; provides advisory services; and publishes a wide variety of materials to disseminate information on land use and development.

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Richard M. Rosan
Executive Vice President

This book is dedicated to my children, Marco, Tony, and Gaetano, with special thanks to my colleague Desmond Muirhead for his trust and support.—G.L.R.

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Basic Golf Course Safety Criteria

Golf Course Architecture

Dr. Michael Hurdzan

GOLF COURSE ARCHITECTURE

Design, Construction & Restoration

Dr. Michael J. Hurdzan

2

Basic Criteria

No matter which design concept is used, the end result of any golf course design is supposed to be one that is enjoyable, relaxing, and a fair test of shot-making ability (see figure 24). But these rather subjective criteria are largely dependent upon the condition of a course and the skill level of the golfer, and therefore are not useful or meaningful to a golf course architect. Instead, architects use criteria that are more objective in nature and are less emotionally generated. These criteria, listed in their order of importance, are:

1) Safety (to golfers and to adjacent land users)
2) Flexibility (variation in length to accommodate all abilities)
3) Shot value (variety in required shots, lengths, and targets)
4) Fairness (severity of hazards and placement in order to offer risks and rewards)
5) Progression (sequence of holes and their associated shot values)
6) Flow (the overall movement of golfer traffic)

Doug Ball

Figure 24. The golf course should take on ethereal qualities, but also remain a fun place to play golf.

the play angles at the tee so that the golfer is forced to set up to hit away from a danger zone. This means placing tees for the poorest golfers closest to the danger zone so they are hitting away from it, not toward it. Experience has shown that it is easiest to control errant shots nearest the tee, when the ball is at a low elevation and has not gone a great distance. Near the tee, wild shots can be controlled by mounds, closely planted trees, dense bushes, or artificial barriers. Barriers such as fences are the least desirable method, for most often they are linear and unsightly. But no matter how ugly, if fences are needed they must be used; aesthetics must always bow to safety. Properly built artificial barriers can be made somewhat attractive by using climbing vines and flowers.

Another situation that cannot easily be tolerated on a golf course is when common play areas are blind to golf shots that may land there. These blind impact areas occur when golfers cannot be seen by the group behind them or by players on an adjacent hole who might hit the ball to the area. This condition is most common on hilly ground, where the horizon line of a ridge or hill is very near the tee. Blind shots are quite common on links or links-type courses, for that is the nature and charm of these sites. However, golfers who play these courses must exercise extreme courtesy and caution to avoid accidents.

There are four solutions to blind impact areas (see figure 26). The optimal solution is to unmask the blind spot by excavating the horizon line down or making a saddle cut, so that the golfers in the danger zone can be seen. Often this is not possible because the offending ridge is underlaid with rock that is too costly to remove. The next best solution is to raise the tee to such an elevation that the line of sight is moved above the horizon line. This solution is not always workable, for it might require such a high tee that it would be too costly to build and maintain. The third solution is the use of a periscope or mirror atop a pole, either of which raises the line of sight up very high without elevating the golfer at all. If properly constructed, painted, and located, periscopes can be made to blend so well with the background that they are unobtrusive. There is also something to be said for their novelty effect, as long as they are not used more than a few times on any site. The last solution is perhaps the most commonly used, but has many shortcomings. It is the warning device, usually a bell that the group ahead rings to signal the group behind that the impact area is safe. The problem is, many forget to use the bell or the group behind does not hear it. Bells should be avoided, if possible, for the burden should be placed on the group behind to maintain a safe interval, not on the group ahead.

Other areas of safety that should be considered by the golf architect include pathways, steep slopes, stair design, bridges, high cliffs, aging trees, dangerous wildlife, banks, slopes of water hazards, and poisonous plants. In all instances, warnings in the form of signs or written statements should be given to each golfer. Where possible, unsafe conditions should be corrected. If correction is not possible, then fences, markers or guards should be used to remind the golfer of the danger. Nothing is more important than safety.

Frequently the golf course architect can lessen unsafe conditions by his routing of the golf course. One method is to try to keep out-of-bounds limits to the hook side, since fewer golfers hook and thus fewer neighbors will be endangered by errant shots. On rolling ground, a golf course architect can route his course so that slices will bounce into a slope instead of run down one. A good rule of thumb for a safe routing is to have the right side of the impact area higher than the left side (see figure 27). If the ground is flat, mounds should be located and built to control the slice. Of course, the impact area of sliced shots must still be conducive to finding the ball and playing the next stroke, so if possible a good design philosophy is to cut the golf hole down into the ground so the sideslopes create containment. Mounds create rejection of golf balls that bounce off their far sides, thus moving the golfer further off line. If mounds are to be used to create containment, they should be placed outside the 15° angle of probable play, as done at Cook's Creek in Circleville, Ohio (see figure 28).

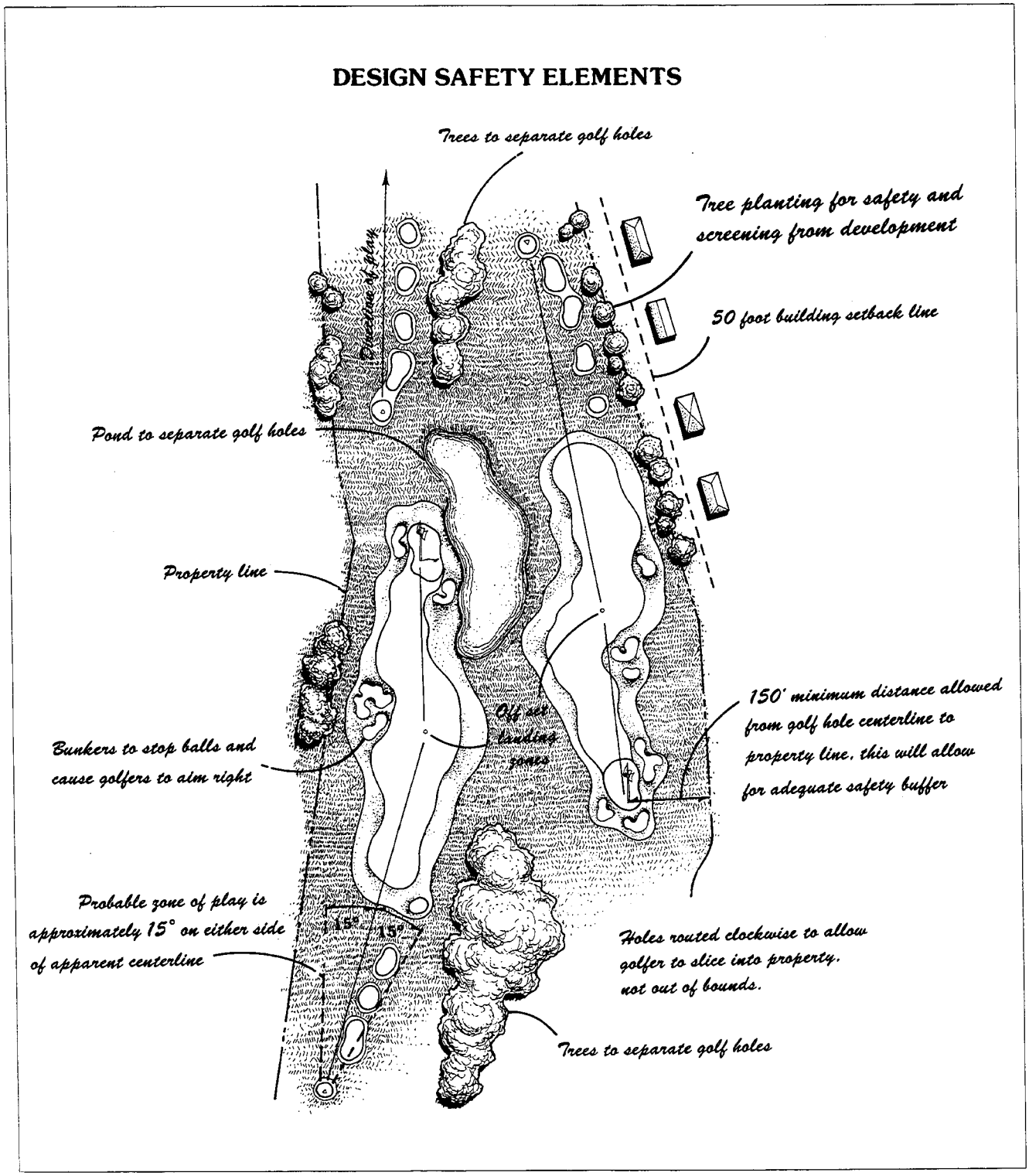

Figure 25. Hurdzan design guidelines can be used as a starting point, and adjusted based on the topography, vegetation, altitude, prevailing winds, adjacent land uses, and anticipated play level of each specific site and project.

7) Balance (equality in distribution of par, shot values, and progression)
8) Maintenance cost (long-term problems, long-term costs, problems or limitations, cost-benefit ratios)
9) Construction planning (projected total cost, problems or limitations, cost-benefit ratios)
10) Aesthetics (the look, feel, impression of the golf course)
11) Tournament qualities (match vs. medal play, accessibility for galleries)

This list is akin to the activity chart of elements used in chemistry. The criterion that is higher on the list takes precedence when conflicting with a criterion (or element) below it. In general, the most important criterion for a golf course, the one that should take precedence over all others, is safety. This concern should be both to the golfer and maintenance staff using the course and any person or property adjacent to the course. The next six criteria deal with making a golf course as pleasant and pleasurable to the golfer as possible, and presenting the golfer with a fair challenge. These six considerations should take precedence over the long-term maintenance factors. Long-term maintenance, since it is a never ending process, should be more important than construction considerations, which are a one-time cost. Then come the purely aesthetic considerations, which, while not meant to be minimized, must be sacrificed before any criterion above it. Lastly comes tournament qualities of a course, for at best, only one or two weeks will be devoted to tournament play. The remainder of the year the course must properly serve those golfers who routinely play it and foot the bill. Because each of these is an important element, more explanation of each is necessary.

Safety

As previously mentioned, safety is by far the most important single consideration on a golf course. Golf is a rather passive recreation and its participants should not play the game in fear of being hit or of hitting someone with an errant shot. Sadly, people have been hit by golf balls and as a result have lost sight in one eye, lost teeth, had bones broken, or even been in danger of losing their life. Sometimes these accidents are a result of negligence on the part of the golfers, but other times it is because the golf course was improperly designed. Having occasionally watched people hit the ball between their own legs, or shank one 90° off line, or slice a ball two hundred yards off the target line, we all realize that no golf course can be made totally safe. Of course, no home, highway, or office building can be made totally safe either. But proper design that respects common playing patterns can markedly reduce the probability of a serious accident.

There are no golf course design standards, so each golf course architect must prudently set his own guidelines for safety based upon the foreseeability of where and how golfers hit their shots. In the event of an accident, designers may have to defend their personal guidelines in a court of law, and perhaps against the views of another expert witness. What follows are the author's personal guidelines (see figure 25).

The most obvious safety measure involves the right side of a hole, since most beginning and casual golfers slice shots off the tee. An architect can reduce danger in slice impact areas by staggering tees so that players on each hole won't slice into the same area. If impact areas cannot be physically separated, then safety buffers, such as bunkers, rough, trees, ponds, or non-turf vegetation can be used. A safety buffer can be anything that will discourage the golfer from swinging away instead of controlling the shot, or anything that stops the mishit ball in flight or on the roll. Some years ago the author did some fairly extensive study of where golfers hit the ball in relation to their aiming point and apparent line of play. Although unpublished and not statistically validated, the data indicated that 92% of golf shots fall within 15 degrees either side of their apparent line of play to a specific aiming point. This observation can be used as a planning rule of thumb which is modified depending upon topography, vegetation, wind direction, altitude, length of shot, etc.

Another method to provide safety is to offset

Golf Course Accuracy Patterns

The United States Golf Association

United States Golf Association
Course Rating Services, Western Region
103 N Piney Plains Circle The Woodlands TX 77382
409 321-6809 Fax 409 273-9416

THE USGA

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the hole length falls outside the Transition Zone, then the Transition Zone concept should be applied.

4. Accuracy Pattern

The Accuracy Table below prescribes the dimensions of the area into which a scratch or bogey golfer is expected to hit shots of various lengths 67 percent of the time. It is used to assist in evaluating the effect of obstacles around the target (*e.g.*, if the scratch golfer has a 160-yard [130-yard] approach shot, an obstacle within 8½ yards of the center of the green is considered a significant factor).

ACCURACY TABLE -- Men and [Women]
(Dimensions of Expected Landing Area 2/3 of the Time -- in Yards)

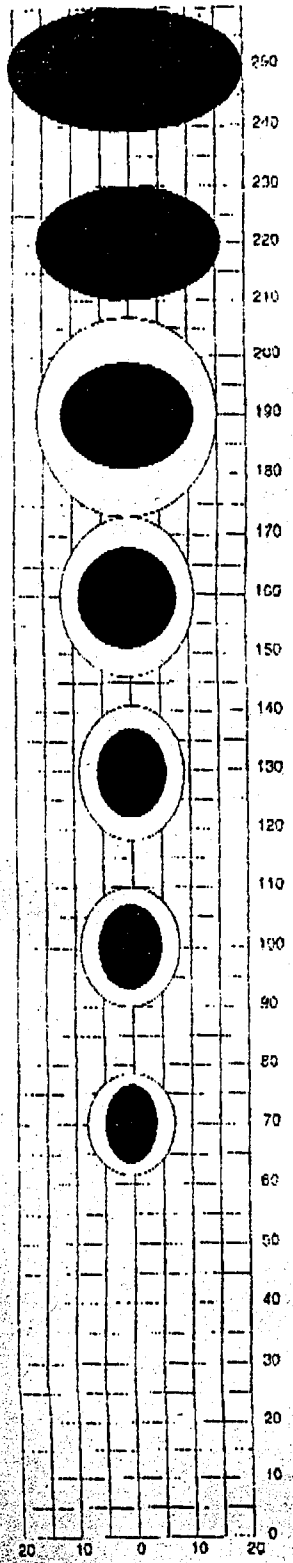
	Scratch Golfer				Bogey Golfer			
Length	Men		[Women]		Men		[Women]	
of Shot	Width	Depth	Width	Depth	Width	Depth	Width	Depth
40	--	--	[9]	[13]	--	--	[14]	[17]
50	--	--	[10]	[14]	--	--	[15]	[18]
60	--	--	[11]	[14]	--	--	[16]	[19]
70	9	13	[11]	[14]	14	17	[16]	[18]
80	10	14	[12]	[15]	15	18	[17]	[21]
90	11	14	[12]	[15]	16	19	[17]	[22]
100	11	14	[13]	[15]	16	20	[18]	[23]
110	12	15	[14]	[16]	17	21	[19]	[24]
120	12	15	[15]	[16]	17	22	[20]	[25]
130	13	15	[17]	[17]	18	23	[21]	[27]
140	14	16	[18]	[17]	19	24	[22]	[28]
150	15	16	[20]	[18]	20	25	[24]	[30]
160	17	17	[23]	[19]	22	27	--	--
170	18	17	[26]	[20]	24	28	--	--
180	20	18	[28]	[22]	26	30	--	--
190	23	18	[30]	[24]	29	34	--	--
200	26	19	[32]	[26]	33	37	--	--
210	29	19	[34]	[28]	--	--	--	--
220	32	20	--	--	--	--	--	--
230	35	20	--	--	--	--	--	--
240	38	20	--	--	--	--	--	--
250	41	21	--	--	--	--	--	--

5. Obstacles "Do Not Exist"

Obstacle values normally decrease as their distance from the target increases. If an obstacle is 60 [50] yards to the left or right of the line of play or 50 [40] yards to the left, right or beyond the center of the green, generally it should not be considered a factor for the scratch golfer (*i.e.*, it "does **not exist**" on the hole and should be rated zero). For the bogey golfer, these distances are 75 [60] yards from the line of play and 65 [50] yards from the center of the green.

ACCURACY PATTERNS

MEN



ALL SHOTS HIT FROM HERE

SHOT PATTERN WIDTH (YARDS)

Shot length and shot pattern width and depth (yards)

Each square = 5 yards

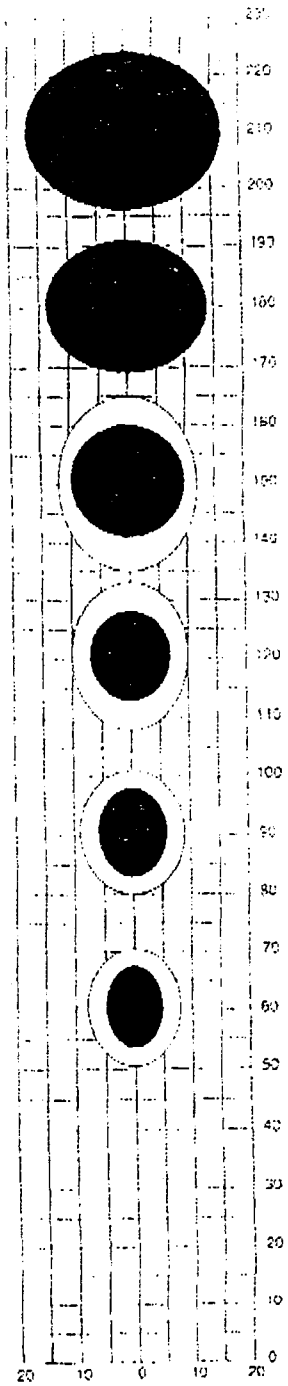
Maximum Scratch Golfer tee shot is 250 [210] yards

Maximum Bogey Golfer tee shot is 200 [150] yards

Scratch

Bogey

WOMEN



SHOT PATTERN WIDTH (YARDS)

ALL SHOTS HIT FROM HERE

15.12 Traffic Impact Analysis

URBAN
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LONG POINT RESORT PROJECT
TRAFFIC IMPACT ANALYSIS (REVISED)
Rancho Palos Verdes, California

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LONG POINT RESORT PROJECT
TRAFFIC IMPACT ANALYSIS (REVISED)
RANCHO PALOS VERDES, CALIFORNIA

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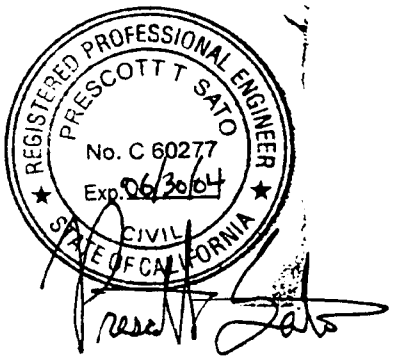

January 26, 2001

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LONG POINT RESORT PROJECT
TRAFFIC IMPACT ANALYSIS (REVISED)
RANCHO PALOS VERDES, CALIFORNIA

INTRODUCTION

The purpose of this traffic impact analysis is to evaluate the development of the Long Point Resort Project from a traffic circulation standpoint. The project is located adjacent to Palos Verdes Drive South and east of Hawthorne Boulevard in the City of Rancho Palos Verdes (see Exhibit A).

The site plan for the project is shown on Exhibit B. This traffic study includes an evaluation of existing traffic conditions, existing plus ambient growth traffic conditions, existing plus ambient growth plus proposed project traffic conditions, existing plus ambient growth plus other development traffic conditions, and existing plus ambient growth plus proposed project plus other development traffic conditions for the study area. This analysis follows the County of Los Angeles traffic study guidelines and is intended to be consistent with traffic impact analysis guidelines set forth in the latest 1997 Congestion Management Program (CMP) prepared by the Los Angeles County Metropolitan Transportation Authority (MTA).

The study area was analyzed for the following intersections:

Palos Verdes Boulevard (NS) at:

- Palos Verdes Drive West – North (EW)
- Palos Verdes Drive West – South (EW)
- Palos Verdes Drive West – East (EW)

EXHIBIT A

LOCATION MAP

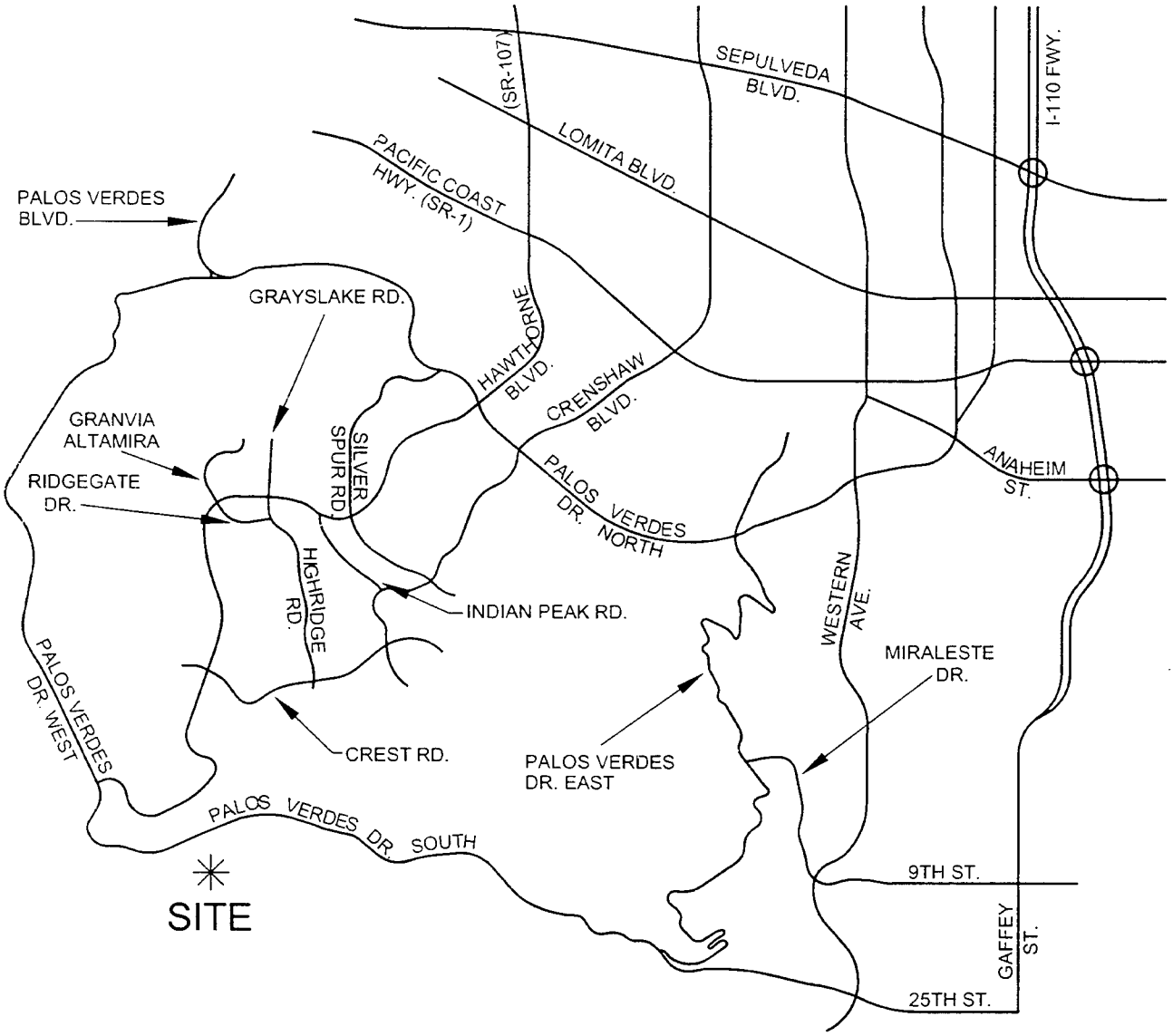

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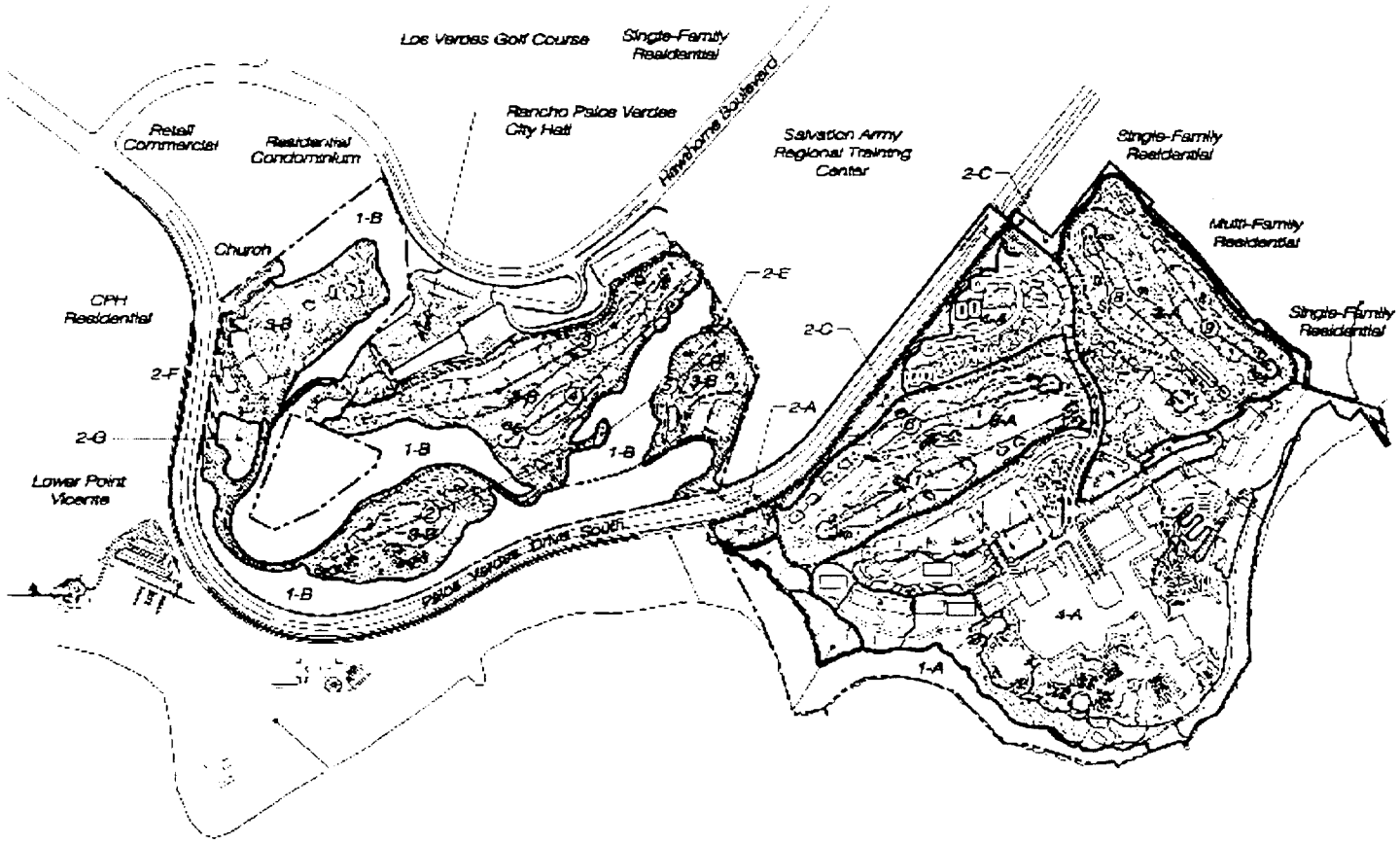
EXHIBIT B

SITE PLAN



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URBAN CROSSROADS

Palos Verdes Drive West (NS) at:

- Hawthorne Boulevard (EW)

Granvia Altamira (NS) at:

- Hawthorne Boulevard (EW)

Highridge Road (NS) at:

- Hawthorne Boulevard (EW)
- Crest Road (EW)

Indian Peak Road (NS) at:

- Hawthorne Boulevard (EW)
- Crenshaw Boulevard (EW)

Silver Spur Road (NS) at:

- Hawthorne Boulevard (EW)
- Crenshaw Boulevard (EW)

Hawthorne Boulevard (NS) at:

- Sepulveda Boulevard (EW)
- Pacific Coast Highway (EW)
- Palos Verdes Drive North (EW)
- Crest Road (EW)

Crenshaw Boulevard (NS) at:

- Palos Verdes Drive North (EW)
- Crest Road (EW)

Project Entrance (NS) at:

- Palos Verdes Drive South (EW)

Palos Verdes Drive East (NS) at:

- Palos Verdes Drive North (EW)
- Palos Verdes Drive South (EW)

Western Avenue (NS) at:

- Palos Verdes Drive North (EW)
- 9th Street (EW
- 25th Street (EW)

Gaffey Street (NS) at:

- 9th Street (EW)

The intersection of Gaffey Street/15th Street has not been analyzed within the traffic study. It is not a CMP arterial monitoring intersection and is currently not a major through route.

Based upon this evaluation, the proposed project can be accommodated within the planned circulation system, if the circulation system is implemented as discussed in this report.

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FINDINGS

The following findings have been reached for existing conditions and for the proposed development.

Existing Conditions

1. The project site is currently unoccupied and not generating any significant traffic.

2. Existing highways in the vicinity of the project include Palos Verdes Drive West, Hawthorne Boulevard, Crenshaw Boulevard, Palos Verdes Drive East, Western Avenue, Gaffey Street, Sepulveda Boulevard, Pacific Coast Highway, Palos Verdes Drive North, Silver Spur Road, Indian Peak Road, Highridge Road/Grayslake Road, Granvia Altamira/Ridgegate Drive, Crest Road, Miraleste Drive/9th Street and Palos Verdes Drive South/25th Street.

3. Existing intersections within the study area are currently operating at Level of Service "D" or better during the peak hours (see Table 1), except for the following study area intersections which operate at Level of Service "E" or "F" during the peak hours:

   Silver Spur Road (NS) at:

   - Hawthorne Boulevard (EW)

   Hawthorne Boulevard (NS) at:

   - Sepulveda Boulevard (EW)
   - Pacific Coast Highway (EW)
   - Palos Verdes Drive North (EW)

Western Avenue (NS) at:

- Palos Verdes Drive North (EW)

Proposed Development

1. The proposed development is projected to generate approximately 6,263 trip-ends per day with 313 vehicles per hour during the AM peak hour and 499 vehicles per hour during the PM peak hour.

2. As shown in Table 4, the study area intersections are projected to operate at Level of Service "D" or better during the peak hours for existing plus ambient growth traffic conditions, except for the following study area intersections which operate at Level of Service "E" or "F" during the peak hours:

Palos Verdes Boulevard (NS) at:

- Palos Verdes Drive West – North (EW)

Silver Spur Road (NS) at:

- Hawthorne Boulevard (EW)

Hawthorne Boulevard (NS) at:

- Sepulveda Boulevard (EW)
- Pacific Coast Highway (EW)
- Palos Verdes Drive North (EW)

Western Avenue (NS) at:

- Palos Verdes Drive North (EW)

A traffic signal is projected to be warranted at the following study area intersection for existing plus ambient growth traffic conditions (see Appendix "E"):

Crenshaw Boulevard (NS) at:

- Crest Road (EW)

3. As shown in Table 5, the study area intersections are projected to operate at Level of Service "D" or better during the peak hours for existing plus ambient growth plus proposed project traffic conditions, except for the following study area intersections which operate at Level of Service "E" or "F" during the peak hours:

Palos Verdes Boulevard (NS) at:

- Palos Verdes Drive West – North (EW)

Silver Spur Road (NS) at:

- Hawthorne Boulevard (EW)

Hawthorne Boulevard (NS) at:

- Sepulveda Boulevard (EW)
- Pacific Coast Highway (EW)
- Palos Verdes Drive North (EW)

Western Avenue (NS) at:

- Palos Verdes Drive North (EW)

A traffic signal is projected to be warranted at the following additional study area intersection for existing plus ambient growth plus proposed project traffic conditions (see Appendix "E"):

Project Entrance (NS) at:

- Palos Verdes Drive South (EW)

4. As shown in Table 7, the study area intersections are projected to operate at Level of Service "D" or better during the peak hours for existing plus ambient growth plus other development traffic conditions, except for the following study area intersections which operate at Level of Service "E" or "F" during the peak hours:

Palos Verdes Boulevard (NS) at:

- Palos Verdes Drive West – North (EW)

Silver Spur Road (NS) at:

- Hawthorne Boulevard (EW)

Hawthorne Boulevard (NS) at:

- Sepulveda Boulevard (EW)
- Pacific Coast Highway (EW)
- Palos Verdes Drive North (EW)

Western Avenue (NS) at:

- Palos Verdes Drive North (EW)

A traffic signal is projected to be warranted at the following additional study area intersection for existing plus ambient growth plus other development traffic conditions (see Appendix "E"):

Palos Verdes Drive East (NS) at:

- Palos Verdes Drive South (EW)

5. As shown in Table 8, the study area intersections are projected to operate at Level of Service "D" or better during the peak hours for existing plus ambient growth plus proposed project plus other development traffic conditions, except for the following study area intersections which operate at Level of Service "E" or "F" during the peak hours:

Palos Verdes Boulevard (NS) at:

- Palos Verdes Drive West – North (EW)

Silver Spur Road (NS) at:

- Hawthorne Boulevard (EW)

Hawthorne Boulevard (NS) at:

- Sepulveda Boulevard (EW)
- Pacific Coast Highway (EW)
- Palos Verdes Drive North (EW)

Western Avenue (NS) at:

- Palos Verdes Drive North (EW)

6. The access and circulation system provided by the proposed development is adequate to meet the needs of the development. Access to the proposed development is to Palos Verdes Drive South.

Recommendations

1. Construct Palos Verdes Drive South adjacent to the project site at its ultimate half-section width at a 100 foot right-of-way in conjunction with development (see Exhibit KK).

2. Provide a minimum 150 foot left turn pocket for vehicles traveling west on Palos Verdes Drive South and desiring to turn left into the main access to the project site. The project site main access is located opposite the existing gated Crestmont Lane. Access to the driving range located on the north side of Palos Verdes Drive South shall be restricted to right turns in/out only.

3. A traffic signal should be installed by the project applicant when warranted at the following study area intersection:

   Project Entrance (NS) at:

   - Palos Verdes Drive South (EW)

4. Sight distance at the project entrances should be further reviewed with respect to standard Caltrans/City of Rancho Palos Verdes sight distance standards at the time of preparation of final grading, landscape and street improvement plans.

5. Internal traffic signing/striping should be implemented in conjunction with detailed construction plans for the project.

6. The project itself is expected to have a significant traffic impact at three (3) study area intersections projected to operate at Level of Service "E" or "F" during the peak hours. As a result of these impacts, the following measures are recommended for implementation:

Silver Spur Road (NS) at:

- Hawthorne Boulevard (EW)
  - Restripe south leg with two left turn lanes, one through lane and one right turn lane
  - Provide north leg with one left turn lane, two through lanes and one right turn lane

Hawthorne Boulevard (NS) at:

- Palos Verdes Drive North (EW)
  - Provide west leg with one left turn lane, one shared left/ through lane, one through lane and one right turn lane

Western Avenue (NS) at:

- 25th Street (EW)
  - Provide east leg with one left turn lane, two through lanes and one right turn lane

These mitigation measures will result in no remaining significant impacts.

The project share of cost has been based on the proportion of project peak hour traffic contributed to the improvement location relative to the total new peak hour existing plus ambient growth plus proposed project plus other development traffic volume. Table 10 presents a summary of project shares at each intersection improvement location.

EXISTING CONDITIONS

Study Area Street System

Existing roadways in close proximity to the project include Palos Verdes Drive West, Hawthorne Boulevard, Crenshaw Boulevard, Palos Verdes Drive East, Western Avenue, Gaffey Street, Sepulveda Boulevard, Pacific Coast Highway, Palos Verdes Drive North, Silver Spur Road, Indian Peak Road, Highridge Road/Grayslake Road, Granvia Altamira/Ridgegate Drive, Crest Road, Miraleste Drive/9th Street and Palos Verdes Drive South/25th Street. The existing number of through travel lanes and intersection controls on these roadways is shown on Exhibit C. Appendix "A" contains the City of Rancho Palos Verdes roadway cross-sections.

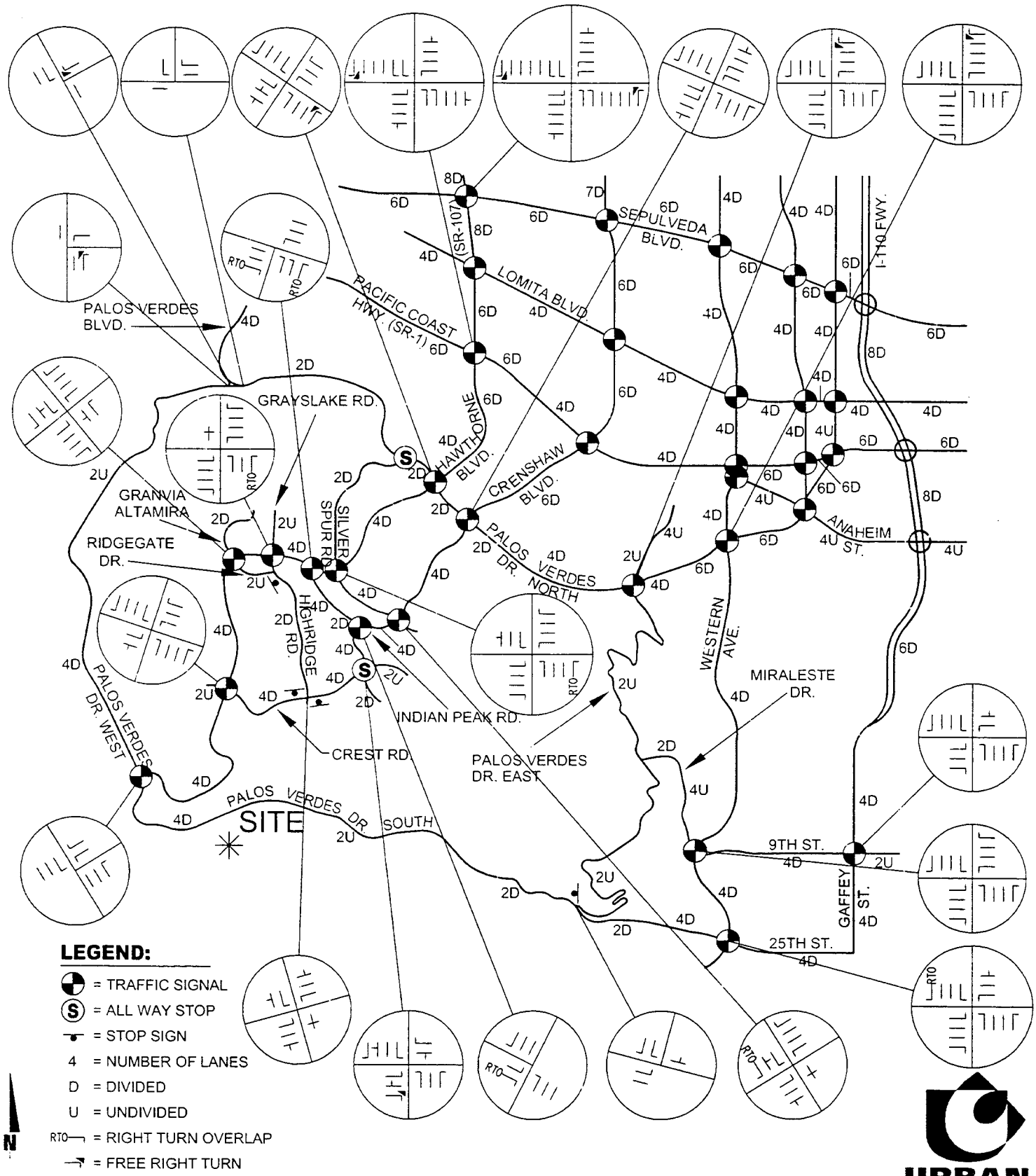
Palos Verdes Drive West is currently a two lane undivided roadway south of Palos Verdes Drive North and a four lane divided roadway north of Hawthorne Boulevard. It carries approximately 8,600 to 20,900 vehicles per day in the study area. The right-of-way varies in the City of Rancho Palos Verdes.

Hawthorne Boulevard is currently a four lane divided roadway from north of Palos Verdes Drive North to Palos Verdes Drive West and a six lane divided roadway from south of Pacific Coast Highway to north of Sepulveda Boulevard. It carries approximately 8,300 to 63,300 vehicles per day in the study area. The right-of-way is 100 feet wide in the City of Rancho Palos Verdes.

Crenshaw Boulevard is currently a two lane divided roadway south of Crest Road, a four lane divided roadway from Crest Road to Palos Verdes Drive North, and a six lane divided roadway north of Palos Verdes Drive North. It carries approximately 2,800 to

EXHIBIT C

EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS



URBAN CROSSROADS

LONG POINT RESORT PROJECT, Rancho Palos Verdes, California-00103/05A

26,400 vehicles per day in the study area. The right-of-way is 80 feet wide in the City of Rancho Palos Verdes.

Palos Verdes Drive East is currently a two lane undivided roadway south of Palos Verdes Drive North and a four lane divided roadway north of Palos Verdes Drive North. It carries approximately 2,200 to 9,900 vehicles per day in the study area. The right-of-way is 75 feet wide from Calle Aventura to Ganado Drive and 50 feet wide from Ganado Drive to Palos Verdes Drive South/25th Street in the City of Rancho Palos Verdes.

Western Avenue is currently a four lane divided roadway north of 25th Street. It carries approximately 6,400 to 30,500 vehicles per day in the study area.

Gaffey Street is currently a four lane divided roadway north of 25th Street. It carries approximately 25,300 to 26,900 vehicles per day in the study area.

Sepulveda Boulevard is currently a six lane divided roadway in the vicinity of the project site. It carries approximately 30,400 to 43,400 vehicles per day in the study area.

Pacific Coast Highway is currently a four lane divided roadway between Crenshaw Boulevard and Western Avenue and is a six lane divided roadway west of Crenshaw Boulevard and east of Western Avenue. It carries approximately 40,000 to 43,000 vehicles per day in the study area.

Palos Verdes Drive North is currently a two lane divided roadway between Palos Verdes Boulevard and east of Crenshaw Boulevard, a four lane divided roadway between east of Crenshaw Boulevard and east of Palos Verdes Drive East, and a six lane divided

roadway east of Palos Verdes Drive East. It carries approximately 11,500 to 28,500 vehicles per day in the study area.

Silver Spur Road is currently a two lane divided roadway between Palos Verdes Drive North and Hawthorne Boulevard and a four lane divided roadway south of Hawthorne Boulevard. It carries approximately 13,000 to 17,500 vehicles per day in the study area. The right-of-way is 80 feet wide in the City of Rancho Palos Verdes.

Indian Peak Road is currently a two lane divided roadway north of Crenshaw Boulevard and a four lane divided roadway south of Hawthorne Boulevard. It carries approximately 6,100 to 10,100 vehicles per day in the study area. The right-of-way is 80 feet wide in the City of Rancho Palos Verdes.

Highridge Road/Grayslake Road is currently a two lane undivided roadway north of Hawthorne Boulevard and a two lane divided roadway south of Hawthorne Boulevard. It carries approximately 600 to 7,500 vehicles per day in the study area. The right-of-way is 100 feet wide in the City of Rancho Palos Verdes.

Granvia Altamira/Ridgegate Drive is currently a two lane undivided roadway south of Hawthorne Boulevard and a two lane divided roadway north of Hawthorne Boulevard. It carries approximately 5,800 to 7,700 vehicles per day in the study area.

Crest Road is currently a two lane undivided roadway west of Hawthorne Boulevard and east of Crenshaw Boulevard and a four lane divided roadway between Hawthorne Boulevard and Crenshaw Boulevard. It carries approximately 2,900 to 8,300 vehicles per day in the study area. The right-of-way is 100 feet wide in the City of Rancho Palos Verdes.

Miraleste Drive/9th Street is currently a two lane undivided roadway to four lanes divided roadway east of Palos Verdes Drive East. It carries approximately 5,500 to 7,700 vehicles per day in the study area. The right-of-way is 170 feet wide in the City of Rancho Palos Verdes.

Palos Verdes Drive South/25th Street is currently a two lane undivided roadway to four lane divided roadway between Hawthorne Boulevard and Gaffey Street. It carries approximately 10,400 to 16,300 vehicles per day in the study area. The right-of-way for for Palos Verdes Drive South is 100 feet wide from Palos Verdes Drive West to Narcissa Drive and Schooner Drive to 25th Street and the right-of-way for 25th Street varies from 60 to 70 feet wide in the City of Rancho Palos Verdes.

Existing Average Daily Traffic

Existing average daily traffic (ADT) volumes on arterial highways throughout the study area are shown on Exhibit D. ADT volumes are based upon the traffic data collected from the 1998 Traffic Volumes on California State Highways by Caltrans, previous traffic studies and are factored up from the peak hour counts made for Urban Crossroads, Inc. using the following formula for each intersection leg:

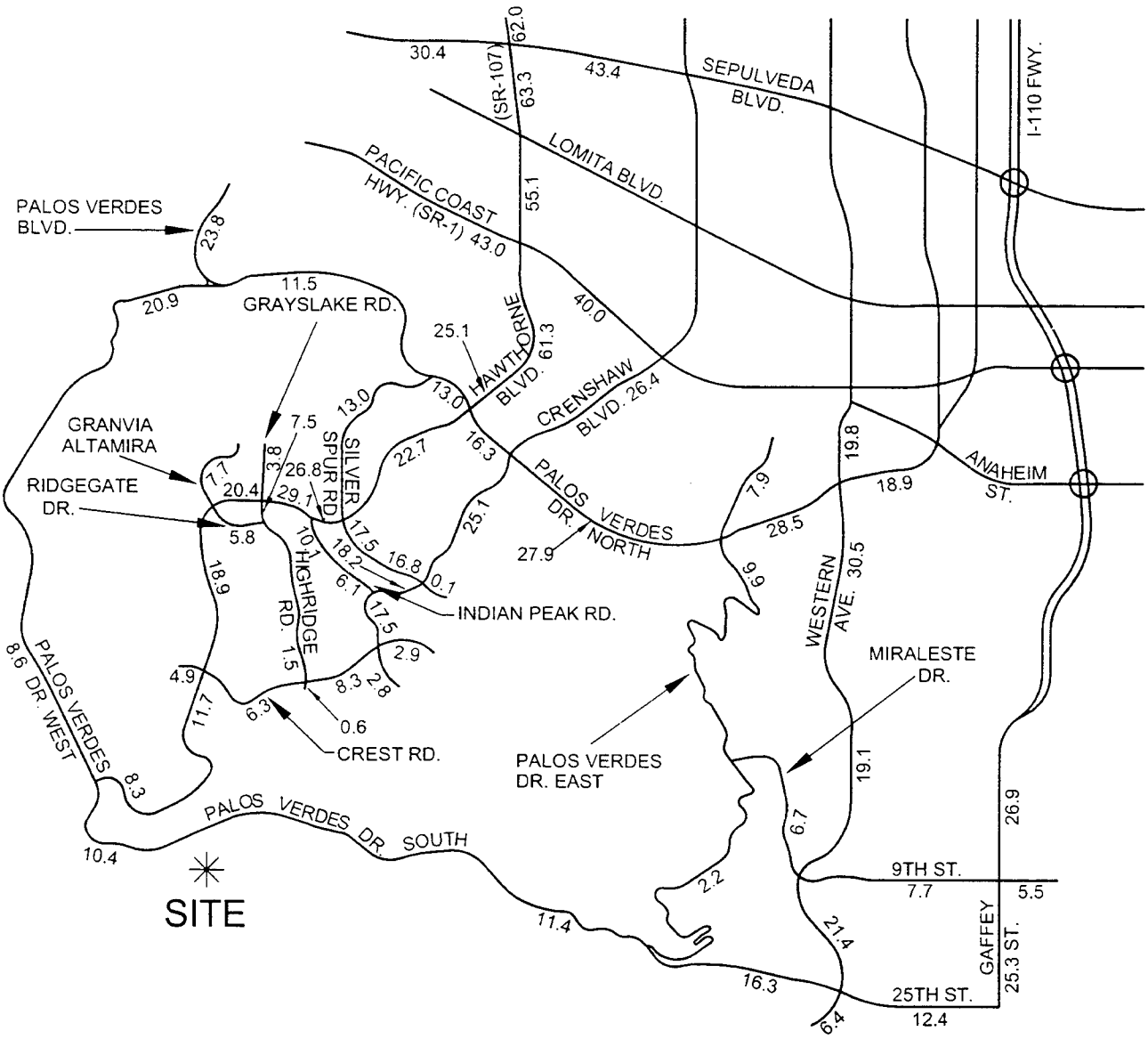
PM Peak Hour (Approach Volume + Exit Volume) x 10 = Leg Volume.

Existing Intersection Analysis

The technique used to assess the operation of a signalized intersection is known as Intersection Capacity Utilization (ICU). To calculate an ICU the volume of traffic using the intersection is compared with the capacity of the intersection. ICU is usually expressed

EXHIBIT D

EXISTING AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

10.4 = VEHICLES PER DAY (1000'S)

N

as a percent. The percent represents that portion of the hour required to provide sufficient capacity to accommodate all intersection traffic if all approaches operate at capacity. An explanation of Level of Service is included in Appendix "B". The levels of service for existing intersections in the vicinity of the project are shown in Table 1.

Existing intersection level of service calculations are based upon AM and PM peak hour turning movement counts made for Urban Crossroads, Inc. in May, July and August, 1999 (see Exhibits E and F). Traffic count worksheets are provided in Appendix "C". Existing intersections within the study area are currently operating at Level of Service "D" or better during the peak hours, except for the following study area intersections which operate at Level of Service "E" or "F" during the peak hours:

Silver Spur Road (NS) at:

- Hawthorne Boulevard (EW)

Hawthorne Boulevard (NS) at:

- Sepulveda Boulevard (EW)
- Pacific Coast Highway (EW)
- Palos Verdes Drive North (EW)

Western Avenue (NS) at:

- Palos Verdes Drive North (EW)

Existing ICU calculation worksheets are included in Appendix "D".

TABLE 1

INTERSECTION ANALYSIS FOR EXISTING CONDITIONS

INTERSECTION	INTERSECTION APPROACH LANES[1]												ICU[2]		LOS[3]	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND						
	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Palos Verdes Blvd. (NS) at:																
• Palos Verdes Dr. West-North (EW)	0	1	0	1	1	0	0	0	0	0	0	1>>	0.87	0.77	D	C
• Palos Verdes Dr. West-South (EW)	0	1	1>>	0	1	0	0	0	0	1	0	0	0.84	0.83	D	D
• Palos Verdes Dr. West-East (EW)	0	1	0	0	1	1	1	0	0	0	0	0	0.35	0.49	A	A
Palos Verdes Dr. West (NS) at:																
• Hawthorne Blvd. (EW)	0	2	1	1	2	0	0	0	0	1	0	1	0.50	0.45	A	A
Granvia Altamina (NS) at:																
• Hawthorne Blvd. (EW)	0	1	1	1.5	0.5	1	1	2	1	1	2	1	0.58	0.57	A	A
Highridge Rd. (NS) at:																
• Hawthorne Blvd. (EW)	1	1	1>	0	1	0	1	2	1	1	2	1	0.82	0.66	D	B
• Crest Rd. (EW)	0	1	0	1	1	0	1	2	0	1	2	0	0.28	0.27	A	A
Indian Peak Rd. (NS) at:																
• Hawthorne Blvd. (EW)	2	0	1>	0	0	0	0	2	1>	1	2	0	0.66	0.68	B	B
• Crenshaw Blvd. (EW)	0	0	0	1	0	1>	1	2	0	0	2	1	0.57	0.55	A	A
Silver Spur Rd. (NS) at:																
• Hawthorne Blvd. (EW)	1	2	1>	1	2	0	1	2	1	1	2	1	0.87	0.98	D	E
• Crenshaw Blvd. (EW)	0	1	0	1.5	0.5	1>	1	2	0	1	2	1	0.68	0.69	B	B
Hawthorne Blvd. (NS) at:																
• Sepulveda Blvd. (EW)	2	4	1>>	2	4	1>>	2	3	0	2	3	0	0.89	1.06	D	F
• Pacific Coast Hwy. (EW)	2	3	0	2	3	1>>	1	3	0	1	3	0	0.91	1.45	E	F
• Palos Verdes Dr. North (EW)	1	2	1>>	1	2	1	1.5	1.5	0	1	1	1	0.92	0.85	E	D
• Crest Rd. (EW)	1	2	1	1	2	1	1	1	0	1	1	1	0.45	0.43	A	A
Crenshaw Blvd. (NS) at:																
• Palos Verdes Dr. North (EW)	1	2	1	1	2	1	2	2	0	2	2	0	0.79	0.67	C	B
• Crest Rd. (EW)	1	1	1	1	1.5	1.5	1.5	0.5	1>>	0	1	1	0.48	0.38	A	A
Palos Verdes Dr. East (NS) at:																
• Palos Verdes Dr. North (EW)	1	2	1	1	2	1	1	2	1	1	2	1>>	0.74	0.70	C	B
• Palos Verdes Dr. South (EW)	0	0	0	1	0	1	1	1	0	0	1	0	0.47	0.49	A	A
Western Ave. (NS) at:																
• Palos Verdes Dr. North (EW)	1	2	1	1	2	1	1	3	1	1	3	1	0.87	0.93	D	E
• 9th St. (EW)	1	2	1	1	2	1	1	2	1	1	2	1	0.49	0.57	A	A
• 25th St. (EW)	1	2	1	1	2	1>	1	2	1	1	2	0	0.59	0.69	A	B
Gaffey St. (NS) at:																
• 9th St. (EW)	1	2	1	1	2	1	1	1	1	1	1	0	0.75	0.79	C	C

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; > = Right Turn Overlap; >> = Free Right Turn

[2] Intersection Capacity Utilization (ICU).

[3] Level of Service (LOS).

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EXHIBIT E

EXISTING AM PEAK HOUR INTERSECTION VOLUMES

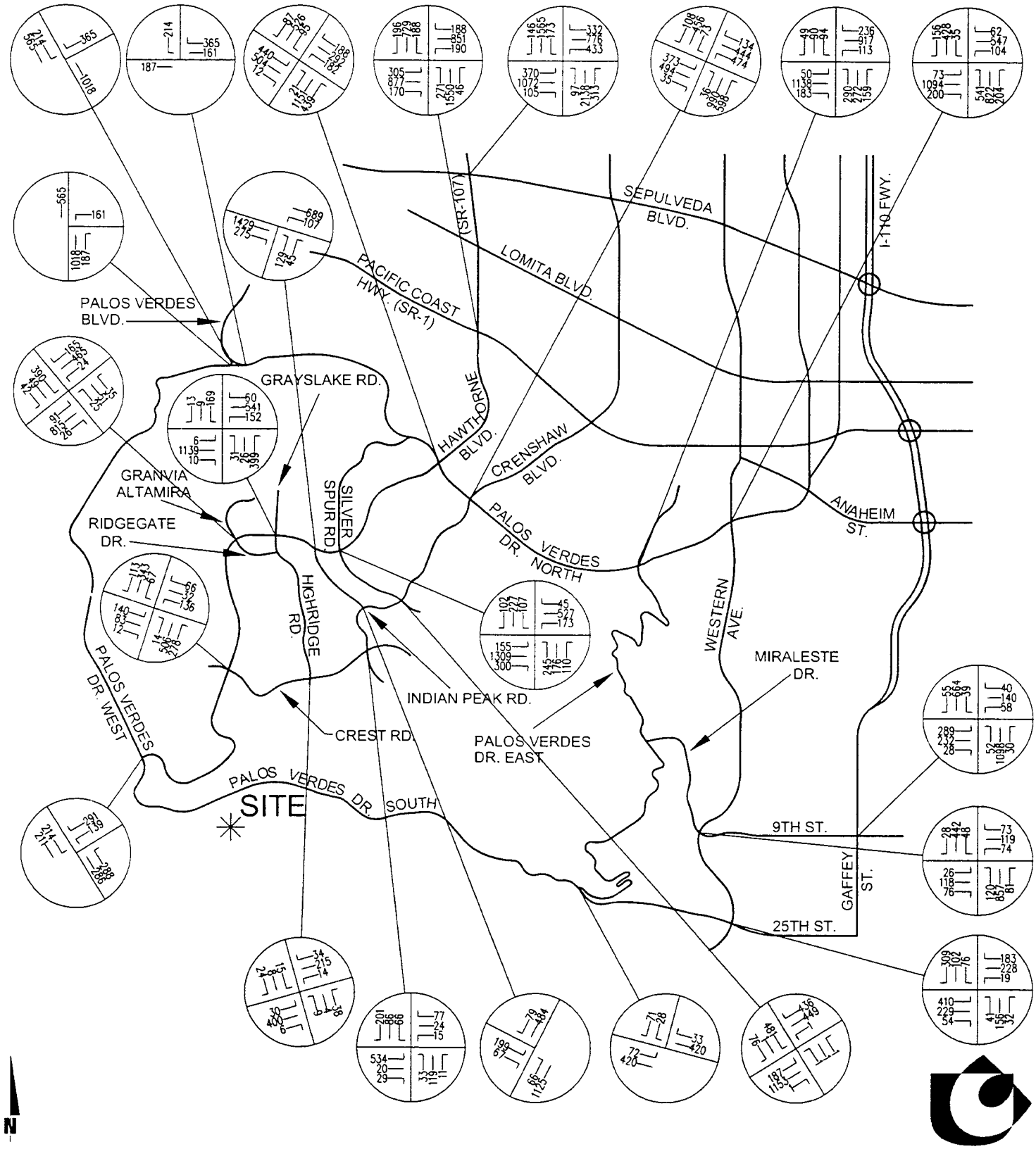
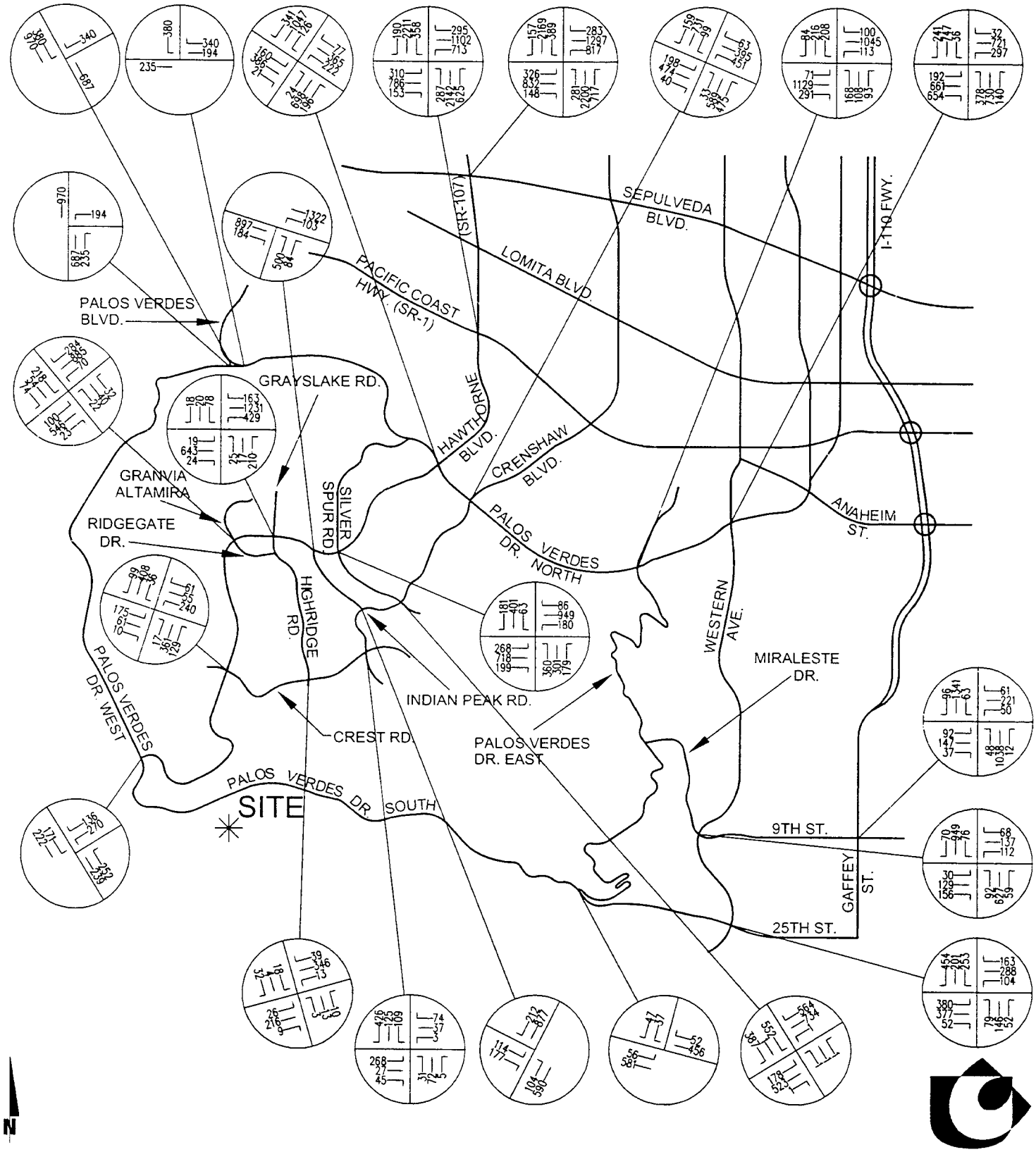


EXHIBIT F

EXISTING PM PEAK HOUR INTERSECTION VOLUMES



PROJECT DEVELOPMENT

Trip Generation

Trip generation represents the amount of traffic which is produced or attracted to a development. The traffic generation for this project has been estimated, based upon the specific land uses which have been planned for the proposed development.

The following project description has been obtained for the Long Point Resort Project Environmental Impact Report. The full service resort hotel and related public facilities are described below:

- 400 guest rooms (400 keys) in the main building and bungalows;

- 40 resort casita units described to two villages. These casitas would be multiple-keyed (at up to 3 keys per casita), for a total of up to 150 overnight accommodations;

- 32 resort villas situated along Palos Verdes Drive South. These individually-owned resort villas are proposed to be restricted such that visitor-serving accommodations would be provided a minimum of 75 percent of the year a minimum of 30 days at a time. Recreational facilities and service offered to guests of the resort hotel would be offered to residents of the villas;

- Resort food and beverage and beverage facilities would include a maximum of four restaurants/bars (400 seats), conferee dining (200 seats), lounges/beverage bars (150 seats) and a pool bar (2,000 square feet);

- Banquet/meeting rooms and retail facilities would include approximately 68,000 square feet of ballroom, banquet, meeting, community, prefunction, foyer, flow, convenience services and retail sales space. This space would be made available for conferences, social occasions, and community and public events;

- An approximately 22,000 square foot full-service health spa/fitness center;

- A maximum of seven (7) swimming pools, spas and/or jacuzzi spaced throughout the resort (not including in-room amenities);

- A maximum of four (4) tennis courts;

- The proposed 9-hole golf course and golf practice facility would be operated as a public-play, non-membership, fee-per-round golf course, which would include use by resort hotel guests, residents and visitors. The golf course would extend across both of the project's geographic regions, beginning at the resort hotel area, progressing to the Upper Point Vicente area, and retracing it's route to finish play north/northeast of the resort hotel. No netting or night lighting of the golf course or practice facility is proposed. The public golf practice facility includes a public golf practice and learning facility offering 25 to 30 natural turf tees and including a practice range (approximately 9.2

acres), sand shot and chipping area, and putting green, each designed and constructed to the same standards as the golf fairways and greens. The proposed golf course facilities would include a golf cart staging/maintenance facility, clubhouse with limited food service, pro shop, teaching studio, etc. Public parking for the area north of Palos Verdes Drive South will be access between the facility and St. Paul's Lutheran Church. However, the golf course clubhouse and golf cart staging facilities are all within the resort hotel area located south of Palos Verdes Drive South. A golf cart tunnel shall be provided under Palos Verdes Drive South to provide access between both project areas.

Trip generation rates are based upon the latest data collected by the Institute of Transportation Engineers (ITE) and San Diego Association of Governments (SANDAG). Trip generation rates utilized in this study are included in Table 2.

Both daily and peak hour trip generation for the proposed project are shown in Table 3. The proposed development is projected to generate approximately 6,263 trip-ends per day with 313 vehicles per hour during the AM peak hour and 499 vehicles per hour during the PM peak hour.

Traffic Assignment

Trip distribution represents the directional orientation of traffic to and from the project site. Trip distribution is heavily influenced by the geographical location of the site, the location of residential, commercial and recreational opportunities and the proximity to the regional freeway system. The directional orientation of traffic was determined by evaluating

TABLE 2

TRIP GENERATION RATES

LAND USE	UNITS[1]	PEAK HOUR				DAILY
		AM		PM		
		IN	OUT	IN	OUT	
Hotel/Meeting Facility[2]	RM	0.22	0.09	0.18	0.24	6.00[3]
Casitas Units[2]	RM	0.22	0.09	0.18	0.24	6.00[3]
Resort Villas[2]	RM	0.07	0.37	0.36	0.18	5.86
Retail Facilities[2]	TSF	1.87	1.19	5.21	5.64	121.09
Restaurants[2]	TSF	4.82	4.45	6.52	4.34	130.34
Health Spa/Fitness Center[2]	TSF	0.14	0.16	2.62	1.68	30.00[4]
Golf Course[2]	HOLE	1.75	0.47	1.21	1.53	35.74
Driving Range[5]	AC	1.47	0.63	3.15	3.15	70.00

[1] RM = Rooms
TSF = Thousand Square Feet
AC = Acres

[2] Source: Institute of Transportation Engineers (ITE), Trip Generation, Sixth Edition, 1997, Land Use Categories 330, 820, 832, 493, 430 and 230.

[3] Daily trip rates based upon Austin-Foust Associates, Resort Hotel Traffic Study (1986).

[4] Daily trip rate based upon San Diego Association of Governments (SANDAG), Traffic Generators, July 1998.

[5] Trip rates based upon San Diego Association of Governments (SANDAG), Traffic Generators, July 1998.

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TABLE 3

PROJECT TRIP GENERATION

LAND USE	QUANTITY	UNITS[1]	PEAK HOUR				DAILY
			AM		PM		
			IN	OUT	IN	OUT	
Hotel/Meeting Facility	400	RM	88	36	72	96	2,400
Casitas Units	150	RM	33	14	27	36	900
Resort Villas	32	RM	2	12	12	6	188
Retail Facilities[2]	20.0	TSF	15	10	42	45	969
Restaurants[2]	22.5	TSF	43	40	59	39	1,173
Health Spa/Fitness Center[3]	22.0	TSF	1	1	17	11	198
Golf Course[4]	9	HOLES	7	2	5	6	145
Driving Range[4]	9	AC	6	3	13	13	290
TOTAL			195	118	247	252	6,263

[1] RM = Rooms
TSF = Thousand Square Feet
AC = Acres

[2] Based on marketing information provided by the project team, the project trip generation assumes 60% internal hotel use and 40% outside community use. It is assumed that a percentage of patrons without the hotel will use the other facilities on-site. The project trip generation has been adjusted to account for only new trips associated with the project. This internal use does not constitute a new project trip as the patron is already on-site.

[3] Based on marketing information provided by the project team, the project trip generation assumes 70% internal hotel use and 30% outside community use. It is assumed that a percentage of patrons without the hotel will use the other facilities on-site. The project trip generation has been adjusted to account for only new trips associated with the project. This internal use does not constitute a new project trip as the patron is already on-site.

[4] Based on marketing information provided by the project team, the project trip generation assumes 55% internal hotel use and 45% outside community use. It is assumed that a percentage of patrons without the hotel will use the other facilities on-site. The project trip generation has been adjusted to account for only new trips associated with the project. This internal use does not constitute a new project trip as the patron is already on-site.

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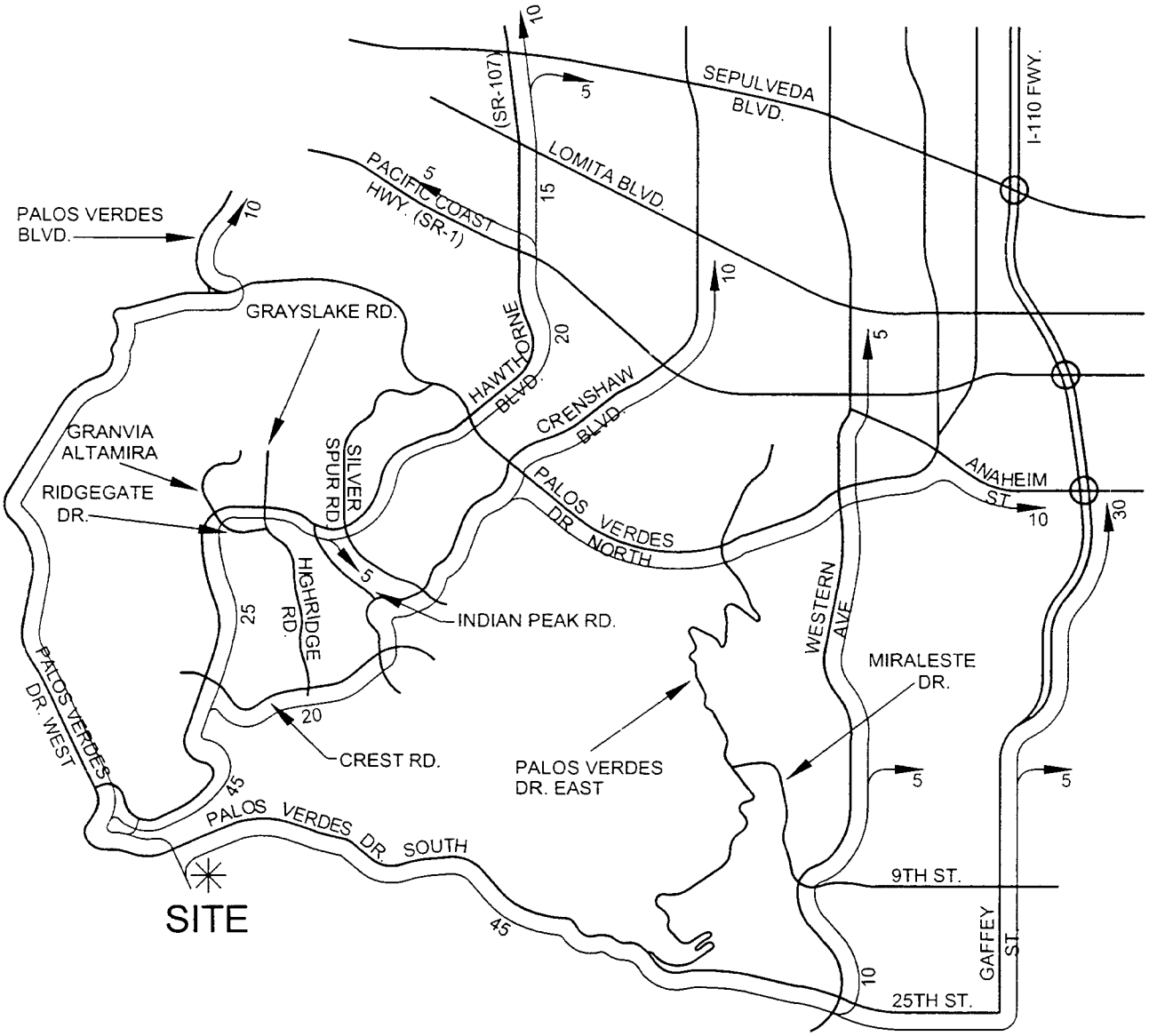
existing land uses and highways within the community and existing traffic volumes. It should also be noted that the resort hotel will provide directional assistance within promotional material that will affect patrons driving patterns for visiting the project site.

Trip distribution for this study has been based upon near-term conditions, based upon those highway facilities which are in place. The trip distribution pattern for the project is graphically depicted on Exhibit G.

The assignment of traffic from the site to the adjoining roadway system has been based upon the site's trip generation, trip distributions, existing arterial highway and local street systems, which would be in place by the time of occupancy of the project site. Based on the identified project trip generation and distribution, project related ADT volumes are shown on Exhibits H. Project AM and PM peak hour intersection turning movement volumes are shown on Exhibits I and J, respectively.

EXHIBIT G

PROJECT TRIP DISTRIBUTION



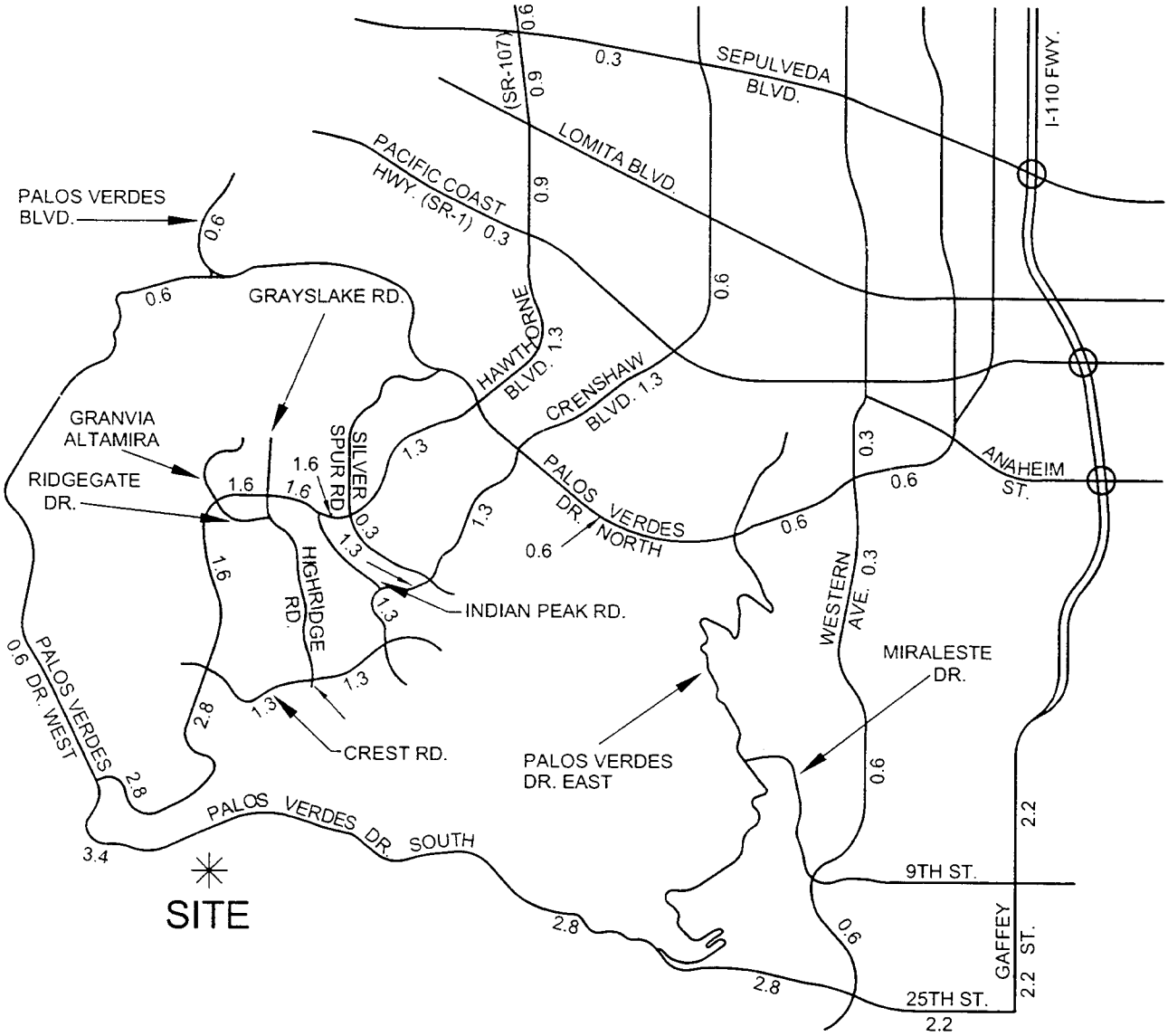
LEGEND:

10 = PERCENT TO/FROM PROJECT

N

EXHIBIT H

PROJECT AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

3.4 = VEHICLES PER DAY (1000'S)

EXHIBIT I

PROJECT AM PEAK HOUR INTERSECTION VOLUMES

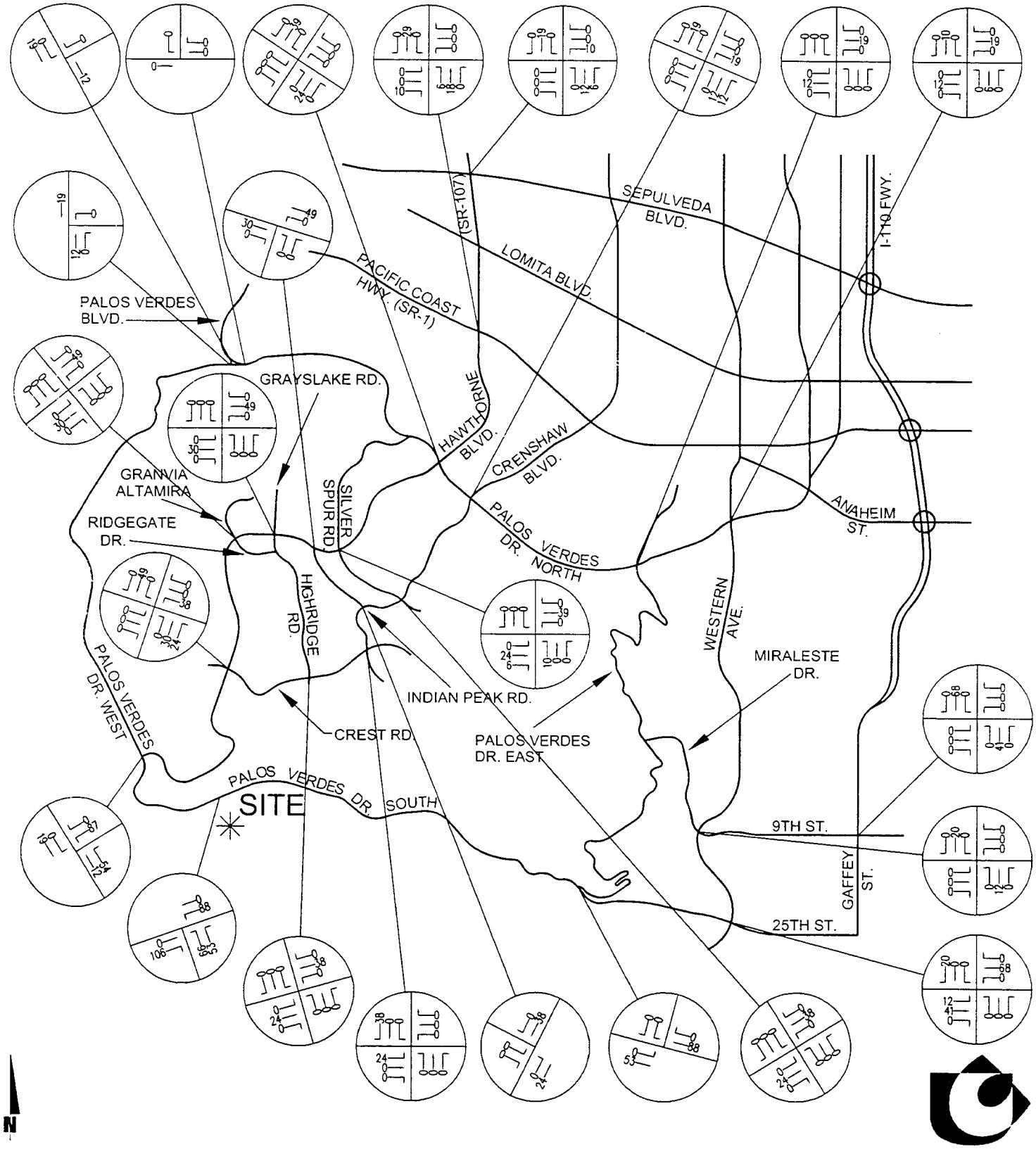
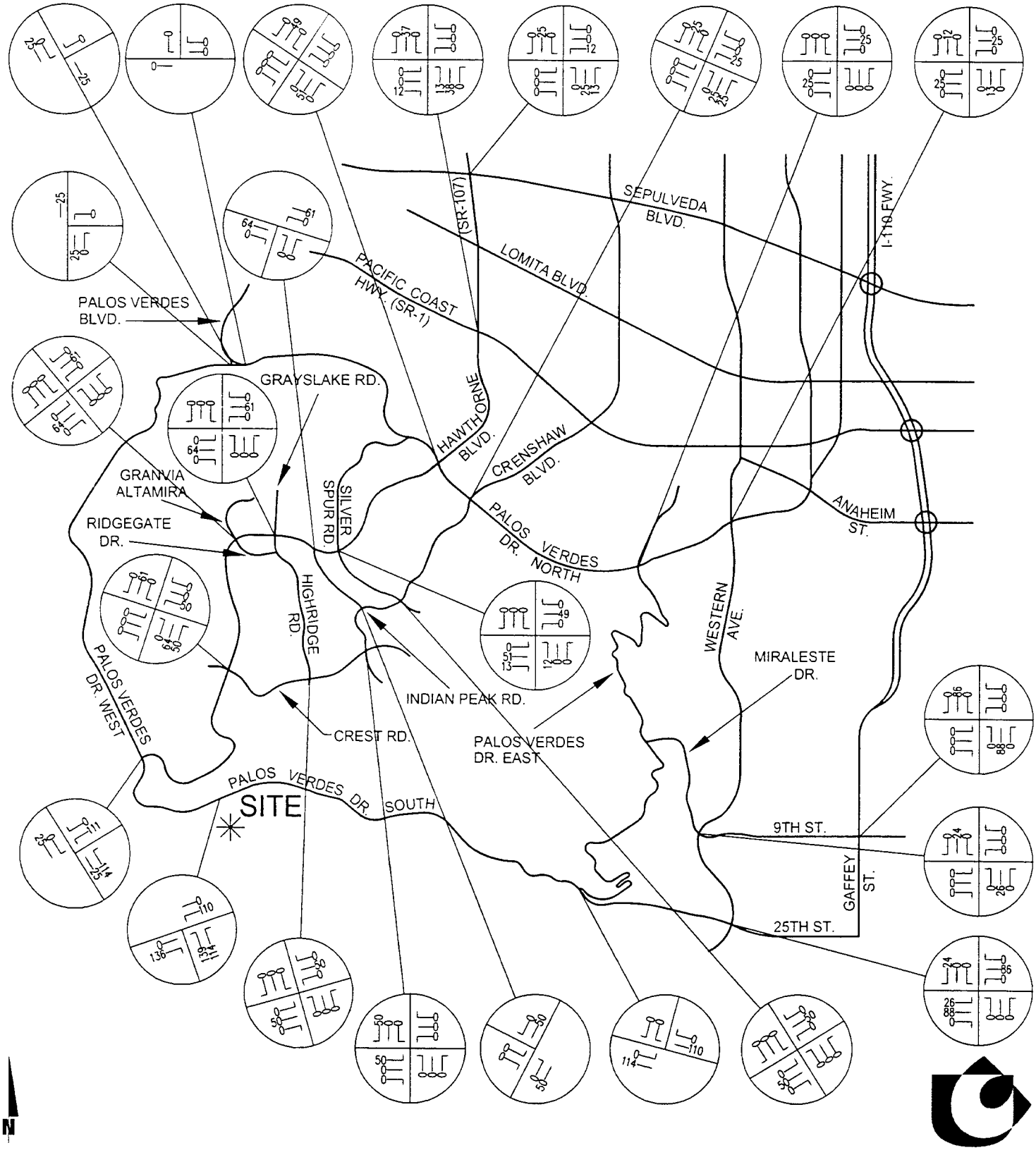


EXHIBIT J

PROJECT PM PEAK HOUR INTERSECTION VOLUMES



EXISTING PLUS AMBIENT GROWTH TRAFFIC CONDITIONS

Method of Projection

To assess future traffic conditions, existing traffic is combined with ambient growth. To account for ambient growth on roadways, future traffic volumes have been calculated based on a 0.5 percent annual growth rate of existing traffic volumes to the Year 2010. Ambient growth has been based upon a growth factor obtained from the latest 1997 Congestion Management Program (CMP) for Los Angeles County prepared by the Los Angeles County Metropolitan Transportation Authority (MTA), as follows:

1992 Factor: 1.000 (Base Year)
2010 Factor: 1.097
Approximate Annual Growth Rate: 0.5%

This analysis follows the County of Los Angeles traffic study guidelines and is intended to be consistent with traffic impact analysis guidelines set forth in the CMP prepared by the Los Angeles County MTA.

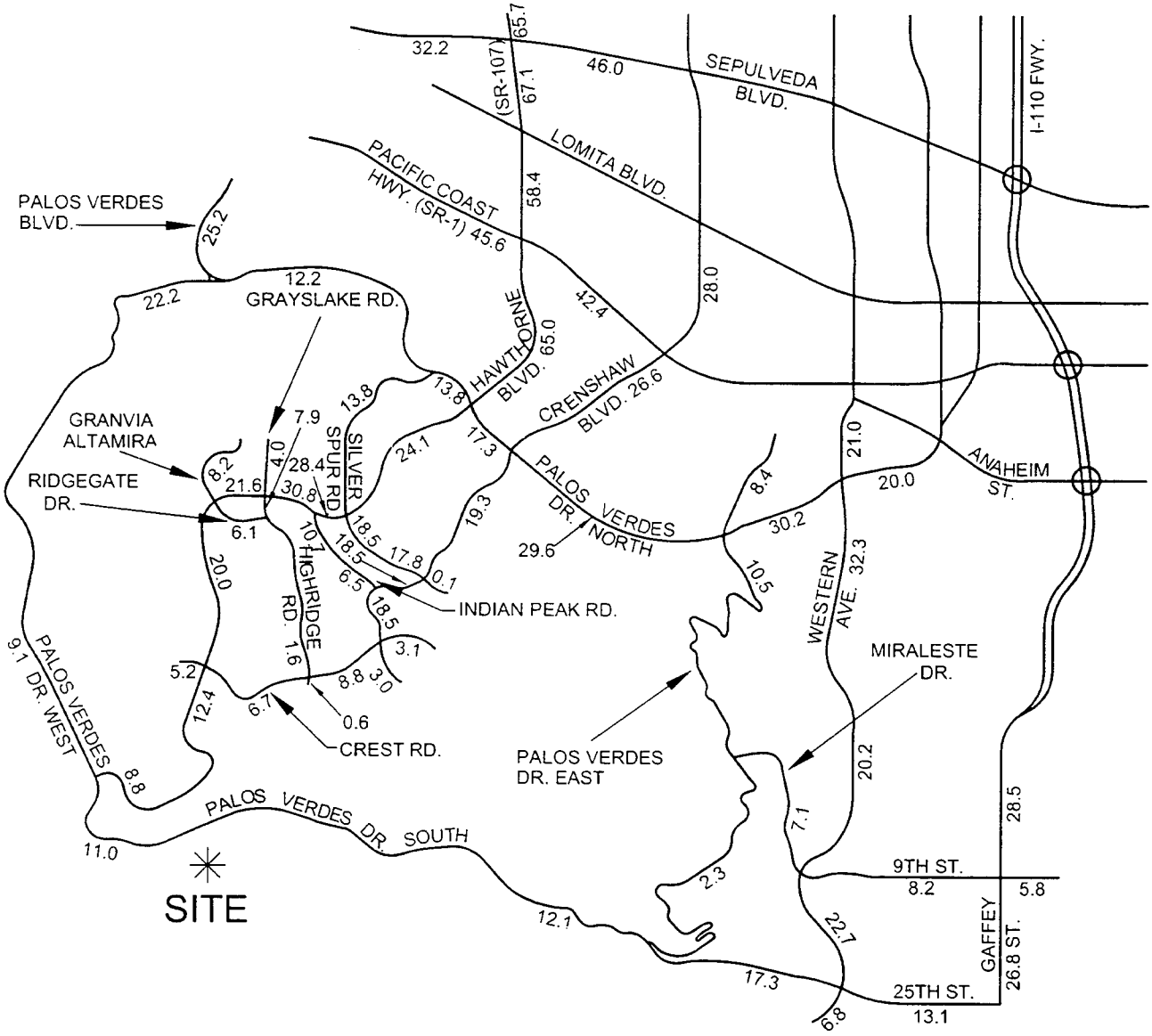
For future traffic conditions, ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways, in addition to traffic generated by the project and other development.

Existing Plus Ambient Growth Average Daily Traffic

Once the ambient growth related traffic is added to existing volumes in the study area, the traffic impact can be assessed. Exhibit K shows ADT volumes for existing plus ambient growth traffic conditions.

EXHIBIT K

EXISTING PLUS AMBIENT GROWTH AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

11.0 = VEHICLES PER DAY (1000'S)

A traffic signal is projected to be warranted at the following study area intersection for existing plus ambient growth traffic conditions (see Appendix "E"):

Crenshaw Boulevard (NS) at:

- Crest Road (EW)

Existing Plus Ambient Growth Intersection Analysis

The ICU methodology has been utilized to evaluate intersection levels of service. Intersection levels of service for existing plus ambient growth traffic conditions have been calculated and are shown in Table 4. Table 4 shows ICU calculations based on the existing geometrics at the study area intersections. Existing plus ambient growth AM and PM peak hour turning movement volumes are shown on Exhibits L and M, respectively. As shown in Table 4, the study area intersections are projected to operate at Level of Service "D or better during the peak hours, except for the following study area intersections which operate at Level of Service "E" or "F" during the peak hours:

Palos Verdes Boulevard (NS) at:

- Palos Verdes Drive West – North (EW)

Silver Spur Road (NS) at:

- Hawthorne Boulevard (EW)

Hawthorne Boulevard (NS) at:

- Sepulveda Boulevard (EW)

TABLE 4

INTERSECTION ANALYSIS FOR EXISTING PLUS AMBIENT GROWTH CONDITIONS

	INTERSECTION APPROACH LANES[1]												ICU[2]		LOS[3]	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND						
INTERSECTION	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Palos Verdes Blvd. (NS) at:																
• Palos Verdes Dr. West-North (EW)	0	1	0	1	1	0	0	0	0	0	0	1>>	0.91	0.81	E	D
• Palos Verdes Dr. West-South (EW)	0	1	1>>	0	1	0	0	0	0	1	0	0	0.88	0.87	D	D
• Palos Verdes Dr. West-East (EW)	0	1	0	0	1	1	1	0	0	0	0	0	0.36	0.51	A	A
Palos Verdes Dr. West (NS) at:																
• Hawthorne Blvd. (EW)	0	2	1	1	2	0	0	0	0	1	0	1	0.52	0.47	A	A
Granvia Altamina (NS) at:																
• Hawthorne Blvd. (EW)	0	1	1	1.5	0.5	1	1	2	1	1	2	1	0.61	0.60	B	A
Highridge Rd. (NS) at:																
• Hawthorne Blvd. (EW)	1	1	1>	0	1	0	1	2	1	1	2	1	0.85	0.69	D	B
• Crest Rd. (EW)	0	1	0	1	1	0	1	2	0	1	2	0	0.28	0.28	A	A
Indian Peak Rd. (NS) at:																
• Hawthorne Blvd. (EW)	2	0	1>	0	0	0	0	2	1>	1	2	0	0.69	0.72	B	C
• Crenshaw Blvd. (EW)	0	0	0	1	0	1>	1	2	0	0	2	1	0.60	0.58	A	A
Silver Spur Rd. (NS) at:																
• Hawthorne Blvd. (EW)	1	2	1>	1	2	0	1	2	1	1	2	1	0.91	1.02	E	F
• Crenshaw Blvd. (EW)	0	1	0	1.5	0.5	1>	1	2	0	1	2	1	0.71	0.73	C	C
Hawthorne Blvd. (NS) at:																
• Sepulveda Blvd. (EW)	2	4	1>>	2	4	1>>	2	3	0	2	3	0	0.93	1.12	E	F
• Pacific Coast Hwy. (EW)	2	3	0	2	3	1>>	1	3	0	1	3	0	0.95	1.52	E	F
• Palos Verdes Dr. North (EW)	1	2	1>>	1	2	1	1.5	1.5	0	1	1	1	0.96	0.89	E	D
• Crest Rd. (EW)	1	2	1	1	2	1	1	1	0	1	1	1	0.46	0.46	A	A
Crenshaw Blvd. (NS) at:																
• Palos Verdes Dr. North (EW)	1	2	1	1	2	1	2	2	0	2	2	0	0.83	0.71	D	C
• Crest Rd. (EW)	1	1	1	1	1.5	1.5	1.5	0.5	1>>	0	1	1	0.51	0.39	A	A
Palos Verdes Dr. East (NS) at:																
• Palos Verdes Dr. North (EW)	1	2	1	1	2	1	1	2	1	1	2	1>>	0.77	0.72	C	C
• Palos Verdes Dr. South (EW)	0	0	0	1	0	1	1	1	0	0	1	0	0.50	0.51	A	A
Western Ave. (NS) at:																
• Palos Verdes Dr. North (EW)	1	2	1	1	2	1	1	3	1	1	3	1	0.91	0.98	E	E
• 9th St. (EW)	1	2	1	1	2	1	1	2	1	1	2	1	0.50	0.58	A	A
• 25th St. (EW)	1	2	1	1	2	1>	1	2	1	1	2	0	0.61	0.72	B	C
Gaffey St. (NS) at:																
• 9th St. (EW)	1	2	1	1	2	1	1	1	1	1	1	0	0.80	0.82	C	D

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; > = Right Turn Overlap; >> = Free Right Turn

[2] Intersection Capacity Utilization (ICU).

[3] Level of Service (LOS).

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EXHIBIT L

EXISTING PLUS AMBIENT GROWTH AM PEAK HOUR INTERSECTION VOLUMES

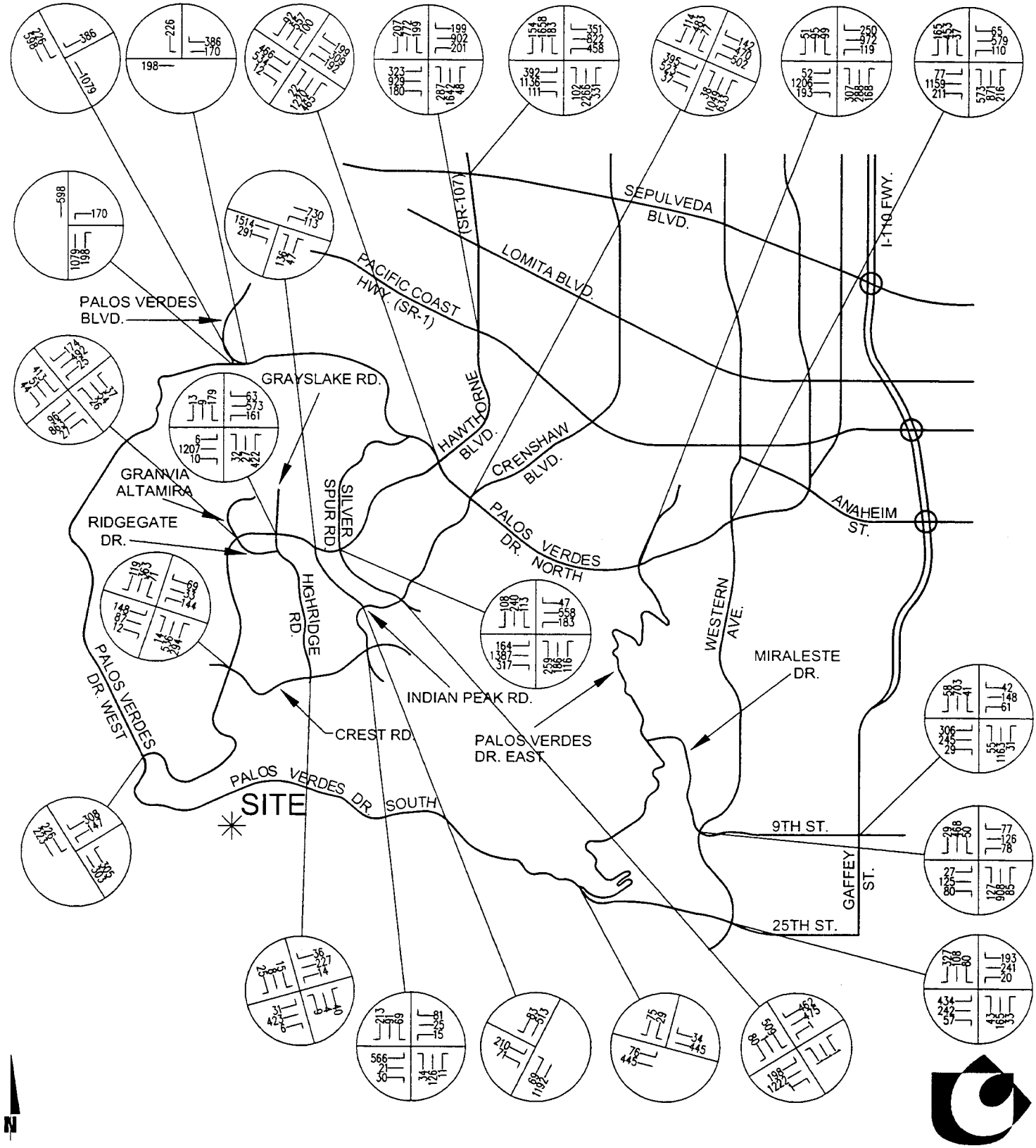
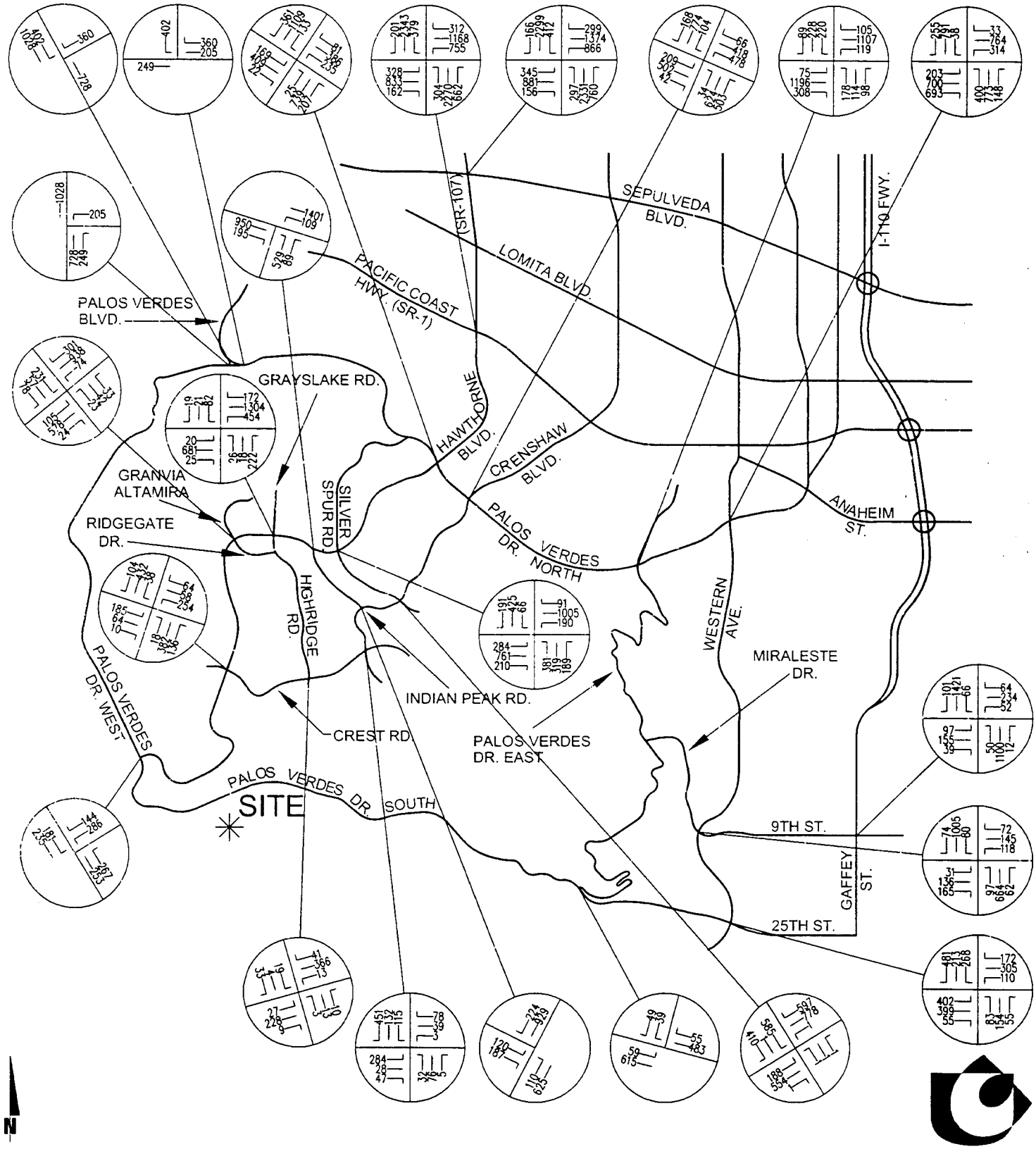


EXHIBIT M

EXISTING PLUS AMBIENT GROWTH PM PEAK HOUR INTERSECTION VOLUMES



- Pacific Coast Highway (EW)
- Palos Verdes Drive North (EW)

Western Avenue (NS) at:

- Palos Verdes Drive North (EW)

Existing plus ambient growth Level of Service calculation worksheets are included in Appendix "F".

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EXISTING PLUS AMBIENT GROWTH PLUS PROPOSED PROJECT TRAFFIC CONDITIONS

Existing Plus Ambient Growth Plus Proposed Project Average Daily Traffic

Once the ambient growth and proposed project traffic is assigned to the street network and added to existing volumes in the study area, the traffic impact can be assessed. Exhibit N shows ADT volumes for existing plus ambient growth plus proposed project traffic conditions.

A traffic signal is projected to be warranted at the following additional study area intersection for existing plus ambient growth plus proposed project traffic conditions (see Appendix "E"):

Project Entrance (NS) at:

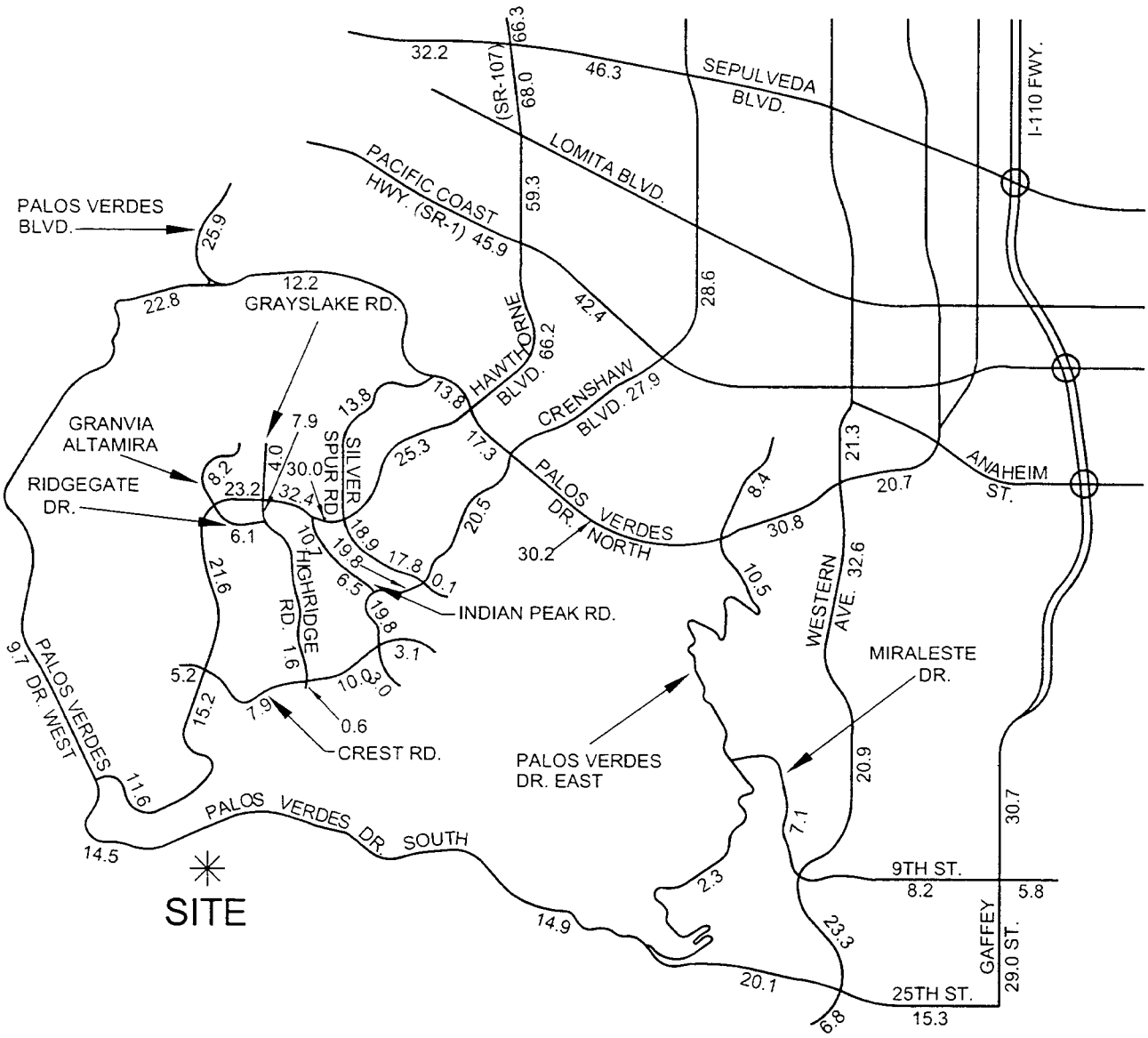
- Palos Verdes Drive South (EW)

Existing Plus Ambient Growth Plus Proposed Project Intersection Analysis

The ICU methodology has been utilized to evaluate intersection levels of service. Intersection levels of service for existing plus ambient growth plus proposed project traffic conditions have been calculated and are shown in Table 5. Table 5 shows ICU calculations based on the existing geometrics at the study area intersections. Existing plus ambient growth plus proposed project AM and PM peak hour turning movement volumes are shown on Exhibits O and P, respectively. As shown in Table 5, the study

EXHIBIT N

EXISTING PLUS AMBIENT GROWTH PLUS PROPOSED PROJECT AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

14.5 = VEHICLES PER DAY (1000'S)

TABLE 5

INTERSECTION ANALYSIS FOR EXISTING PLUS AMBIENT GROWTH PLUS PROPOSED PROJECT CONDITIONS

	INTERSECTION APPROACH LANES[1]												ICU[2]		LOS[3]	
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND						
INTERSECTION	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Palos Verdes Blvd. (NS) at:																
• Palos Verdes Dr. West-North (EW)	0	1	0	1	1	0	0	0	0	0	0	1>>	0.92	0.82	E	D
• Palos Verdes Dr. West-South (EW)	0	1	1>>	0	1	0	0	0	0	1	0	0	0.89	0.89	D	D
• Palos Verdes Dr. West-East (EW)	0	1	0	0	1	1	1	0	0	0	0	0	0.36	0.51	A	A
Palos Verdes Dr. West (NS) at:																
• Hawthorne Blvd. (EW)	0	2	1	1	2	0	0	0	0	1	0	1	0.53	0.55	A	A
Granvia Altamina (NS) at:																
• Hawthorne Blvd. (EW)	0	1	1	1.5	0.5	1	1	2	1	1	2	1	0.62	0.62	B	B
Highridge Rd. (NS) at:																
• Hawthorne Blvd. (EW)	1	1	1>	0	1	0	1	2	1	1	2	1	0.86	0.71	D	C
• Crest Rd. (EW)	0	1	0	1	1	0	1	2	0	1	2	0	0.29	0.29	A	A
Indian Peak Rd. (NS) at:																
• Hawthorne Blvd. (EW)	2	0	1>	0	0	0	0	2	1>	1	2	0	0.70	0.74	B	C
• Crenshaw Blvd. (EW)	0	0	0	1	0	1>	1	2	0	0	2	1	0.61	0.60	B	A
Silver Spur Rd. (NS) at:																
• Hawthorne Blvd. (EW)	1	2	1>	1	2	0	1	2	1	1	2	1	0.93	1.05	E	F
• Crenshaw Blvd. (EW)	0	1	0	1.5	0.5	1>	1	2	0	1	2	1	0.72	0.75	C	C
Hawthorne Blvd. (NS) at:																
• Sepulveda Blvd. (EW)	2	4	1>>	2	4	1>>	2	3	0	2	3	0	0.94	1.13	E	F
• Pacific Coast Hwy. (EW)	2	3	0	2	3	1>>	1	3	0	1	3	0	0.96	1.53	E	F
• Palos Verdes Dr. North (EW)	1	2	1>>	1	2	1	1.5	1.5	0	1	1	1	0.97	0.90	E	D
• Crest Rd. (EW)	1	2	1	1	2	1	1	1	0	1	1	1	0.49	0.50	A	A
Project Entrance (NS) at:																
• Palos Verdes Dr. South (EW)	1	0	1	0	0	0	0	2	0	1	2	0	0.35	0.47	A	A
Crenshaw Blvd. (NS) at:																
• Palos Verdes Dr. North (EW)	1	2	1	1	2	1	2	2	0	2	2	0	0.84	0.71	D	C
• Crest Rd. (EW)	1	1	1	1	1.5	1.5	1.5	0.5	1>>	0	1	1	0.52	0.41	A	A
Palos Verdes Dr. East (NS) at:																
• Palos Verdes Dr. North (EW)	1	2	1	1	2	1	1	2	1	1	2	1>>	0.77	0.73	C	C
• Palos Verdes Dr. South (EW)	0	0	0	1	0	1	1	1	0	0	1	0	0.56	0.59	A	A
Western Ave. (NS) at:																
• Palos Verdes Dr. North (EW)	1	2	1	1	2	1	1	3	1	1	3	1	0.91	0.98	E	E
• 9th St. (EW)	1	2	1	1	2	1	1	2	1	1	2	1	0.51	0.59	A	A
• 25th St. (EW)	1	2	1	1	2	1>	1	2	1	1	2	0	0.64	0.77	B	C
Gaffey St. (NS) at:																
• 9th St. (EW)	1	2	1	1	2	1	1	1	1	1	1	0	0.82	0.85	D	D

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; > = Right Turn Overlap; >> = Free Right Turn

[2] Intersection Capacity Utilization (ICU).

[3] Level of Service (LOS).

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EXHIBIT O

EXISTING PLUS AMBIENT GROWTH PLUS PROPOSED PROJECT AM PEAK HOUR INTERSECTION VOLUMES

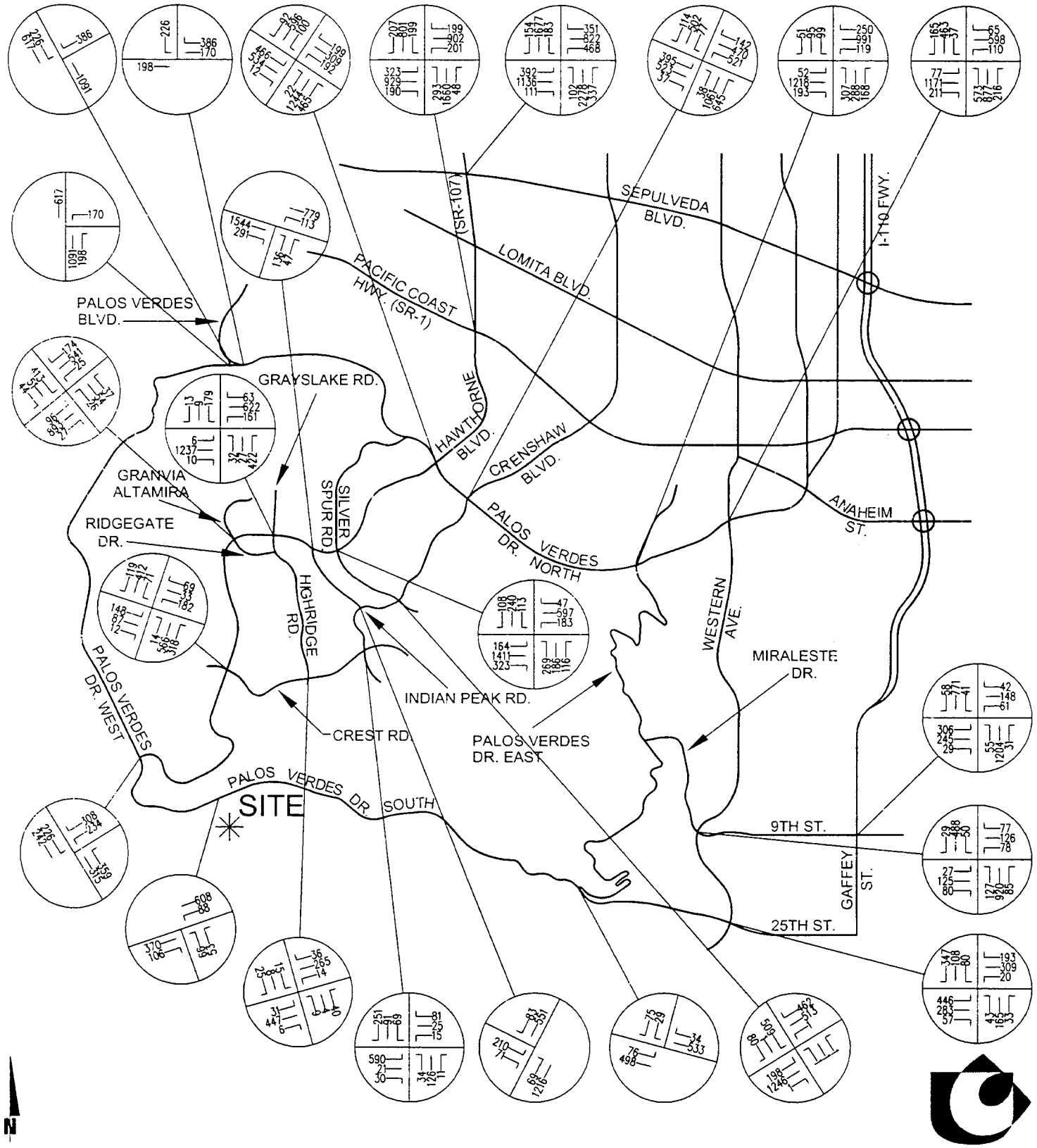
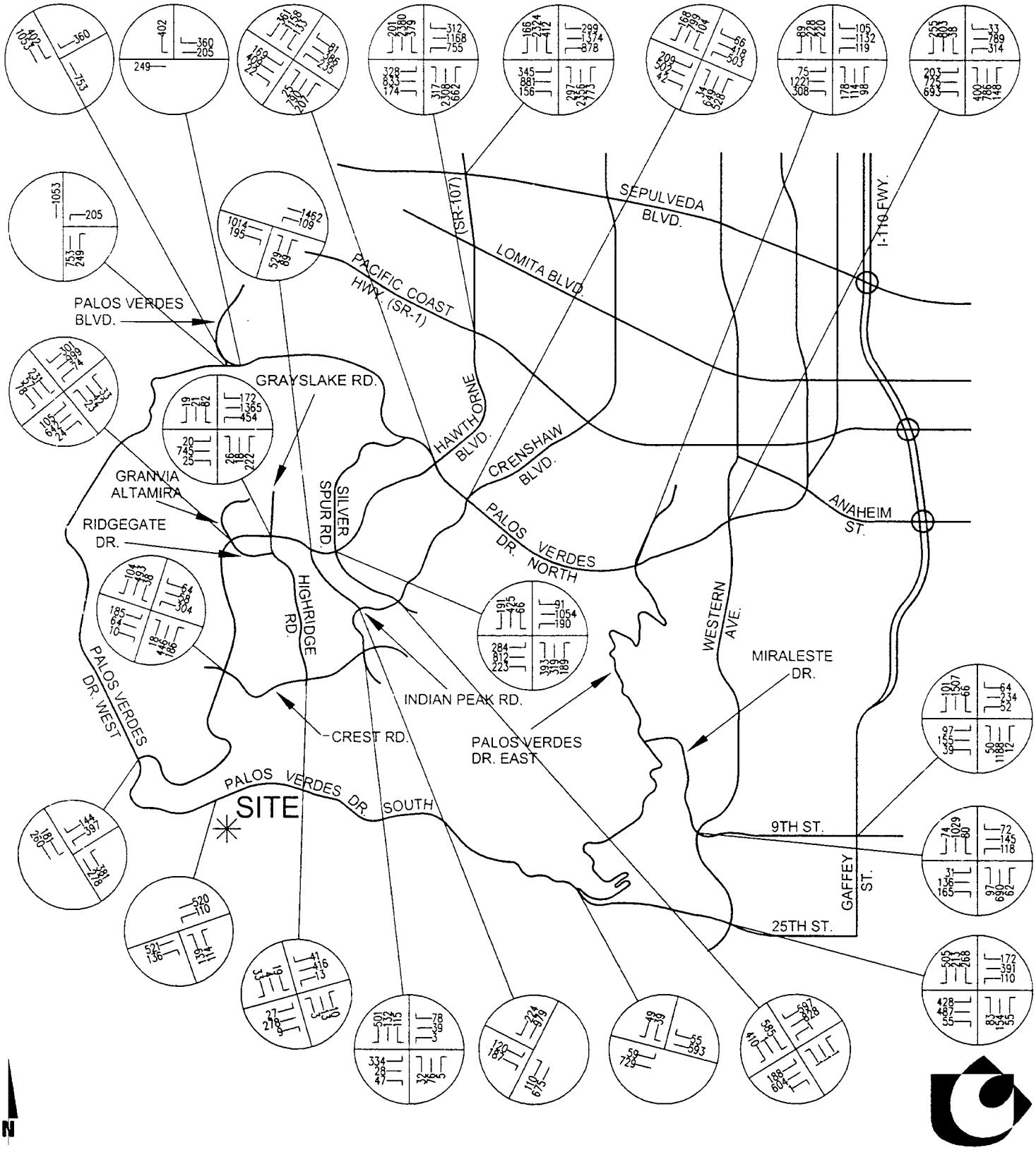


EXHIBIT P

EXISTING PLUS AMBIENT GROWTH PLUS PROPOSED PROJECT PM PEAK HOUR INTERSECTION VOLUMES



URBAN CROSSROADS

area intersections are projected to operate at Level of Service "D" or better during the peak hours, except for the following study area intersections which operate at Level of Service "E" or "F" during the peak hours:

Palos Verdes Boulevard (NS) at:

- Palos Verdes Drive West – North (EW)

Silver Spur Road (NS) at:

- Hawthorne Boulevard (EW)

Hawthorne Boulevard (NS) at:

- Sepulveda Boulevard (EW)
- Pacific Coast Highway (EW)
- Palos Verdes Drive North (EW)

Western Avenue (NS) at:

- Palos Verdes Drive North (EW)

Existing plus ambient growth plus proposed project Level of Service calculation worksheets are included in Appendix "G".

EXISTING PLUS AMBIENT GROWTH PLUS OTHER DEVELOPMENT

Other Development

Based on an analysis of trends in traffic growth in the study area, an ambient growth factor of 0.5 percent per year was used to the Year 2010. This growth factor accounts for increases in traffic resulting from traffic growth from outside the study area. This growth factor, compounded annually, was applied to the existing traffic volumes to develop an estimate of future traffic volumes.

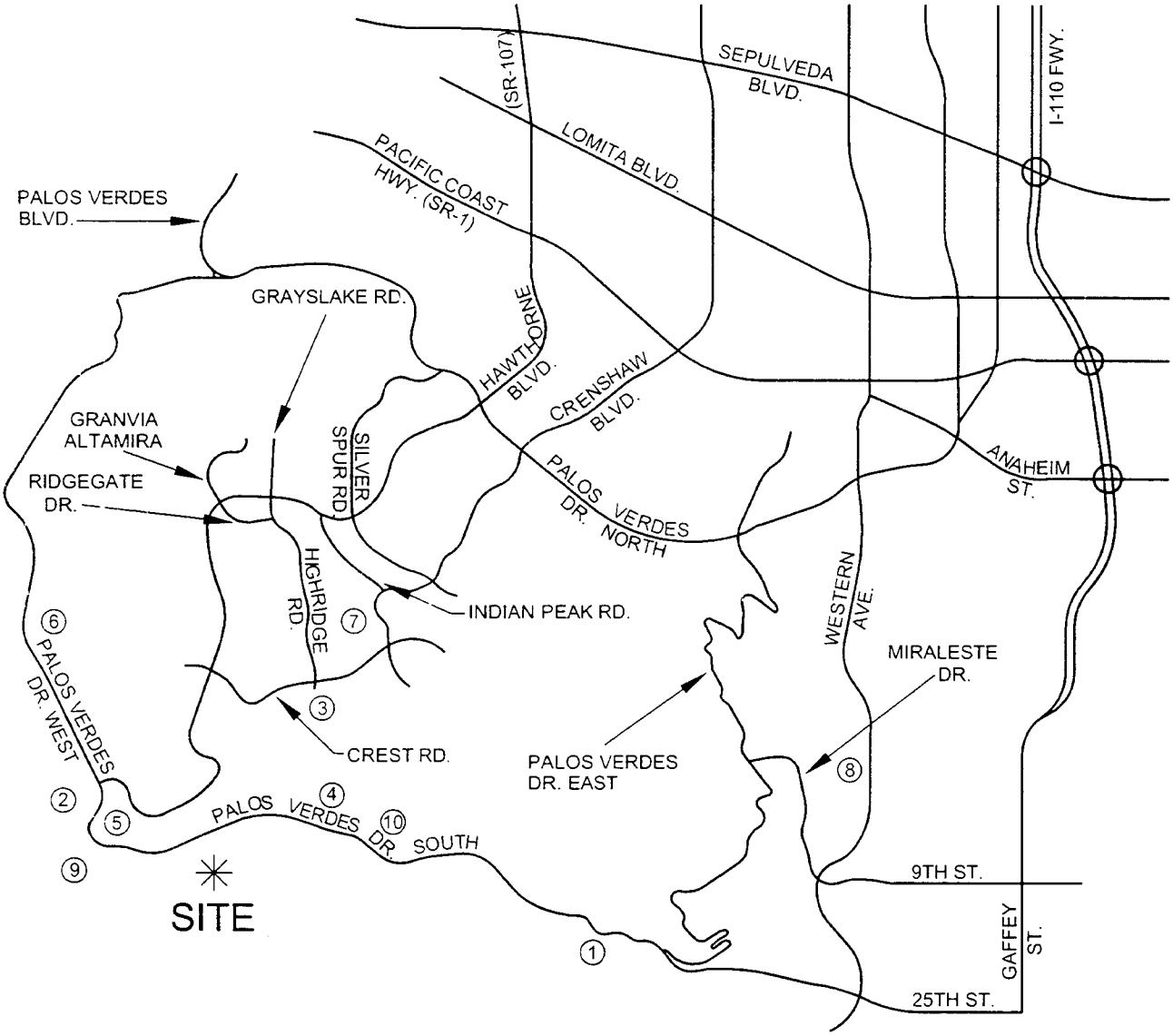
Also included in the future year analyses were other development proposed within the study area (see Exhibit Q). Information regarding potential other development was obtained from previous traffic studies in the study area and City of Rancho Palos Verdes staff.

Both daily and peak hour trip generation for the other development are shown in Table 6. The other development is projected to generate approximately 6,270 trip-ends per day with 356 vehicles per hour during the AM peak hour and 600 vehicles per hour during the PM peak hour.

The trip distributions for the other development are graphically depicted on Exhibit R to AA. Based on the other development trip generation and distributions, other development related ADT volumes are shown on Exhibit BB. Other development AM and PM peak hour intersection turning movement volumes are shown on Exhibits CC and DD, respectively.

EXHIBIT Q

OTHER DEVELOPMENT LOCATION MAP



LEGEND:

① = OTHER DEVELOPMENT LOCATION

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TABLE 6

OTHER DEVELOPMENT TRIP GENERATION

LOCATION NUMBER	PROJECT	CROSS STREETS	PEAK HOUR AM IN	PEAK HOUR AM OUT	PEAK HOUR PM IN	PEAK HOUR PM OUT	DAILY
1	Ocean Trail[1]	Palos Verdes Drive South/ West of Shoreline Park	47	52	73	56	1,399
2	Subregion 1[2]	Palos Verdes Drive West/ Hawthorne Blvd.	15	44	51	28	756
3	Seabreeze[3]	Crest Rd./Highridge Rd.	12	35	41	23	603
4	Point View[4]	Palos Verdes Dr. South	18	52	60	33	890
5	Golden Cove Center Rehabilitation[5]	Palos Verdes Dr. West/ Hawthorne Blvd.	13	8	39	43	891
6	VTTM 52666[6]	Palos Verdes Dr. West/ Alida Pl.	2	7	8	5	124
7	Marriot Lifecare Facility[7]	Crestridge Rd./ Crenshaw Blvd.	5	2	12	9	262
8	Toso Corp. Commercial Development[8]	Western Ave./ Summerland St.	19	12	49	53	1,152
9	Point Vicente Interpretive Center[9]	Palos Verde Dr. West	6	3	4	9	170
10	Wayfarers Chapel[10]	Palos Verde Dr. West	3	1	1	3	23
TOTAL			140	216	338	262	6,270

[1] Ocean Trail consists of 75 single-family residential dwelling units, 4 affordable residential dwelling units units and an 18 hole golf course.

[2] Subregion 1 consists of 79 single-family residential dwelling units.

[3] Seabreeze consists of 63 single-family residential dwelling units.

[4] Point View consists of 93 single-family residential dwelling units.

[5] Golden Cove Center rehabilitation consists of 12,600 square feet of new commercial space within an existing 77,550 square foot shopping center.

[6] VTTM 52666 consists of 13 single-family residential dwelling units.

[7] Marriot Lifecare facility consists of 122 rooms (126 beds).

[8] Toso Corp. commercial development consists of a 6,300 square foot commercial center.

[9] Point Vicente Interpretive Center consists of the expansion of the existing 2,309 square foot facility to a 9,746 square foot facility.

[10] Wayfarers Chapel consists of moving and reconstructing a 2,000 square foot office.

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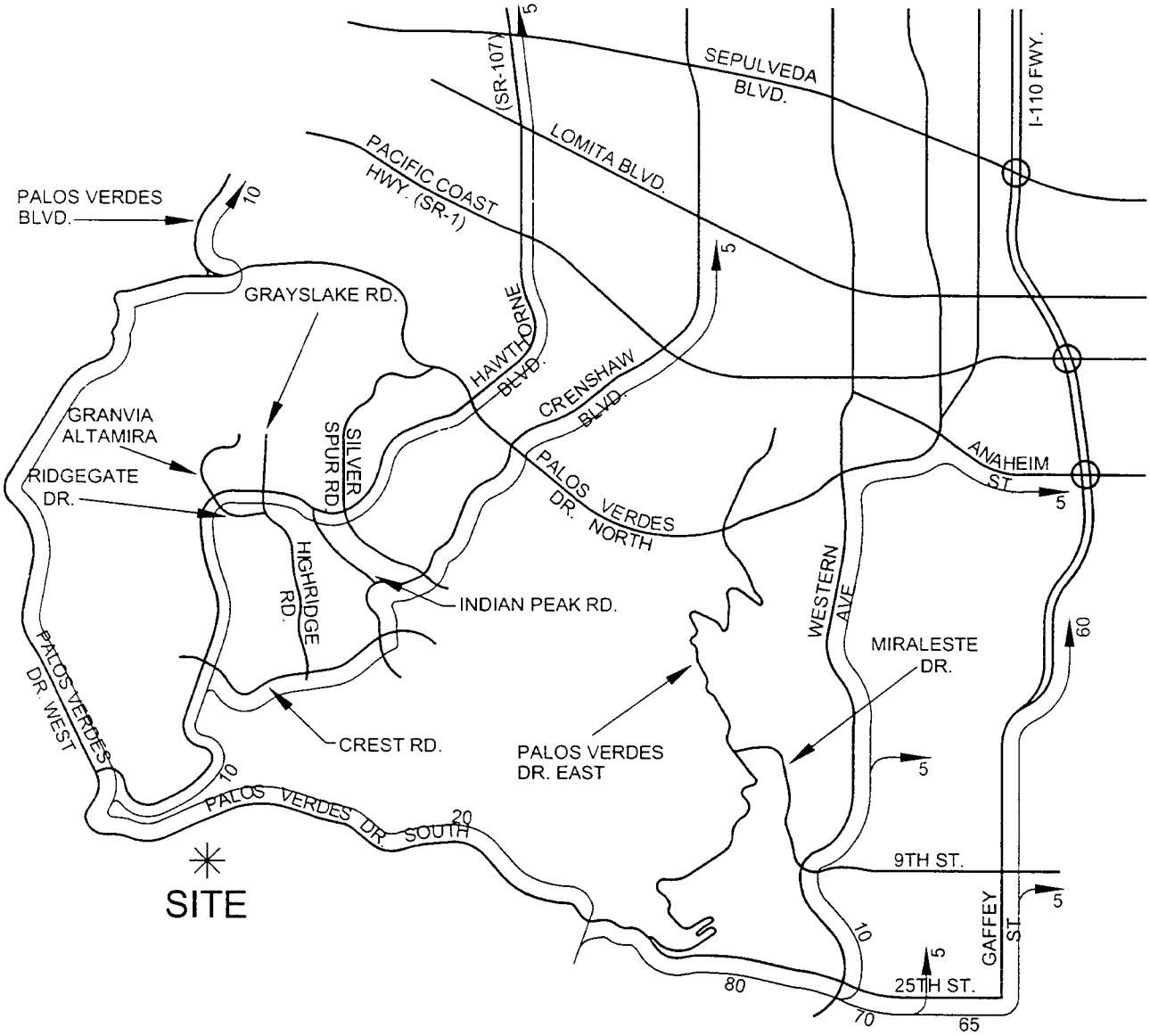
EXHIBIT R

OTHER DEVELOPMENT (LOCATION 1) TRIP DISTRIBUTION



LEGEND:

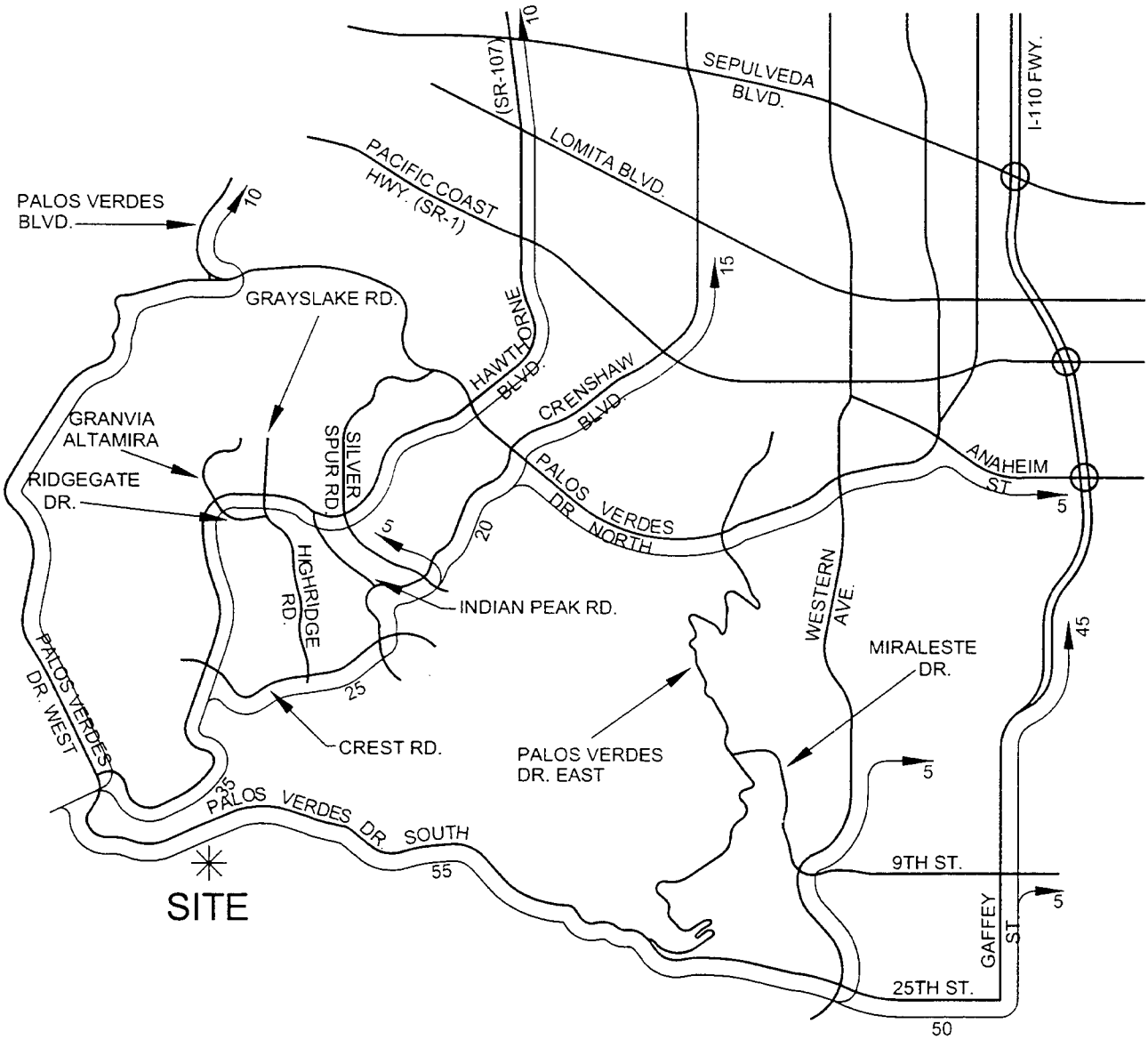
10 = PERCENT TO/FROM PROJECT

N

URBAN CROSSROADS

EXHIBIT S

OTHER DEVELOPMENT (LOCATION 2) TRIP DISTRIBUTION



LEGEND:

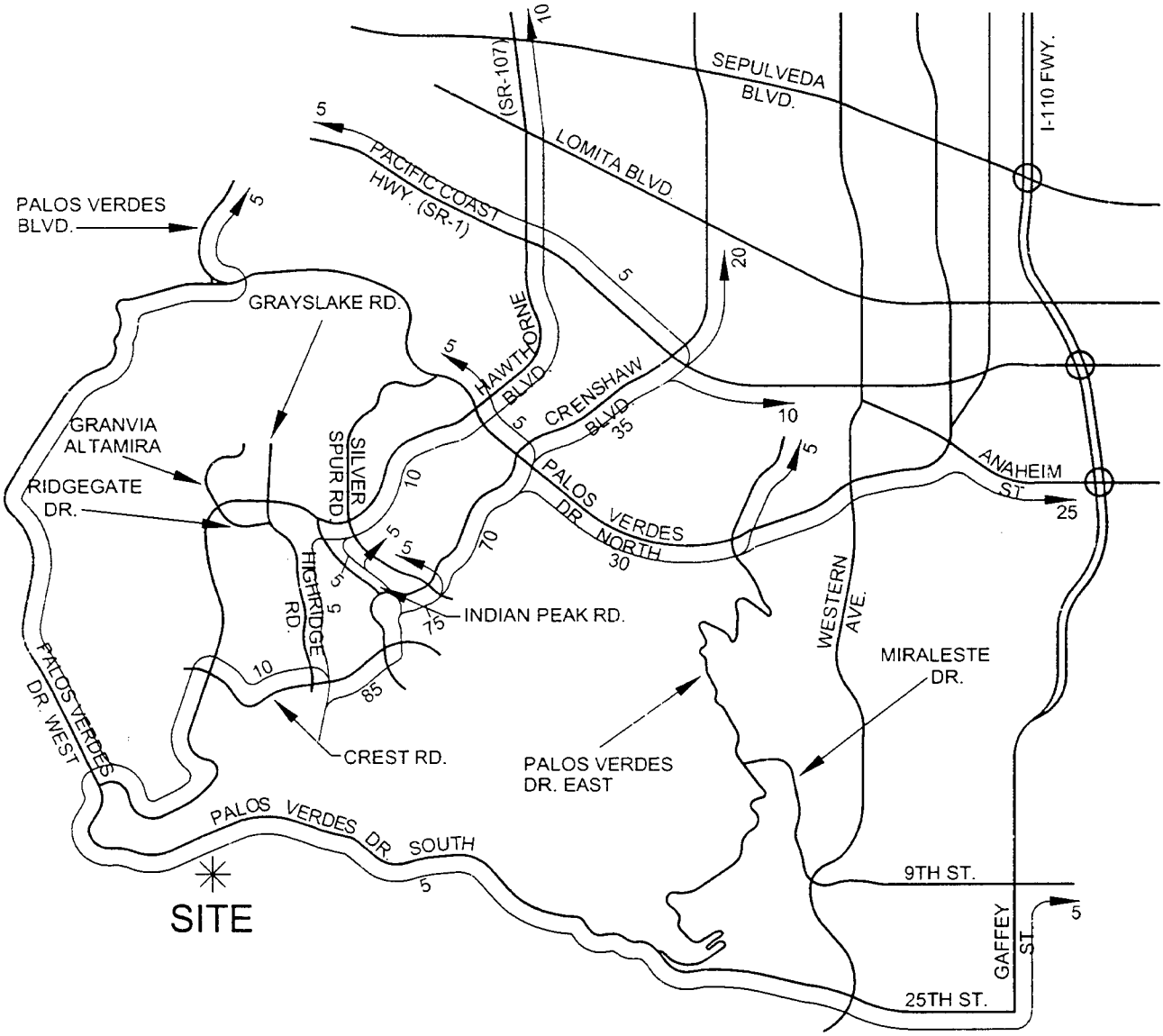
10 = PERCENT TO/FROM PROJECT

N

URBAN CROSSROADS

EXHIBIT T

OTHER DEVELOPMENT (LOCATION 3) TRIP DISTRIBUTION



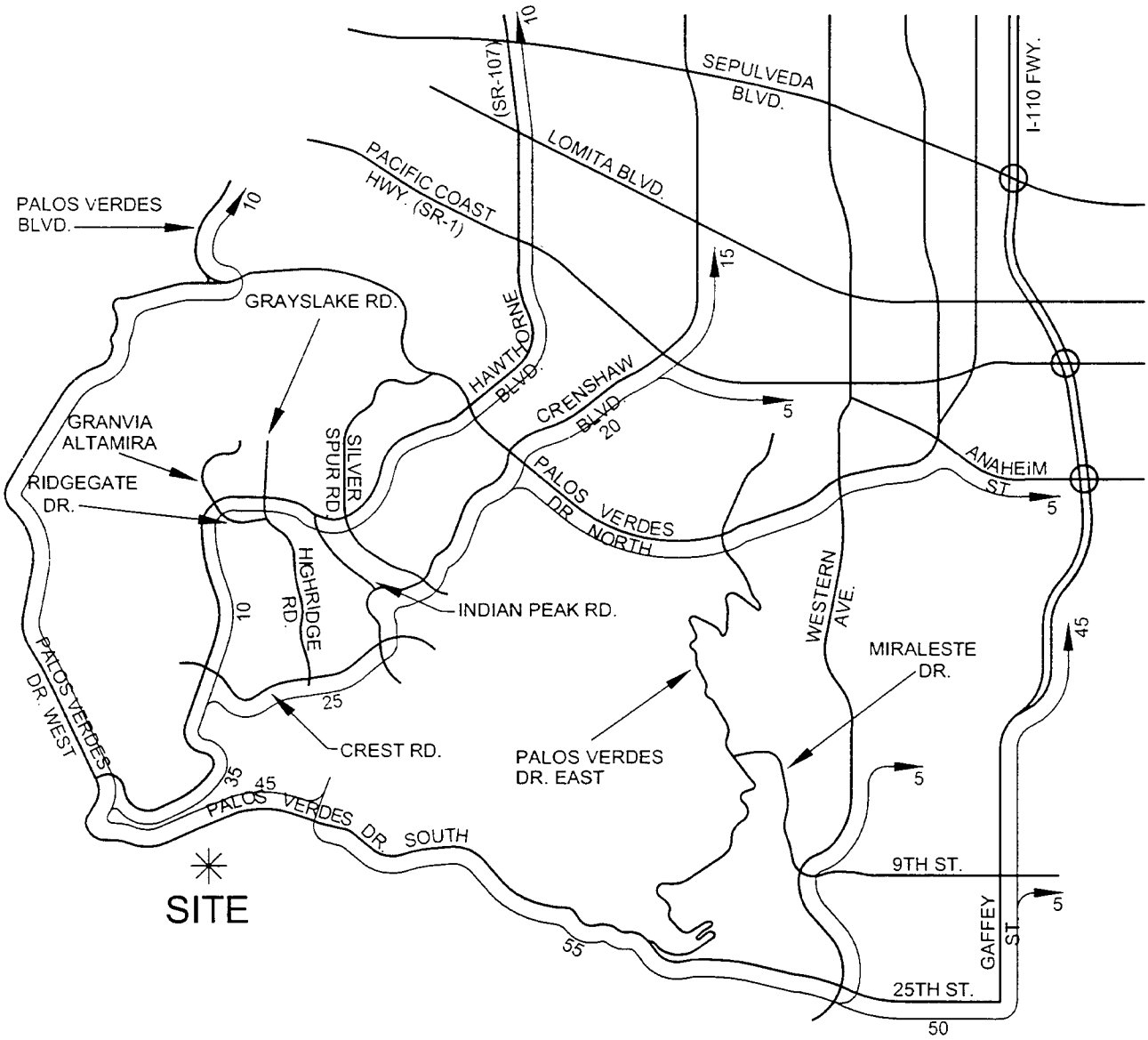
LEGEND:

10 = PERCENT TO/FROM PROJECT

N

EXHIBIT U

OTHER DEVELOPMENT (LOCATION 4) TRIP DISTRIBUTION



LEGEND:

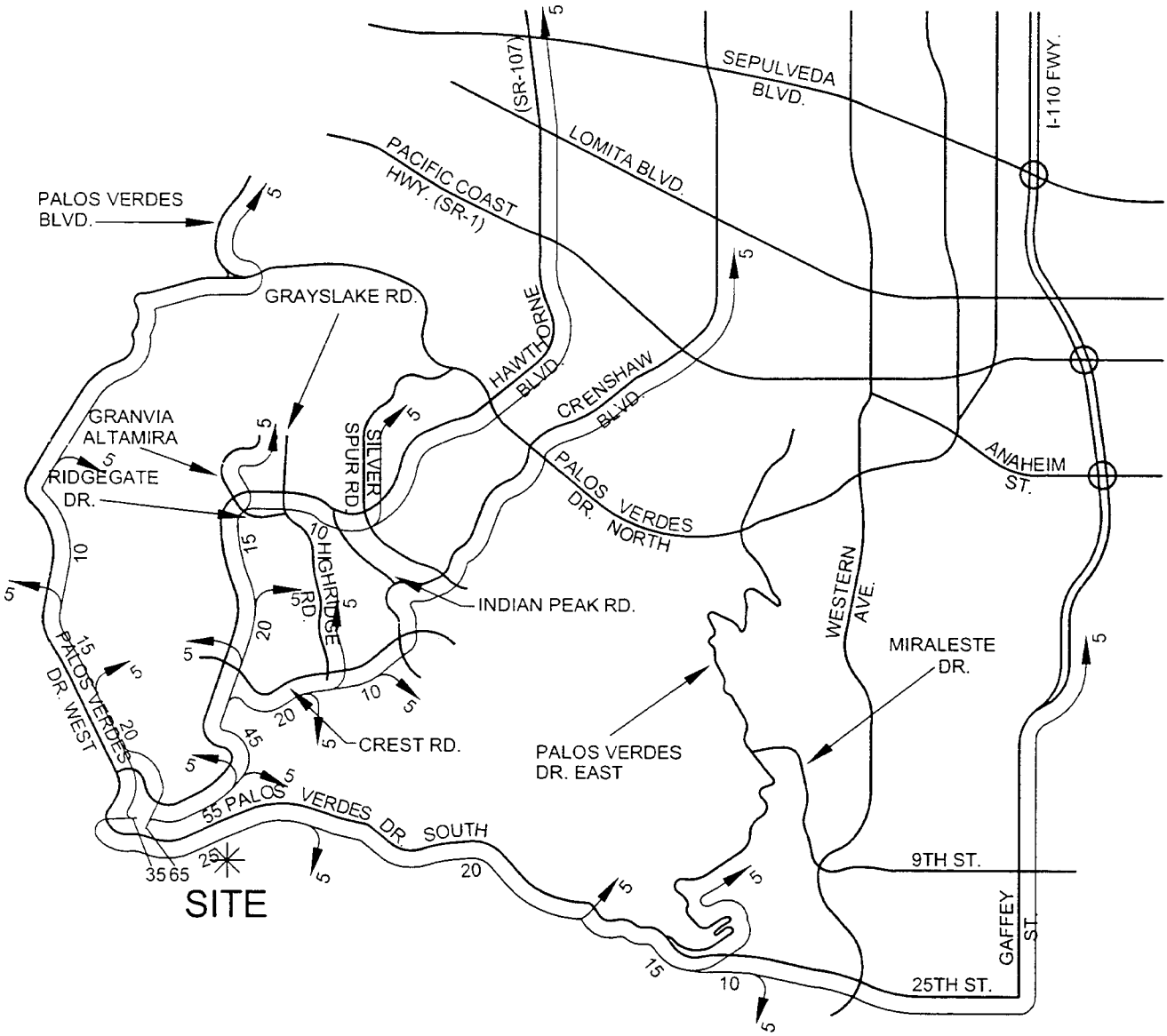
10 = PERCENT TO/FROM PROJECT

N

URBAN CROSSROADS

EXHIBIT V

OTHER DEVELOPMENT (LOCATION 5) TRIP DISTRIBUTION



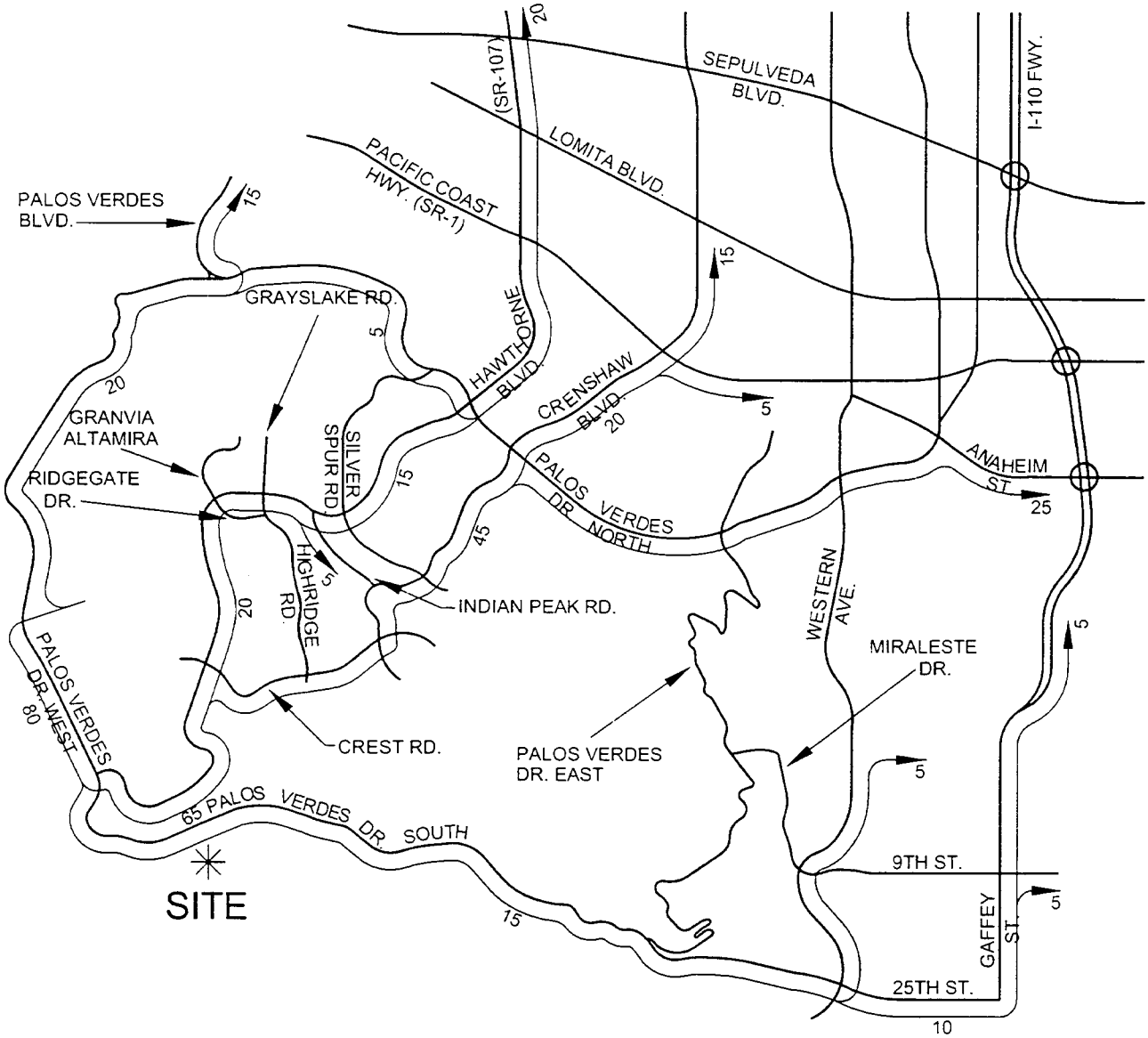
LEGEND:

10 = PERCENT TO/FROM PROJECT

N

EXHIBIT W

OTHER DEVELOPMENT (LOCATION 6) TRIP DISTRIBUTION



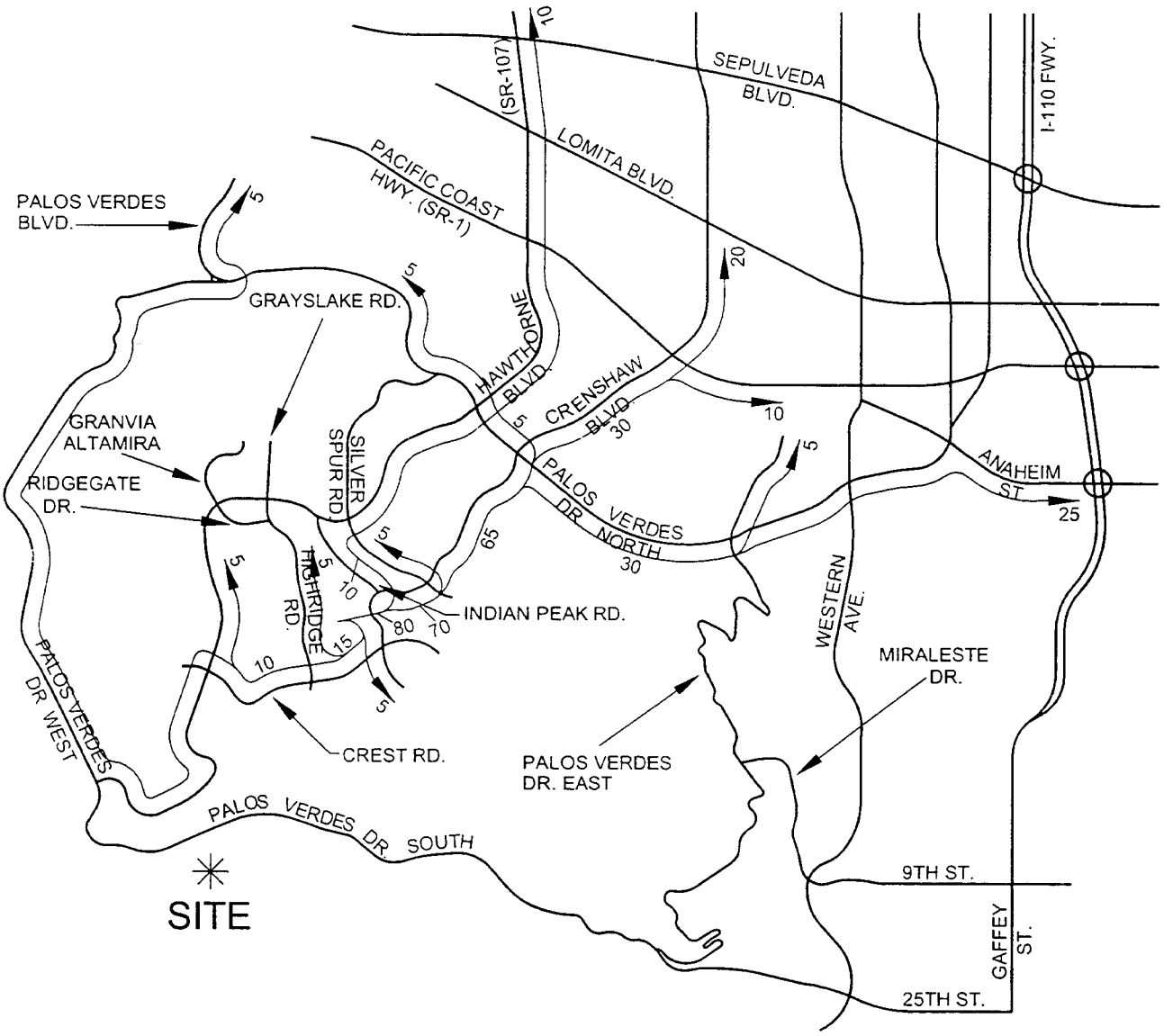
LEGEND:

10 = PERCENT TO/FROM PROJECT

N

EXHIBIT X

OTHER DEVELOPMENT (LOCATION 7) TRIP DISTRIBUTION



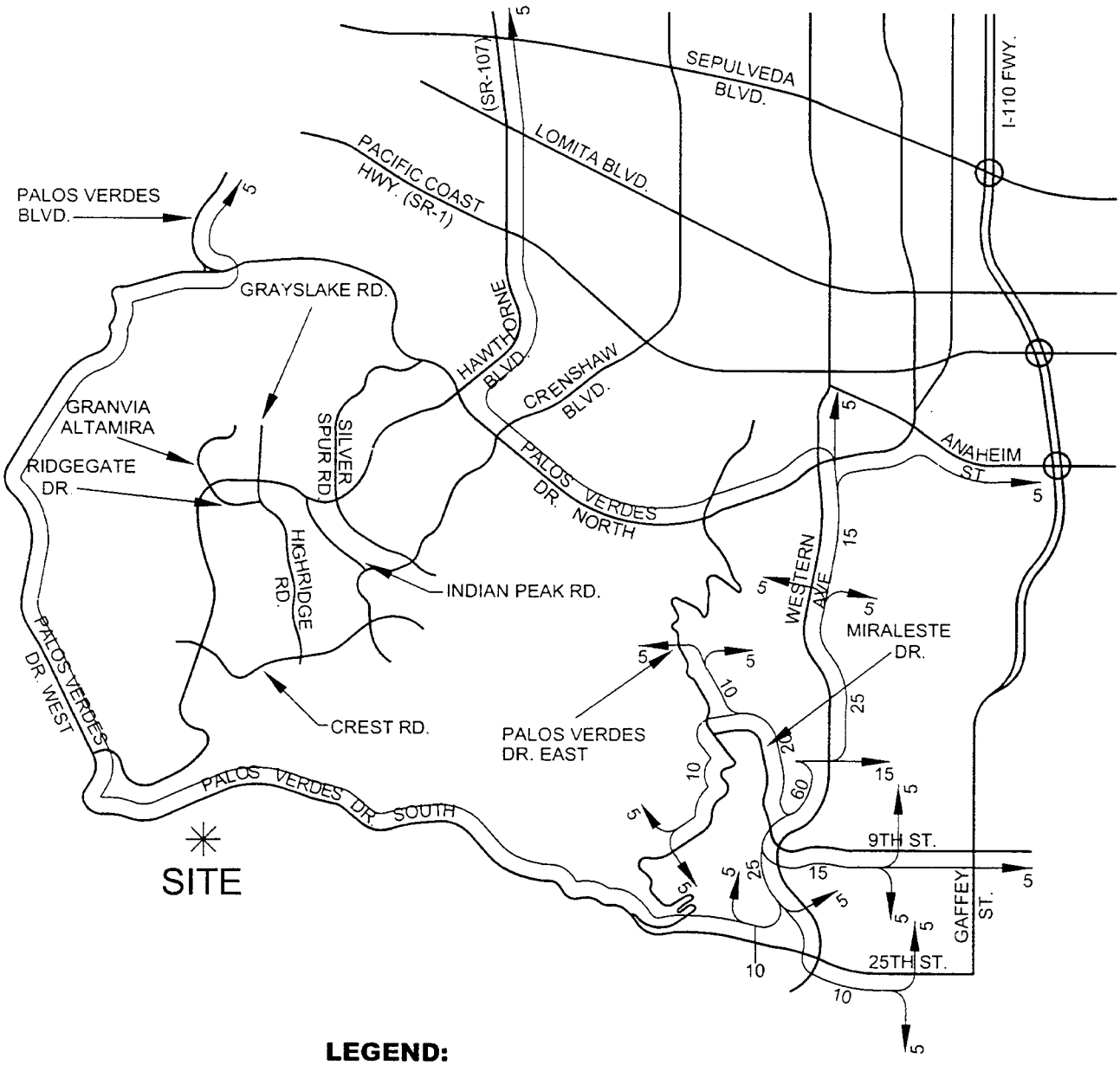
LEGEND:

10 = PERCENT TO/FROM PROJECT

N

EXHIBIT Y

OTHER DEVELOPMENT (LOCATION 8) TRIP DISTRIBUTION

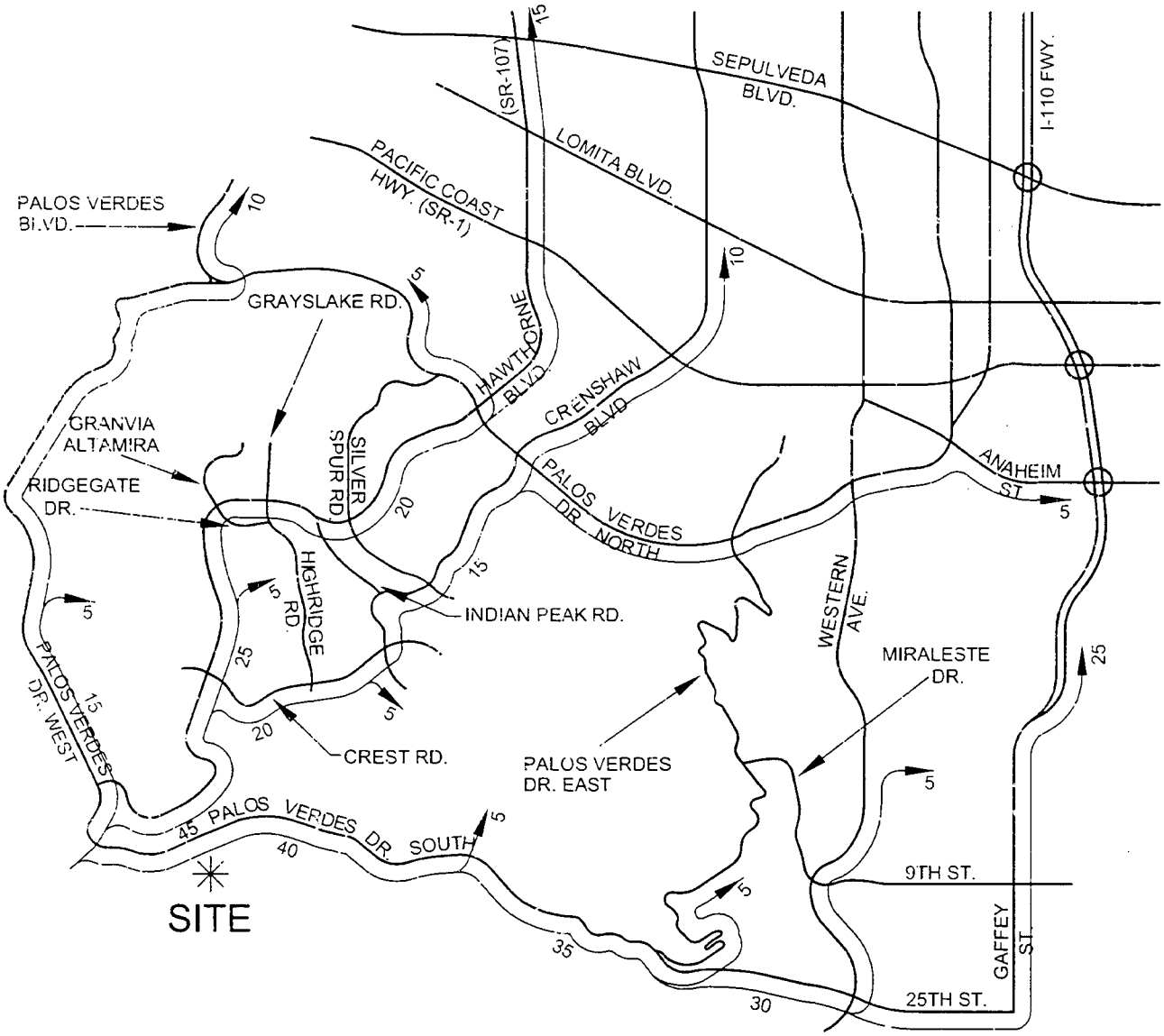


LEGEND:

10 = PERCENT TO/FROM PROJECT

EXHIBIT Z

OTHER DEVELOPMENT (LOCATION 9) TRIP DISTRIBUTION

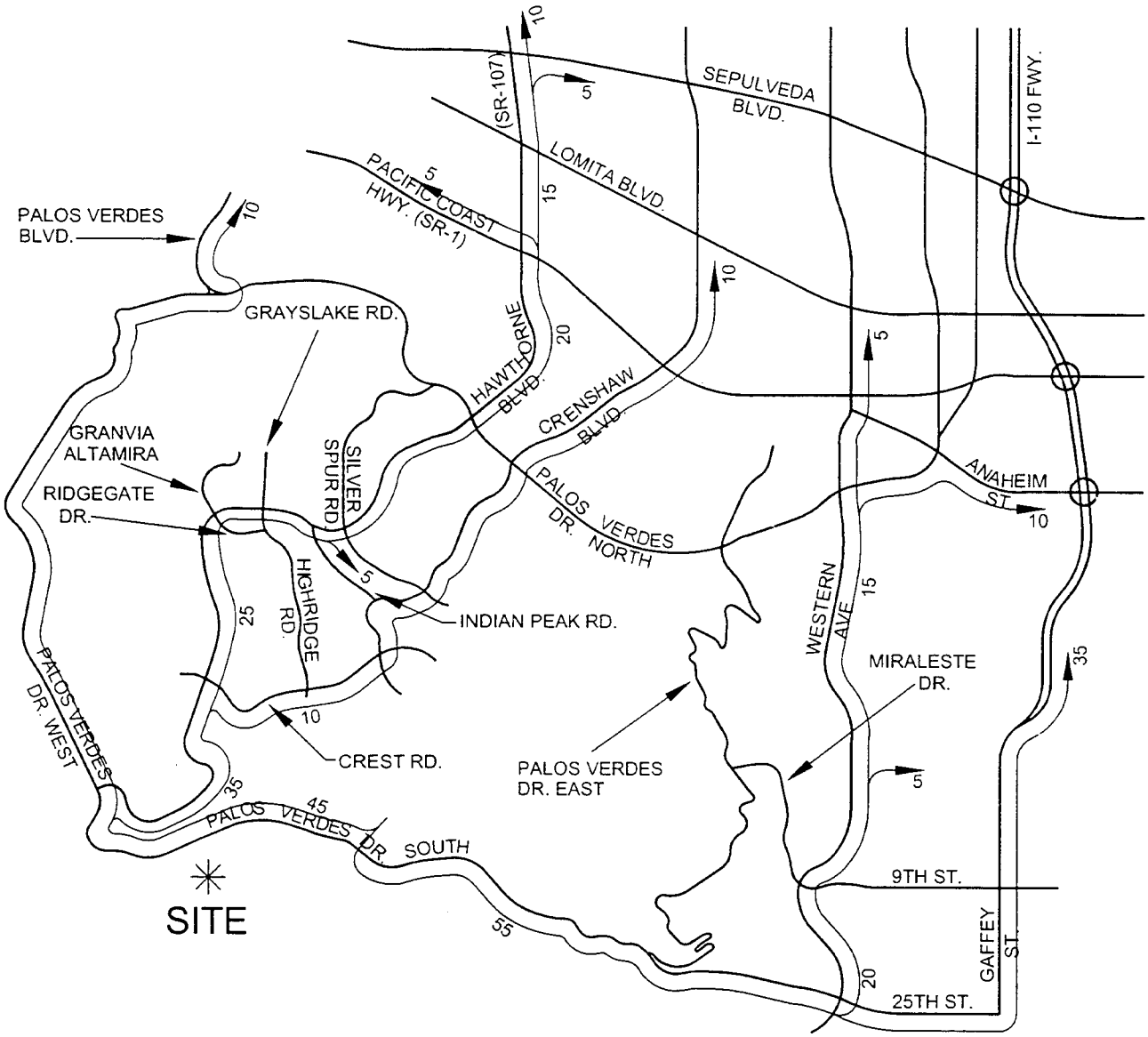


LEGEND:

10 = PERCENT TO/FROM PROJECT

EXHIBIT AA

OTHER DEVELOPMENT (LOCATION 10) TRIP DISTRIBUTION



LEGEND:

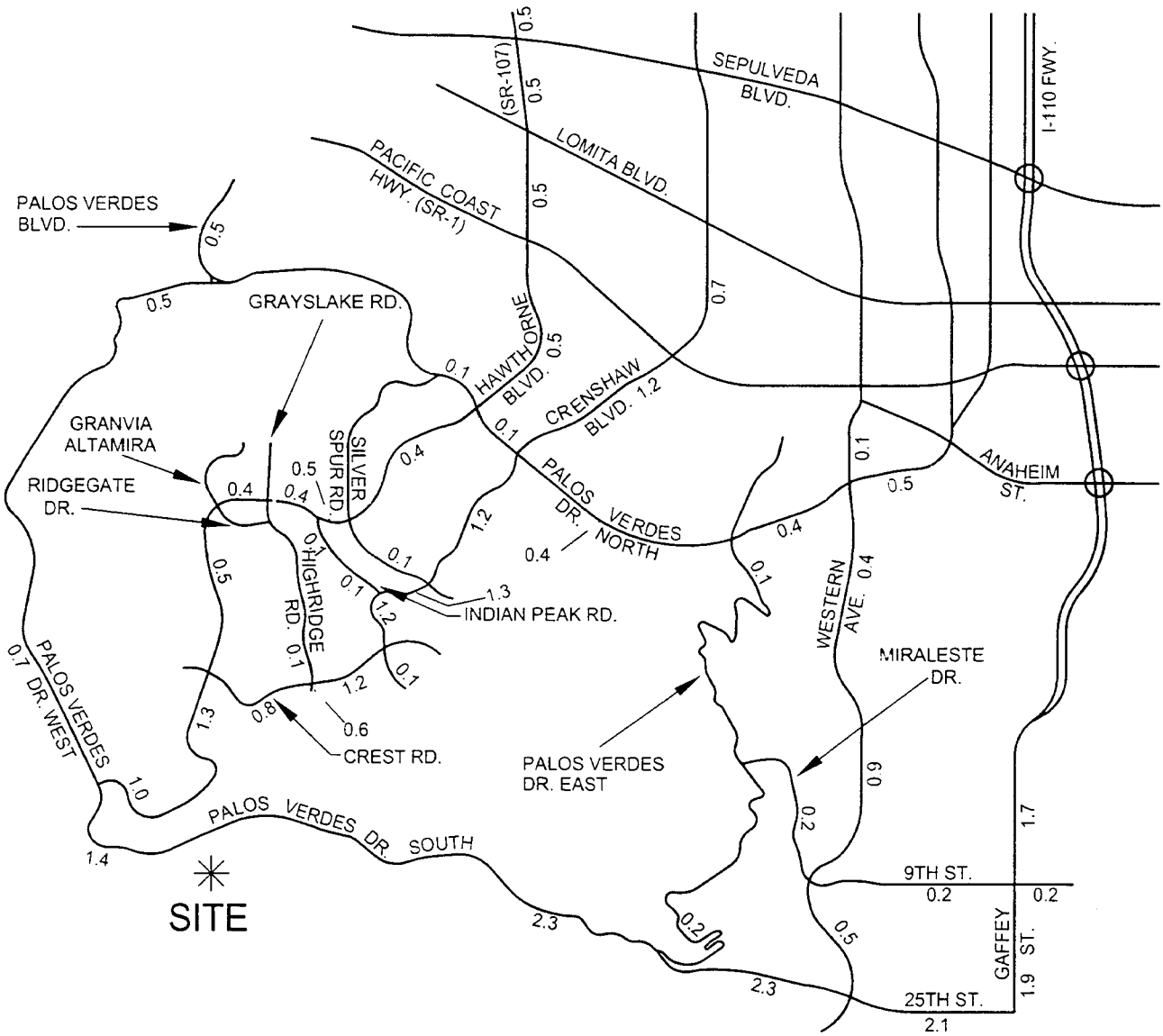
10 = PERCENT TO/FROM PROJECT

N

URBAN CROSSROADS

EXHIBIT BB

OTHER DEVELOPMENT AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

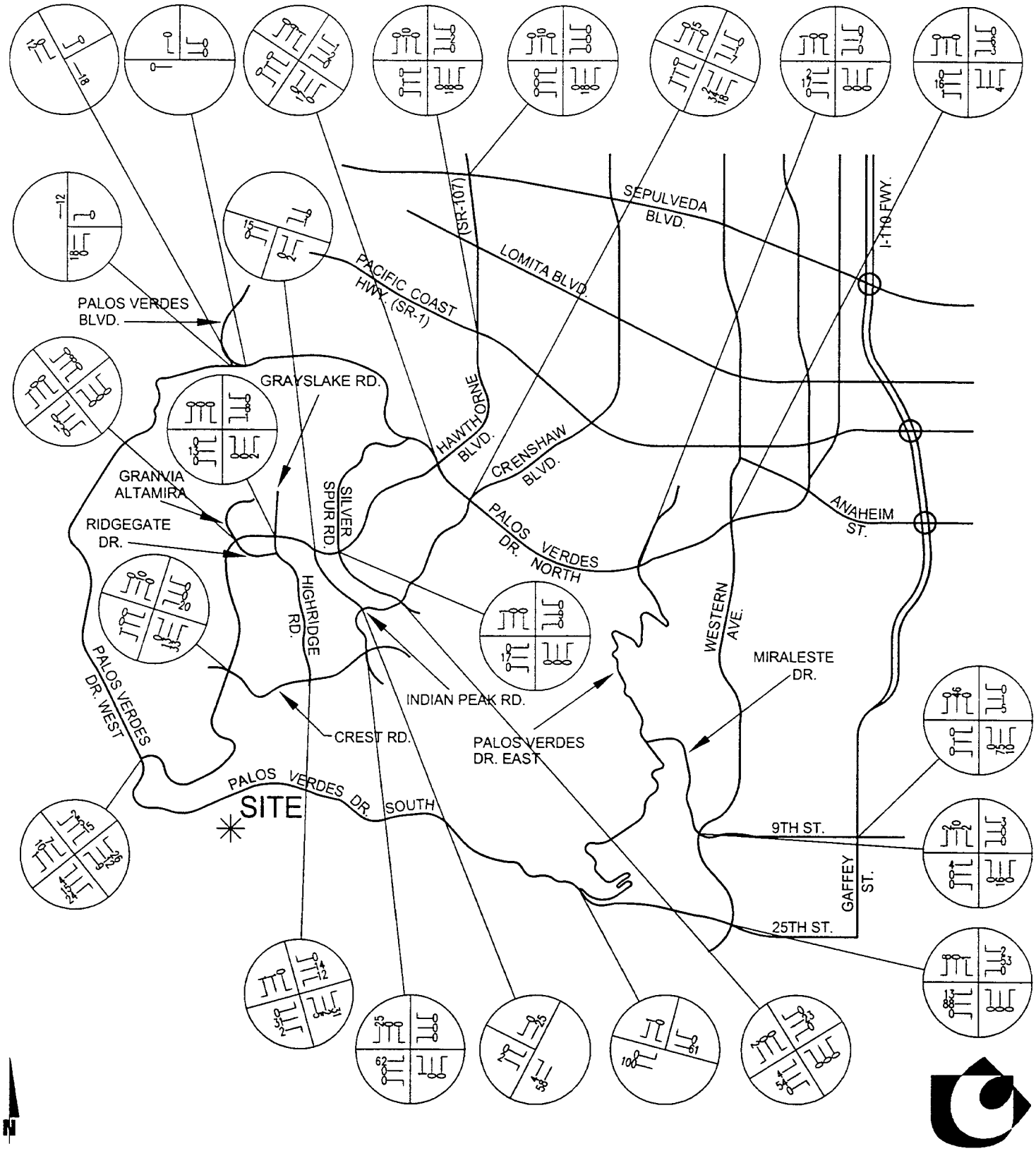
1.4 = VEHICLES PER DAY (1000'S)

N

URBAN CROSSROADS

EXHIBIT CC

OTHER DEVELOPMENT AM PEAK HOUR INTERSECTION VOLUMES

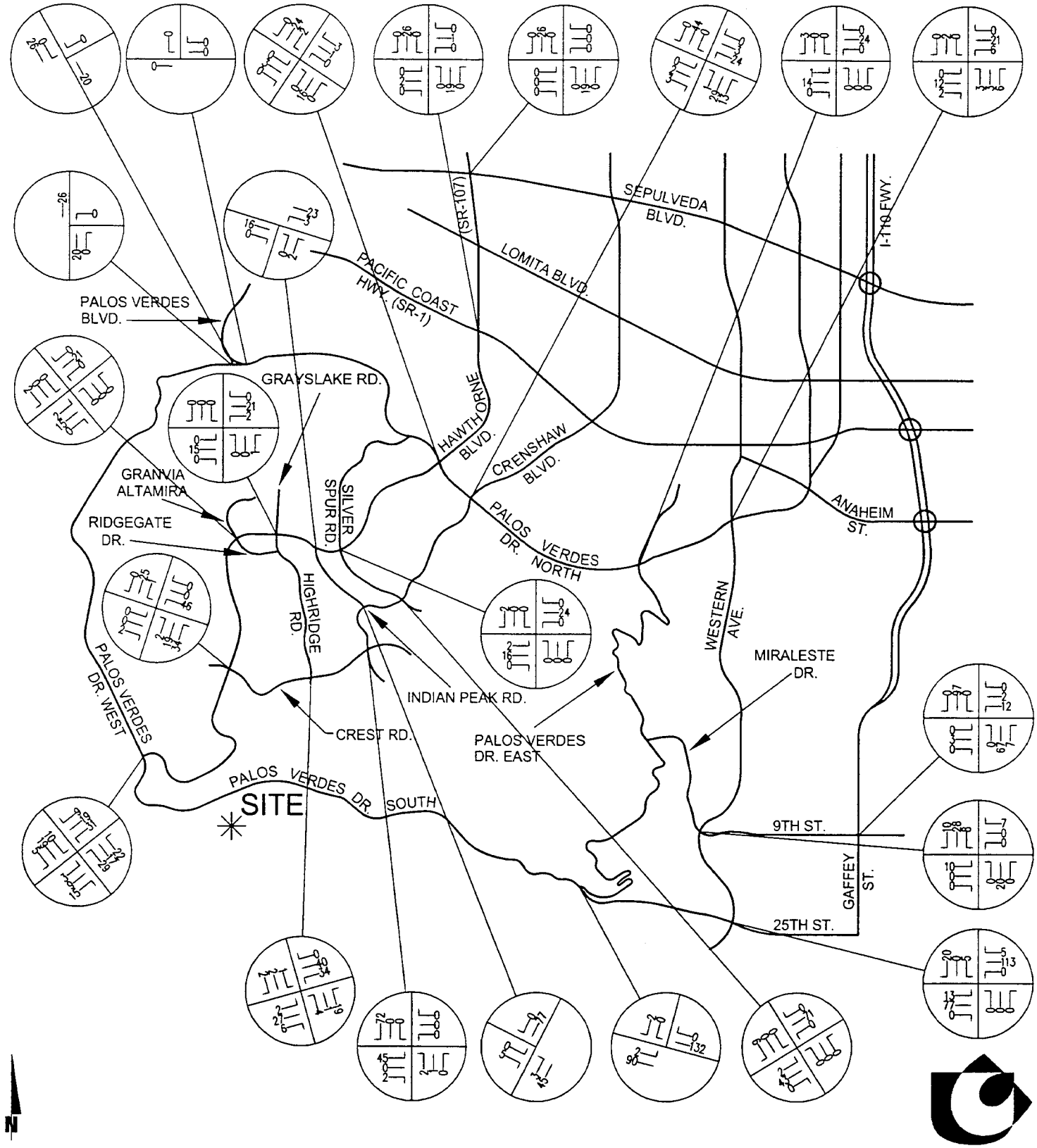


LONG POINT RESORT PROJECT, Rancho Palos Verdes, California-00103/31A

URBAN CROSSROADS

EXHIBIT DD

OTHER DEVELOPMENT PM PEAK HOUR INTERSECTION VOLUMES



Existing Plus Ambient Growth Plus Other Development Average Daily Traffic

Once the ambient growth and other development traffic is assigned to the street network and added to existing volumes in the study area, the traffic impact can be assessed. Exhibit EE shows ADT volumes for existing plus ambient growth plus other development traffic conditions.

A traffic signal is projected to be warranted at the following additional study area intersection for existing plus ambient growth plus other development traffic conditions (see Appendix "E"):

Palos Verdes Drive East (NS) at:

- Palos Verdes Drive South (EW)

Existing Plus Ambient Growth Plus Other Development Intersection Analysis

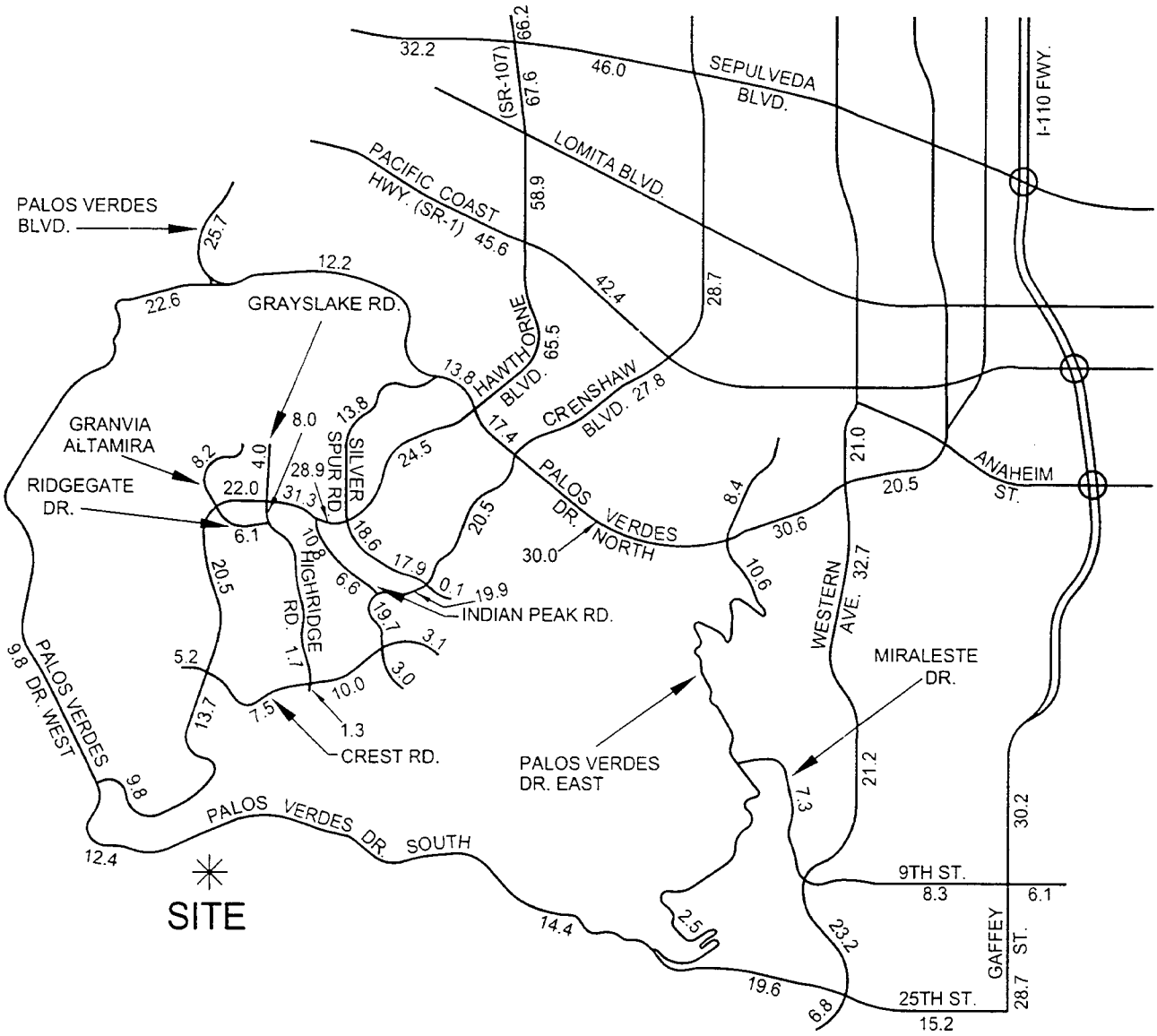
The ICU methodology has been utilized to evaluate intersection levels of service. Intersection levels of service for existing plus ambient growth plus other development traffic conditions have been calculated and are shown in Table 7. Table 7 shows ICU calculations based on the existing geometrics at the study area intersections. Existing plus ambient growth plus other development AM and PM peak hour turning movement volumes are shown on Exhibits FF and GG, respectively. As shown in Table 7, the study area intersections are projected to operate at Level of Service "D" or better during the peak hours, except for the following study area intersections which operate at Level of Service "E" or "F" during the peak hours:

Palos Verdes Boulevard (NS) at:

- Palos Verdes Drive West – North (EW)

EXHIBIT EE

EXISTING PLUS AMBIENT GROWTH PLUS OTHER DEVELOPMENT AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

12.4 = VEHICLES PER DAY (1000'S)

N

TABLE 7

INTERSECTION ANALYSIS FOR EXISTING PLUS AMBIENT GROWTH PLUS OTHER DEVELOPMENT CONDITIONS

	INTERSECTION APPROACH LANES[1]															
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			ICU[2]		LOS[3]	
INTERSECTION	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Palos Verdes Blvd. (NS) at:																
• Palos Verdes Dr. West-North (EW)	0	1	0	1	1	0	0	0	0	0	0	1>>	0.93	0.82	E	D
• Palos Verdes Dr. West-South (EW)	0	1	1>>	0	1	0	0	0	0	1	0	0	0.90	0.89	D	D
• Palos Verdes Dr. West-East (EW)	0	1	0	0	1	1	1	0	0	0	0	0	0.36	0.51	A	A
Palos Verdes Dr. West (NS) at:																
• Hawthorne Blvd. (EW)	0	2	1	1	2	0	0	0	0	1	0	1	0.56	0.52	A	A
Granvia Altamina (NS) at:																
• Hawthorne Blvd. (EW)	0	1	1	1.5	0.5	1	1	2	1	1	2	1	0.61	0.61	B	B
Highridge Rd. (NS) at:																
• Hawthorne Blvd. (EW)	1	1	1>	0	1	0	1	2	1	1	2	1	0.86	0.71	D	C
• Crest Rd. (EW)	0	1	0	1	1	0	1	2	0	1	2	0	0.33	0.30	A	A
Indian Peak Rd. (NS) at:																
• Hawthorne Blvd. (EW)	2	0	1>	0	0	0	0	2	1>	1	2	0	0.70	0.73	B	C
• Crenshaw Blvd. (EW)	0	0	0	1	0	1>	1	2	0	0	2	1	0.62	0.60	B	A
Silver Spur Rd. (NS) at:																
• Hawthorne Blvd. (EW)	1	2	1>	1	2	0	1	2	1	1	2	1	0.92	1.03	E	F
• Crenshaw Blvd. (EW)	0	1	0	1.5	0.5	1>	1	2	0	1	2	1	0.73	0.76	C	C
Hawthorne Blvd. (NS) at:																
• Sepulveda Blvd. (EW)	2	4	1>>	2	4	1>>	2	3	0	2	3	0	0.94	1.13	E	F
• Pacific Coast Hwy. (EW)	2	3	0	2	3	1>>	1	3	0	1	3	0	0.96	1.53	E	F
• Palos Verdes Dr. North (EW)	1	2	1>>	1	2	1	1.5	1.5	0	1	1	1	0.97	0.89	E	D
• Crest Rd. (EW)	1	2	1	1	2	1	1	1	0	1	1	1	0.47	0.49	A	A
Crenshaw Blvd. (NS) at:																
• Palos Verdes Dr. North (EW)	1	2	1	1	2	1	2	2	0	2	2	0	0.85	0.72	D	C
• Crest Rd. (EW)	1	1	1	1	1.5	1.5	1.5	0.5	1>>	0	1	1	0.53	0.41	A	A
Palos Verdes Dr. East (NS) at:																
• Palos Verdes Dr. North (EW)	1	2	1	1	2	1	1	2	1	1	2	1>>	0.77	0.73	C	C
• Palos Verdes Dr. South (EW)	0	0	0	1	0	1	1	1	0	0	1	0	0.54	0.59	A	A
Western Ave. (NS) at:																
• Palos Verdes Dr. North (EW)	1	2	1	1	2	1	1	3	1	1	3	1	0.91	0.98	E	E
• 9th St. (EW)	1	2	1	1	2	1	1	2	1	1	2	1	0.51	0.59	A	A
• 25th St. (EW)	1	2	1	1	2	1>	1	2	1	1	2	0	0.63	0.77	B	C
Gaffey St. (NS) at:																
• 9th St. (EW)	1	2	1	1	2	1	1	1	1	1	1	0	0.83	0.85	D	D

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; > = Right Turn Overlap; >> = Free Right Turn

[2] Intersection Capacity Utilization (ICU).

[3] Level of Service (LOS).

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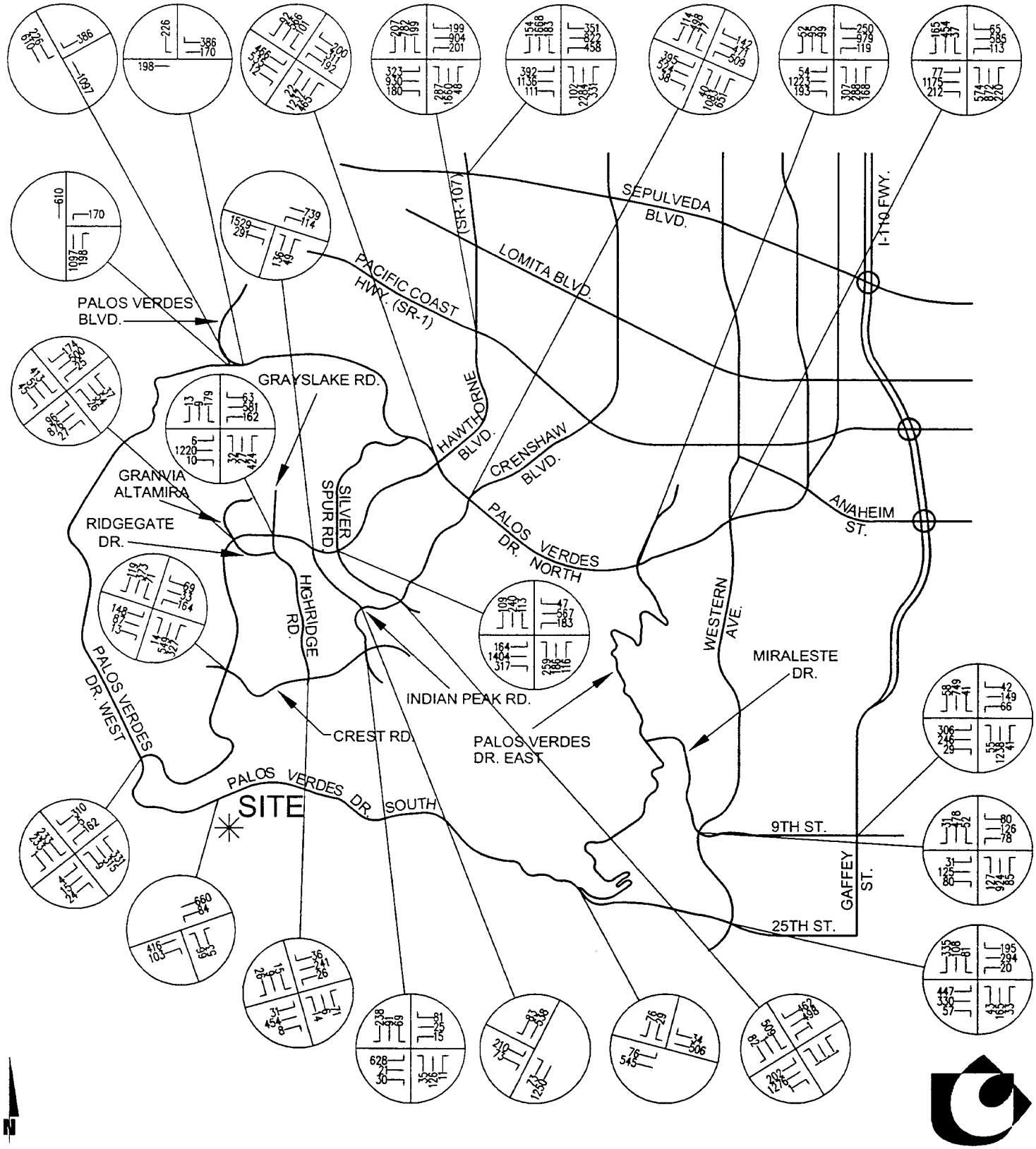
EXHIBIT FF

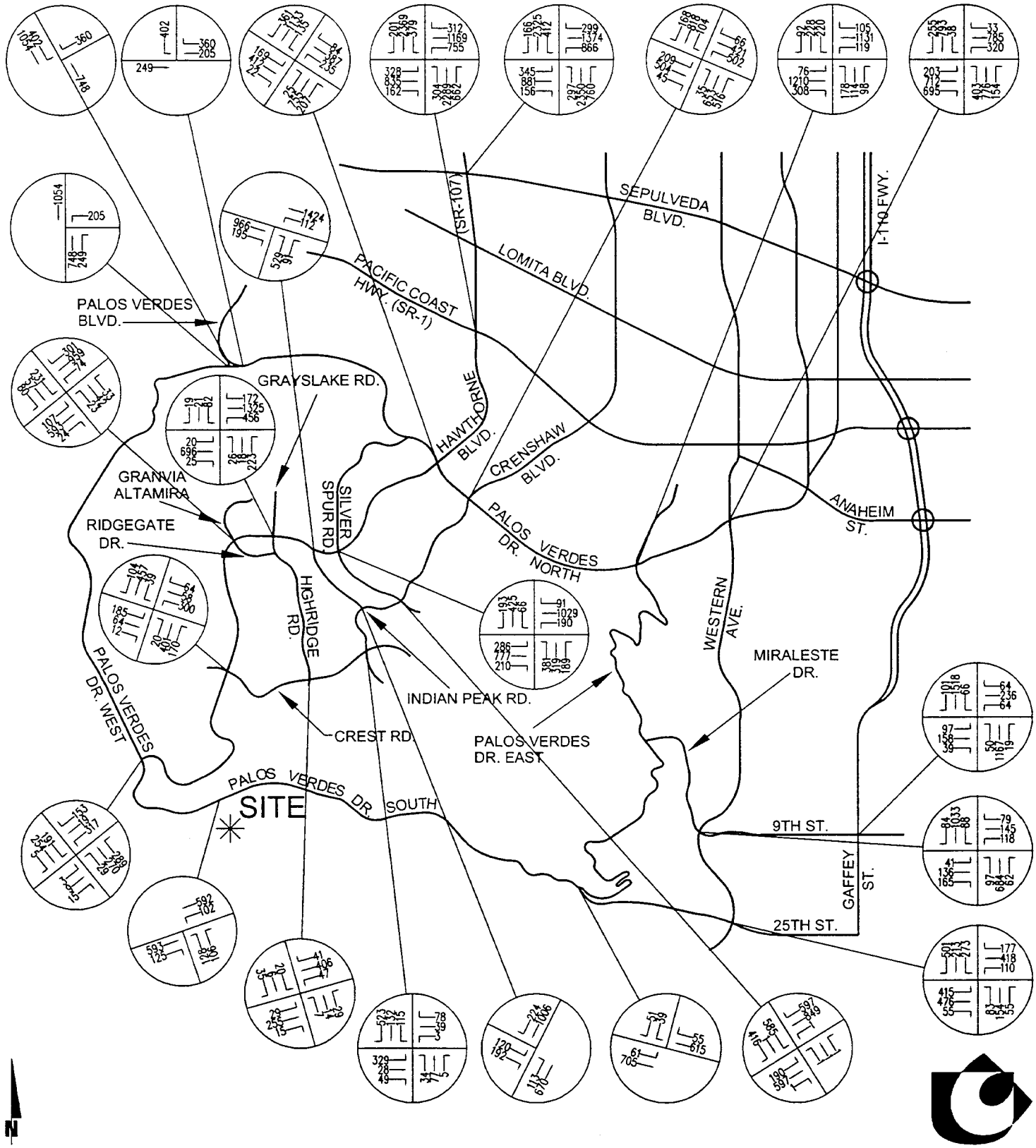
EXISTING PLUS AMBIENT GROWTH PLUS OTHER DEVELOPMENT AM PEAK HOUR INTERSECTION VOLUMES



URBAN CROSSROADS

EXHIBIT GG

EXISTING PLUS AMBIENT GROWTH PLUS OTHER DEVELOPMENT PM PEAK HOUR INTERSECTION VOLUMES



Silver Spur Road (NS) at:

- Hawthorne Boulevard (EW)

Hawthorne Boulevard (NS) at:

- Sepulveda Boulevard (EW)
- Pacific Coast Highway (EW)
- Palos Verdes Drive North (EW)

Western Avenue (NS) at:

- Palos Verdes Drive North (EW)

Existing plus ambient growth plus other development Level of Service calculation worksheets are included in Appendix "H".

EXISTING PLUS AMBIENT GROWTH PLUS PROPOSED PROJECT PLUS OTHER DEVELOPMENT

Existing Plus Ambient Growth Plus Proposed Project Plus Other Development Average Daily Traffic

Once the ambient growth, proposed project and other development traffic is assigned to the street network and added to existing volumes in the study area, the traffic impact can be assessed. Exhibit HH shows ADT volumes for existing plus ambient growth plus proposed project plus other development traffic conditions.

Existing Plus Ambient Growth Plus Proposed Project Plus Other Development Intersection Analysis

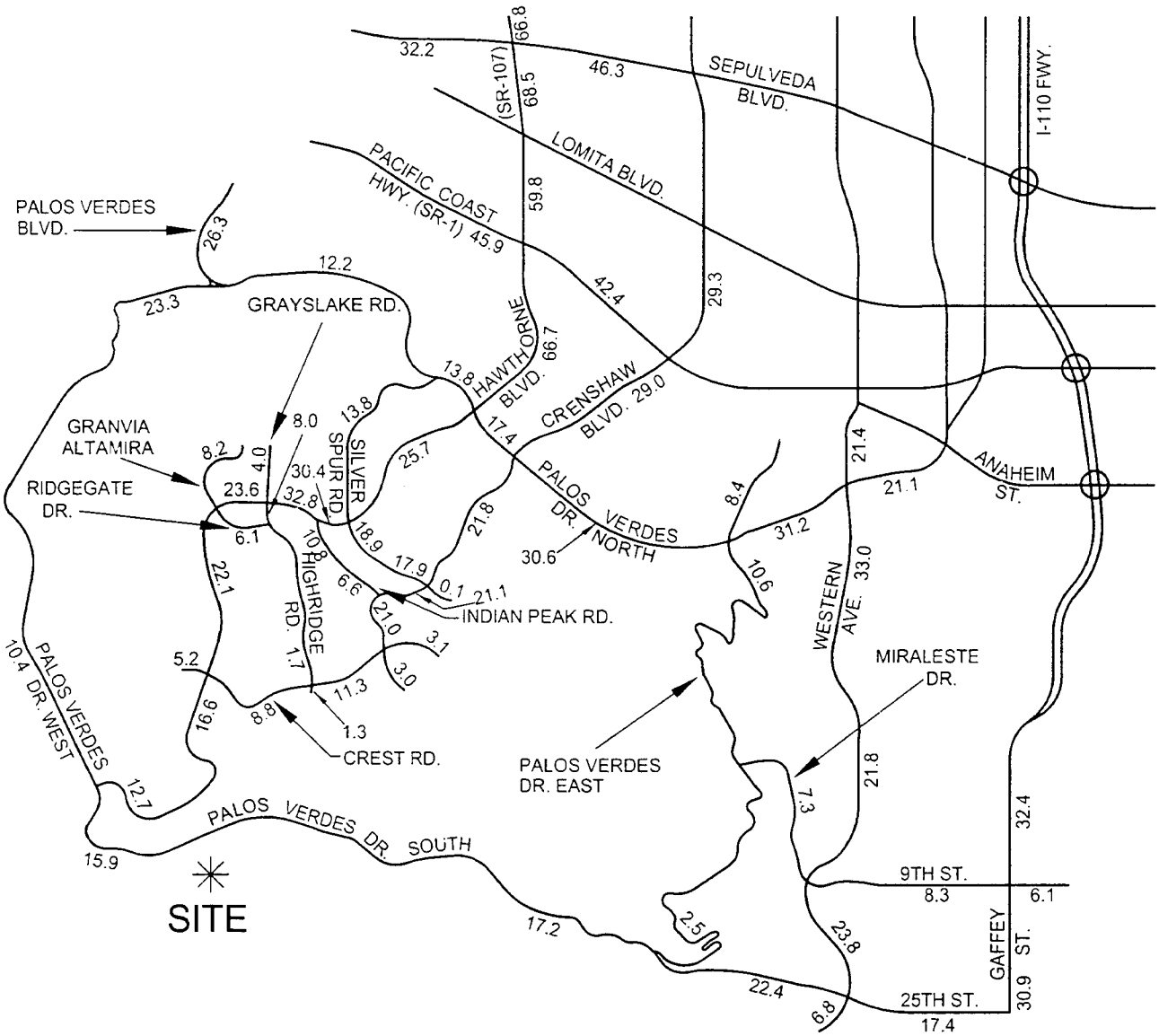
The ICU methodology has been utilized to evaluate intersection levels of service. Intersection levels of service for existing plus ambient growth plus proposed project plus other development traffic conditions have been calculated and are shown in Table 8. Table 8 shows ICU calculations based on the existing geometrics at the study area intersections. Existing plus ambient growth plus proposed project plus other development AM and PM peak hour turning movement volumes are shown on Exhibits II and JJ, respectively. As shown in Table 8, the study area intersections are projected to operate at Level of Service "D" or better during the peak hours, except for the following study area intersections which operate at Level of Service "E" or "F" during the peak hours:

Palos Verdes Boulevard (NS) at:

- Palos Verdes Drive West – North (EW)

EXHIBIT HH

EXISTING PLUS AMBIENT GROWTH PLUS PROPOSED PROJECT PLUS OTHER DEVELOPMENT AVERAGE DAILY TRAFFIC (ADT)



LEGEND:

15.7 = VEHICLES PER DAY (1000'S)

N

URBAN CROSSROADS

TABLE 8

INTERSECTION ANALYSIS FOR EXISTING PLUS AMBIENT GROWTH PLUS PROPOSED PROJECT PLUS OTHER DEVELOPMENT CONDITIONS

	INTERSECTION APPROACH LANES[1]															
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			ICU[2]		LOS[3]	
INTERSECTION	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
Palos Verdes Blvd. (NS) at:																
• Palos Verdes Dr. West-North (EW)	0	1	0	1	1	0	0	0	0	0	0	1>>	0.93	0.83	E	D
• Palos Verdes Dr. West-South (EW)	0	1	1>>	0	1	0	0	0	0	1	0	0	0.90	0.90	D	D
• Palos Verdes Dr. West-East (EW)	0	1	0	0	1	1	1	0	0	0	0	0	0.36	0.51	A	A
Palos Verdes Dr. West (NS) at:																
• Hawthorne Blvd. (EW)	1	2	1	1	2	0	1	1	0	1	1	0	0.56	0.60	A	A
Granvia Altamina (NS) at:																
• Hawthorne Blvd. (EW)	0	1	1	1.5	0.5	1	1	2	1	1	2	1	0.62	0.63	B	B
Highridge Rd. (NS) at:																
• Hawthorne Blvd. (EW)	1	1	1>	0	1	0	1	2	1	1	2	1	0.87	0.73	D	C
• Crest Rd. (EW)	0	1	0	1	1	0	1	2	0	1	2	0	0.34	0.32	A	A
Indian Peak Rd. (NS) at:																
• Hawthorne Blvd. (EW)	2	0	1>	0	0	0	0	2	1>	1	2	0	0.71	0.74	C	C
• Crenshaw Blvd. (EW)	0	0	0	1	0	1>	1	2	0	0	2	1	0.63	0.62	B	B
Silver Spur Rd. (NS) at:																
• Hawthorne Blvd. (EW)	1	2	1>	1	2	0	1	2	1	1	2	1	0.94	1.06	E	F
• Crenshaw Blvd. (EW)	0	1	0	1.5	0.5	1>	1	2	0	1	2	1	0.74	0.77	C	C
Hawthorne Blvd. (NS) at:																
• Sepulveda Blvd. (EW)	2	4	1>>	2	4	1>>	2	3	0	2	3	0	0.94	1.13	E	F
• Pacific Coast Hwy. (EW)	2	3	0	2	3	1>>	1	3	0	1	3	0	0.96	1.53	E	F
• Palos Verdes Dr. North (EW)	1	2	1>>	1	2	1	1.5	1.5	0	1	1	1	0.97	0.91	E	E
• Crest Rd. (EW)	1	2	1	1	2	1	1	1	0	1	1	1	0.51	0.54	A	A
Project Entrance (NS) at:																
• Palos Verdes Dr. South (EW)	1	0	1	0	0	0	0	2	0	1	2	0	0.36	0.49	A	A
Crenshaw Blvd. (NS) at:																
• Palos Verdes Dr. North (EW)	1	2	1	1	2	1	2	2	0	2	2	0	0.85	0.73	D	C
• Crest Rd. (EW)	1	1	1	1	1.5	1.5	1.5	0.5	1>>	0	1	1	0.54	0.43	A	A
Palos Verdes Dr. East (NS) at:																
• Palos Verdes Dr. North (EW)	1	2	1	1	2	1	1	2	1	1	2	1>>	0.78	0.74	C	C
• Palos Verdes Dr. South (EW)	0	0	0	1	0	1	1	1	0	0	1	0	0.59	0.66	A	B
Western Ave. (NS) at:																
• Palos Verdes Dr. North (EW)	1	2	1	1	2	1	1	3	1	1	3	1	0.93	0.98	E	E
• 9th St. (EW)	1	2	1	1	2	1	1	2	1	1	2	1	0.51	0.60	A	A
• 25th St. (EW)	1	2	1	1	2	1>	1	2	1	1	2	0	0.66	0.81	B	D
Gaffey St. (NS) at:																
• 9th St. (EW)	1	2	1	1	2	1	1	1	1	1	1	0	0.84	0.88	D	D

[1] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; > = Right Turn Overlap; >> = Free Right Turn

[2] Intersection Capacity Utilization (ICU).

[3] Level of Service (LOS).

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EXHIBIT II

EXISTING PLUS AMBIENT GROWTH PLUS PROPOSED PROJECT PLUS OTHER DEVELOPMENT AM PEAK HOUR INTERSECTION VOLUMES

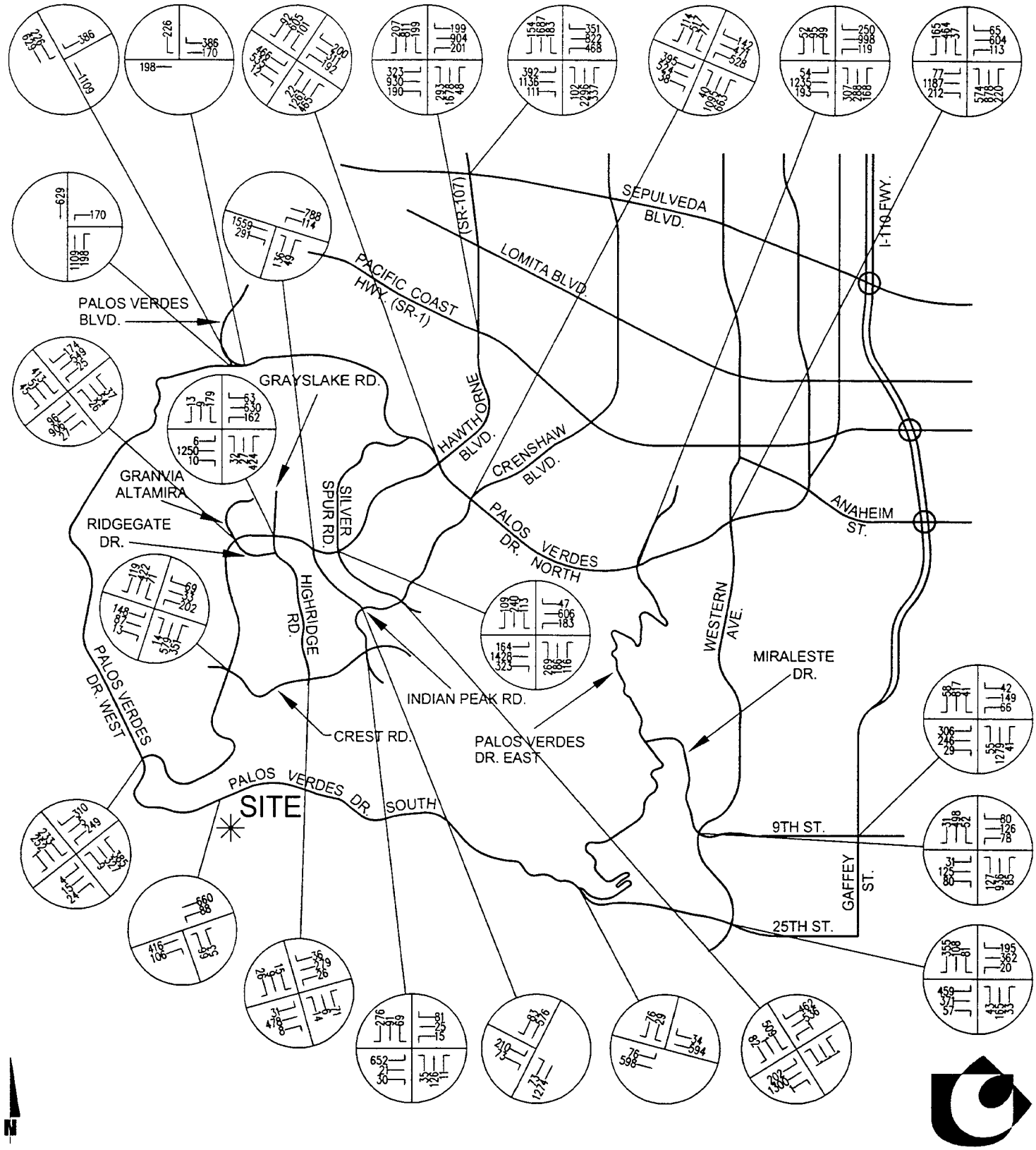
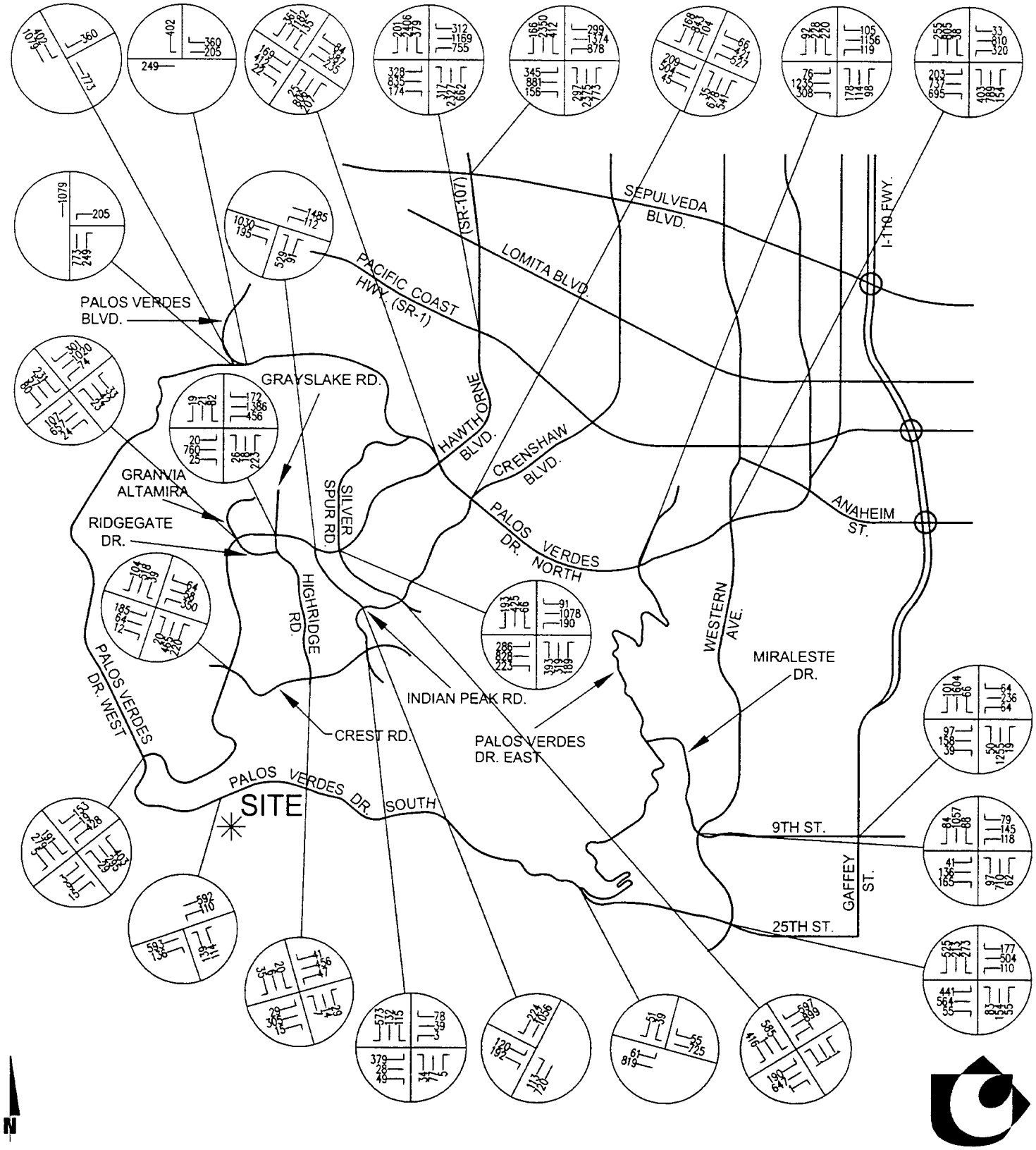


EXHIBIT JJ

EXISTING PLUS AMBIENT GROWTH PLUS PROPOSED PROJECT PLUS OTHER DEVELOPMENT PM PEAK HOUR INTERSECTION VOLUMES



Silver Spur Road (NS) at:

- Hawthorne Boulevard (EW)

Hawthorne Boulevard (NS) at:

- Sepulveda Boulevard (EW)
- Pacific Coast Highway (EW)
- Palos Verdes Drive North (EW)

Western Avenue (NS) at:

- Palos Verdes Drive North (EW)

Existing plus ambient growth plus proposed project plus other development Level of Service calculation worksheets are included in Appendix "I".

Significant Transportation Impact

A transportation impact on an intersection shall be deemed "significant" if the project related increase in the volume to capacity ratio equals or exceeds the threshold shown below:

SIGNIFICANT TRANSPORTATION IMPACT

LEVEL OF SERVICE	FINAL V/C RATIO	PROJECT-RELATED INCREASE IN V/C
C	0.71 - 0.80	0.04 or more
D	0.81 - 0.90	0.02 or more
E, F	0.91 or more	0.01 or more

For purposes of this calculation, the "Final V/C Ratio" shall mean the future V/C ratio at an intersection considering impacts with project, ambient and related project growth but

without proposed traffic mitigation. "Project-Related Increase in V/C" shall mean the change in V/C between the future V/C ratio with project, ambient and related project growth but without proposed traffic mitigation and the future V/C ratio with ambient and related project growth but without project and proposed traffic mitigation.

Table 9 depicts the project traffic contribution at the study area intersections. The project itself is expected to have a significant traffic impact at three (3) study area intersections. ICU calculation worksheets are included in Appendix "J". As a result of these impacts, the following measures are recommended for implementation:

Silver Spur Road (NS) at:

- Hawthorne Boulevard (EW)
  - Restripe south leg with two left turn lanes, one through lane and one right turn lane
  - Provide north leg with one left turn lane, two through lanes and one right turn lane

Hawthorne Boulevard (NS) at:

- Palos Verdes Drive North (EW)
  - Provide west leg with one left turn lane, one shared left/ through lane, one through lane and one right turn lane

Western Avenue (NS) at:

- 25th Street (EW)
  - Provide east leg with one left turn lane, two through lanes and one right turn lane

TABLE 9

PROJECT TRAFFIC CONTRIBUTION[1]

INTERSECTION	PEAK HOUR	EXISTING PLUS AMBIENT GROWTH PLUS OTHER DEVELOPMENT		EXISTING PLUS AMBIENT GROWTH PLUS PROPOSED PROJECT PLUS OTHER DEVELOPMENT							
				WITHOUT MITIGATION				WITH MITIGATION			
		ICU[2]	LOS[3]	ICU[4]	LOS	PROJECT IMPACT	SIGNIFICANT IMPACT	ICU	LOS	PROJECT IMPACT	SIGNIFICANT IMPACT
Palos Verdes Blvd. (NS) at:											
• Palos Verdes Dr. West-North (EW)	AM	0.928	E	0.935	E	+ 0.007	NO				
	PM	0.820	D	0.835	D	+ 0.015	NO				
• Palos Verdes Dr. West-South (EW)	AM	0.893	D	0.900	D	+ 0.007	NO				
	PM	0.888	D	0.904	D	+ 0.016	NO				
• Palos Verdes Dr. West-East (EW)	AM	0.366	A	0.366	A	+ 0.000	NO				
	PM	0.508	A	0.508	A	+ 0.000	NO				
Palos Verdes Dr. West (NS) at:											
• Hawthorne Blvd. (EW)	AM	0.544	A	0.548	A	+ 0.004	NO				
	PM	0.517	A	0.595	A	+ 0.078	NO				
Granvia Altamira (NS) at:											
• Hawthorne Blvd. (EW)	AM	0.612	B	0.621	B	+ 0.009	NO				
	PM	0.605	B	0.624	B	+ 0.019	NO				
Highridge Rd. (NS) at:											
• Hawthorne Blvd. (EW)	AM	0.859	D	0.869	D	+ 0.010	NO				
	PM	0.697	B	0.717	C	+ 0.020	NO				
• Crest Rd. (EW)	AM	0.330	A	0.337	A	+ 0.007	NO				
	PM	0.303	A	0.319	A	+ 0.016	NO				
Indian Peak Rd. (NS) at:											
• Hawthorne Blvd. (EW)	AM	0.697	B	0.706	C	+ 0.009	NO				
	PM	0.729	C	0.748	C	+ 0.019	NO				
• Crenshaw Blvd. (EW)	AM	0.623	B	0.630	B	+ 0.007	NO				
	PM	0.606	B	0.621	B	+ 0.015	NO				
Silver Spur Rd. (NS) at:											
• Hawthorne Blvd. (EW)	AM	0.925	E	0.939	E	+ 0.014	YES	0.849	D	- 0.076	NO
	PM	1.033	F	1.055	F	+ 0.022	YES	0.872	D	- 0.161	NO
• Crenshaw Blvd. (EW)	AM	0.714	C	0.722	C	+ 0.008	NO				
	PM	0.746	C	0.762	C	+ 0.016	NO				
Hawthorne Blvd. (NS) at:											
• Sepulveda Blvd. (EW)[5]	AM	0.940	E	0.946	E	+ 0.006	NO				
	PM	1.127	F	1.135	F	+ 0.008	NO				
• Pacific Coast Hwy. (EW)[5]	AM	0.957	E	0.961	E	+ 0.004	NO				
	PM	1.527	F	1.537	F	+ 0.010	NO				
• Palos Verdes Dr. North (EW)	AM	0.974	E	0.981	E	+ 0.007	NO	0.976	E	- 0.105	NO
	PM	0.893	D	0.909	E	+ 0.016	YES	0.900	D	- 0.070	NO
• Crest Rd. (EW)	AM	0.483	A	0.515	A	+ 0.032	NO				
	PM	0.492	A	0.542	A	+ 0.050	NO				
Project Entrance (NS) at:											
• Palos Verdes Dr. South (EW)	AM	--	--	0.359	A	--	--				
	PM	--	--	0.484	A	--	--				
Crenshaw Blvd. (NS) at:											
• Palos Verdes Dr. North (EW)	AM	0.840	D	0.849	D	+ 0.009	NO				
	PM	0.724	C	0.741	C	+ 0.017	NO				
• Crest Rd. (EW)	AM	0.536	A	0.546	A	+ 0.010	NO				
	PM	0.406	A	0.427	A	+ 0.020	NO				
Palos Verdes Dr. East (NS) at:											
• Palos Verdes Dr. North (EW)	AM	0.779	C	0.783	C	+ 0.004	NO				
	PM	0.736	C	0.744	C	+ 0.008	NO				
• Palos Verdes Dr. South (EW)	AM	0.534	A	0.589	A	+ 0.055	NO				
	PM	0.589	A	0.658	B	+ 0.069	NO				
Western Ave. (NS) at:											
• Palos Verdes Dr. North (EW)	AM	0.917	E	0.922	E	+ 0.005	NO				
	PM	0.984	E	0.988	E	+ 0.004	NO				
• 9th St. (EW)	AM	0.510	B	0.514	A	+ 0.004	NO				
	PM	0.601	B	0.609	B	+ 0.008	NO				
• 25th St. (EW)	AM	0.636	B	0.665	B	+ 0.029	NO	0.603	B	-0.033	NO
	PM	0.765	C	0.808	D	+ 0.043	YES	0.753	C	-0.012	NO
Gaffey St. (NS) at:											
• 9th St. (EW)[5]	AM	0.824	D	0.837	D	+ 0.013	NO				
	PM	0.856	D	0.882	D	+ 0.026	NO				

[1] ICU calculation worksheets are included in Appendix "J".

[2] Intersection Capacity Utilization (ICU).

[3] Level of Service (LOS).

[4] The ICU values may vary slightly when compared to Table 8. This is due to the computer program rounding for two decimal points versus three decimal points for the computer printouts.

[5] Los Angeles County CMP Arterial Monitoring Intersection. The CMP defines a significant project impact as one that increases traffic demand on a CMP facility by 2% of capacity (change in V/C > 0.02), causing or worsening LOS "F" (V/C > 1.00).

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These mitigation measures will result in no remaining significant impacts.

Project Fair Share

The project share of cost has been based on the proportion of project peak hour traffic contributed to the improvement location relative to the total new peak hour existing plus ambient growth plus proposed project plus other development traffic volume. Table 10 presents a summary of project shares at each intersection improvement location.

TABLE 10

PROJECT FAIR SHARE CONTRIBUTION

INTERSECTION	PEAK HOUR	EXISTING TRAFFIC	EXISTING + AMBIENT GROWTH + PROPOSED PROJECT + OTHER DEVELOPMENT TRAFFIC	PROJECT TRAFFIC	TOTAL NEW TRAFFIC	PROJECT % OF NEW TRAFFIC
Silver Spur Rd. (NS) at:						
• Hawthorne Blvd. (EW)	AM	3,476	3,784	79	308	25.6%
	PM	3,885	4,281	125	396	31.6%
Hawthorne Blvd. (NS) at:						
• Palos Verdes Dr. North (EW)	AM	3,937	4,262	63	325	19.4%
	PM	3,663	4,025	100	362	27.6%
Western Ave. (NS) at:						
• 25th St. (EW)	AM	1,839	2,249	141	410	34.4%
	PM	2,549	3,129	224	580	38.6%

\\SERVER\UcData\UcJobs\00103\Excel\[00103-0017-01.xls]T 10

OTHER CONSIDERATIONS

Congestion Management Plan (CMP) Analysis

The Congestion Management Plan (CMP) is a state-mandated program as result of Proposition 111 and has been implemented by the Los Angeles County Metropolitan Transportation Authority (LACMTA). The CMP for Los Angeles County requires that the traffic impact of individual development projects of potential regional significance be analyzed. This analysis has been conducted in accordance with the guidelines set forth within the latest 1997 CMP for Los Angeles County.

Per CMP Transportation Impact Analysis (TIA) Guidelines, a traffic impact analysis must be conducted where:

- At CMP arterial monitoring intersections, including freeway on- or off-ramps, where the proposed project will add 50 or more trips during either AM or PM weekday peak hours.

- At CMP mainline freeway monitoring locations, where the project will add 150 or more trips, in either direction, during either the AM or PM weekday peak hours.

The following three (3) intersections are designated as part of the Los Angeles County CMP arterial monitoring intersections and are affected by 50 or more peak hour project trips (see Exhibits I and J):

Hawthorne Boulevard (NS) at:

- Sepulveda Boulevard (EW)
- Pacific Coast Highway (EW)

Gaffey Street (NS) at:

- 9th Street (EW)

The CMP defines a significant project impact as one that increases traffic demand on a CMP facility by 2% of capacity (change in V/C $\geq$ 0.02), causing or worsening LOS "F" (V/C > 1.00).

As shown earlier in this report, the addition of project traffic at the three (3) CMP arterial monitoring intersections is not significant, with the mitigation measures within the "Findings" section of this report.

The project will not add 150 or more trips, in either direction, during either the AM or PM peak hours along the I-110 Freeway and no CMP analysis is required.

Site Access

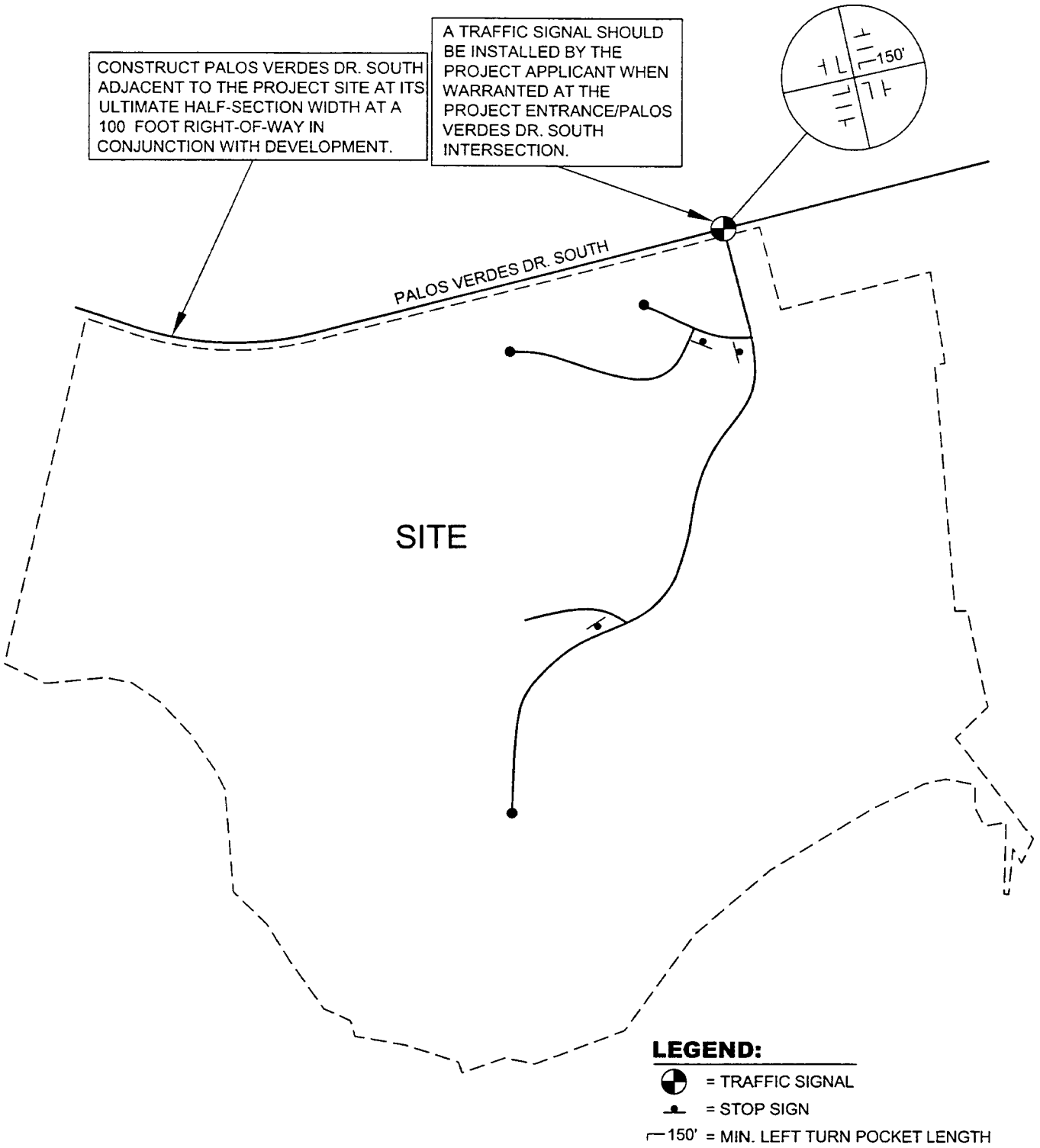
Construct Palos Verdes Drive South adjacent to the project site at its ultimate half-section width at a 100 foot right-of-way in conjunction with development (see Exhibit KK).

Provide a minimum 150 foot left turn pocket for vehicles traveling west on Palos Verdes Drive South and desiring to turn left into the main access to the project site. The project site main access is located opposite the existing gated Crestmont Lane. Access to the driving range located on the north side of Palos Verdes Drive South shall be restricted to right turns in/out only.

A traffic signal should be installed by the project applicant when warranted at the following study area intersection:

EXHIBIT KK

CIRCULATION RECOMMENDATIONS



N

URBAN CROSSROADS

Project Entrance (NS) at:

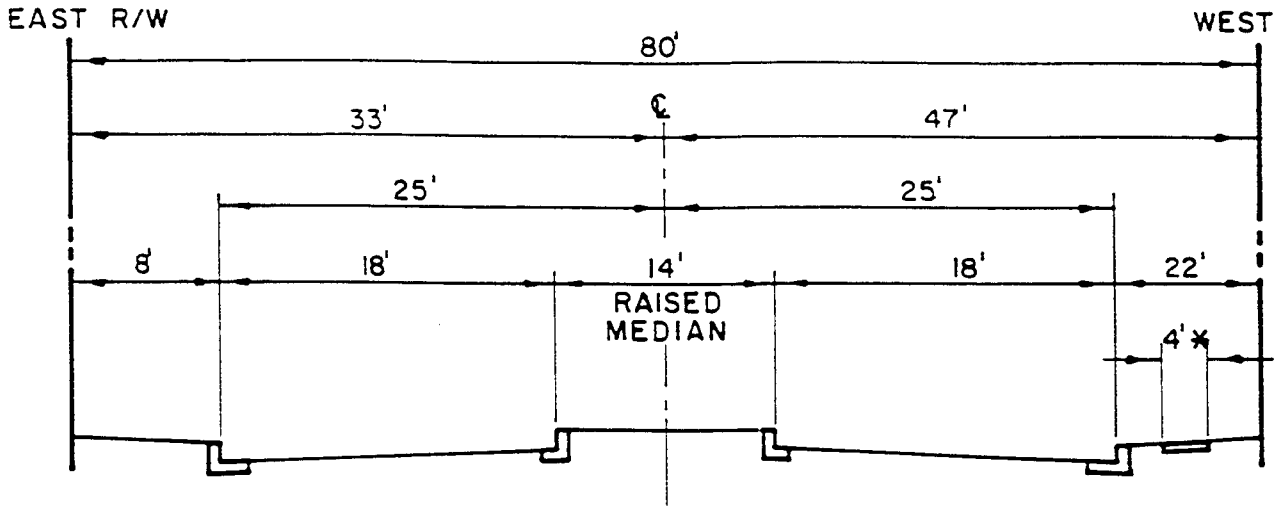
- Palos Verdes Drive South (EW)

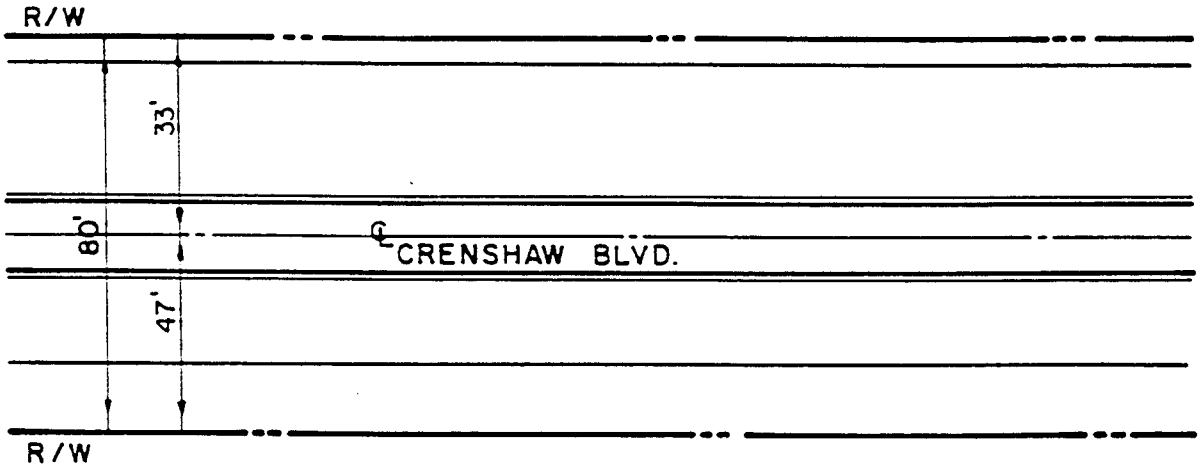
Sight distance at the project entrances should be further reviewed with respect to standard Caltrans/City of Rancho Palos Verdes sight distance standards at the time of preparation of final grading, landscape and street improvement plans.

Internal traffic signing/striping should be implemented in conjunction with detailed construction plans for the project.

APPENDIX A

CITY OF RANCHO PALOS VERDES ROADWAY CROSS-SECTIONS





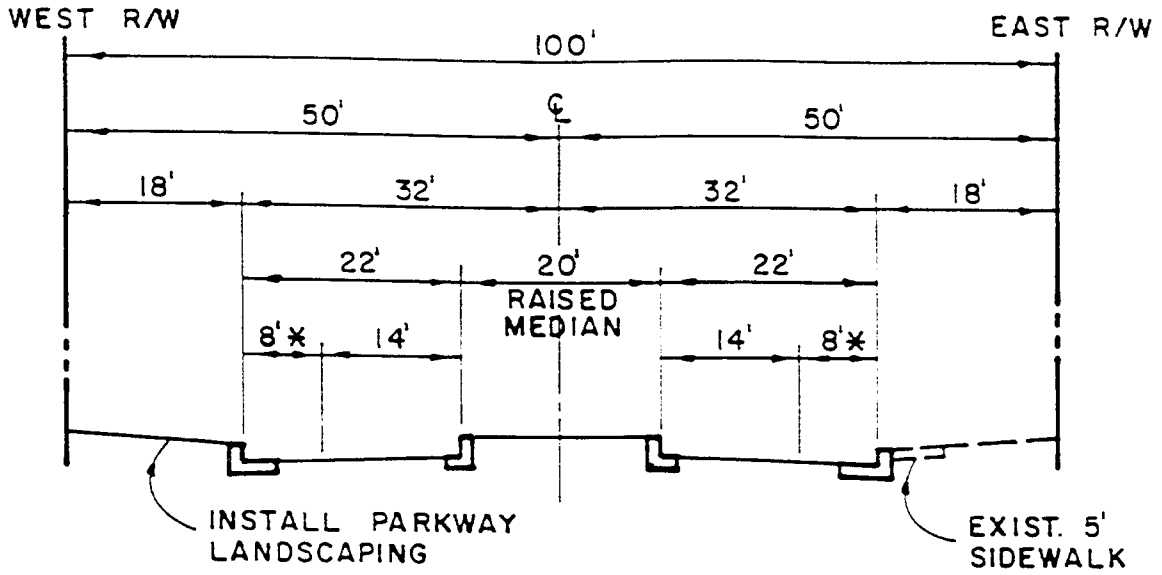
* 4' MEANDERING SIDEWALK

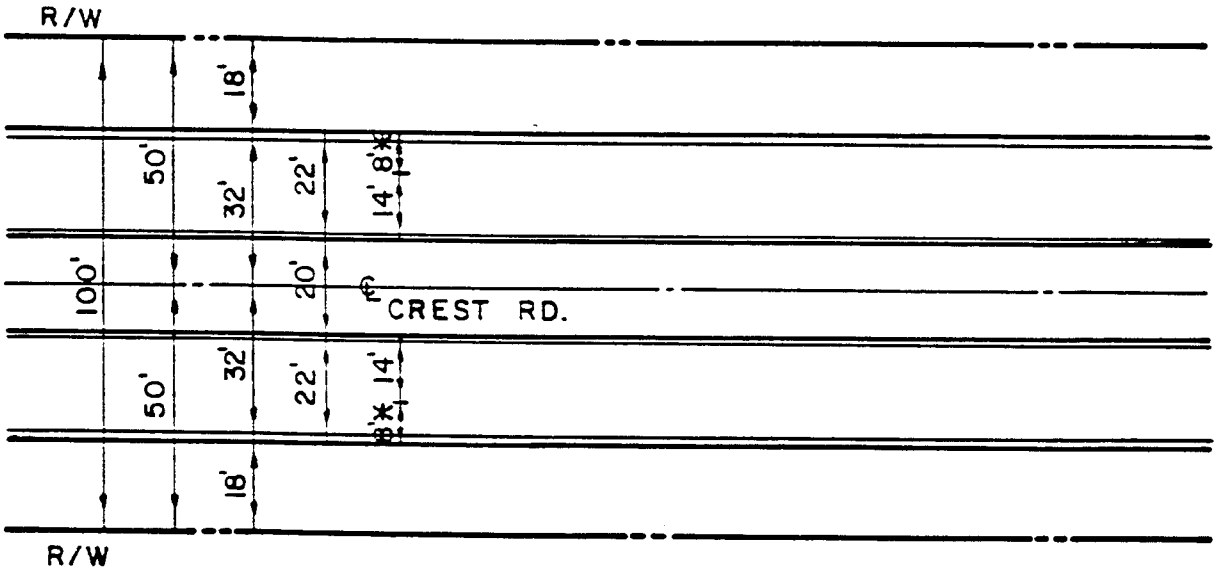
CRENSHAW BOULEVARD
SOUTH OF CREST RD.

figure no.

6

rancho palos verdes



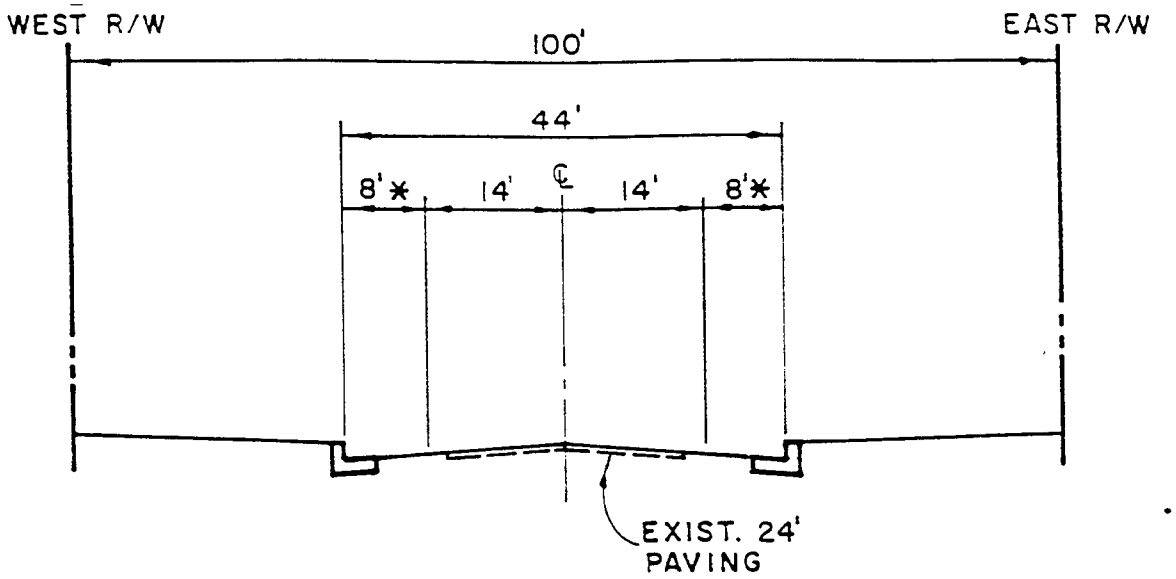


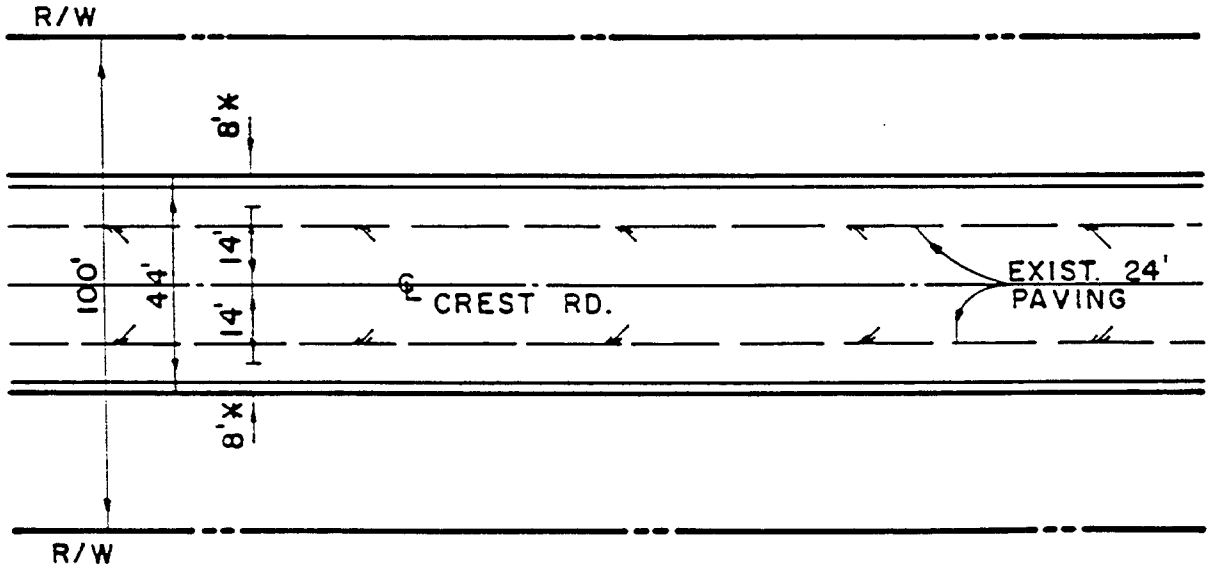
* EMERGENCY PARKING & BIKE TRAIL

CREST ROAD
NEAR PALOS VERDES DR. EAST

figure no.

rancho palos verdes





* BIKE TRAIL AND EMERGENCY PARKING

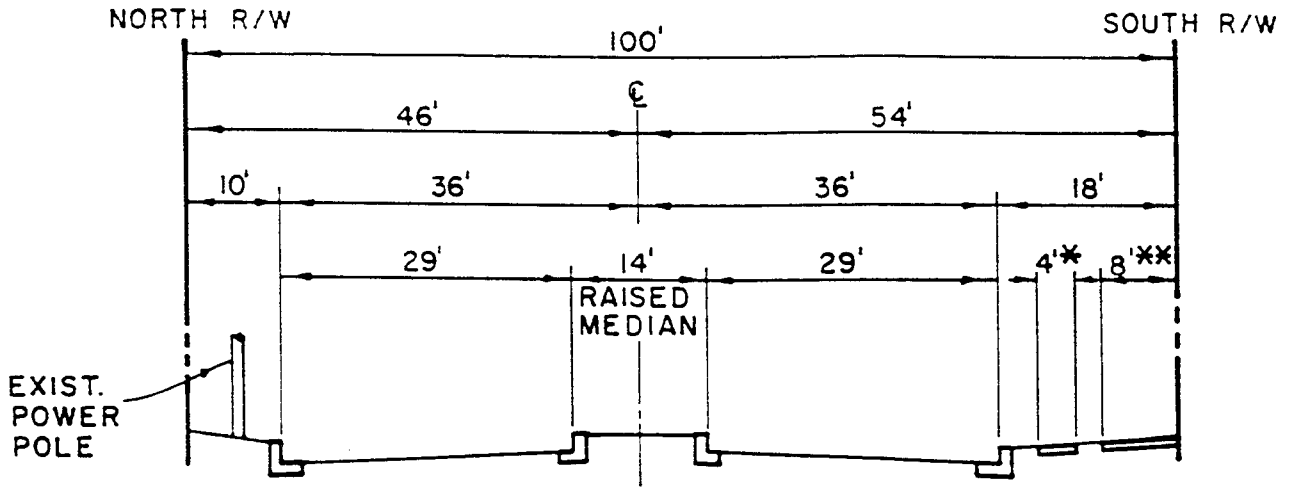
NOTE: LOCATION OF ROADWAY TO VARY WITHIN RIGHT OF WAY TO ACCOMMODATE TOPOGRAPHY & VISTA POINTS, HOWEVER, ROADWAY SHALL BE ALIGNED AS CLOSE AS POSSIBLE TO UPHILL SIDE TO MAXIMIZE VIEW POTENTIAL ON DOWNHILL SIDE.

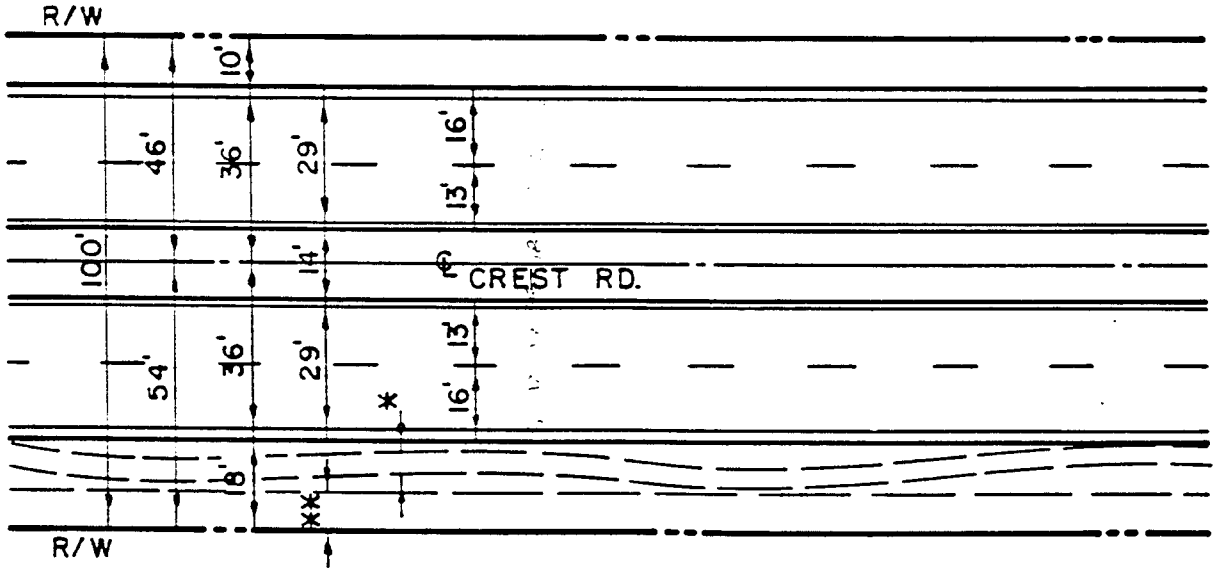
CREST ROAD

BETWEEN GANADO DR. & CITY BOUNDARY

figure no.

rancho palos verdes





* 4' MEANDERING SIDEWALK

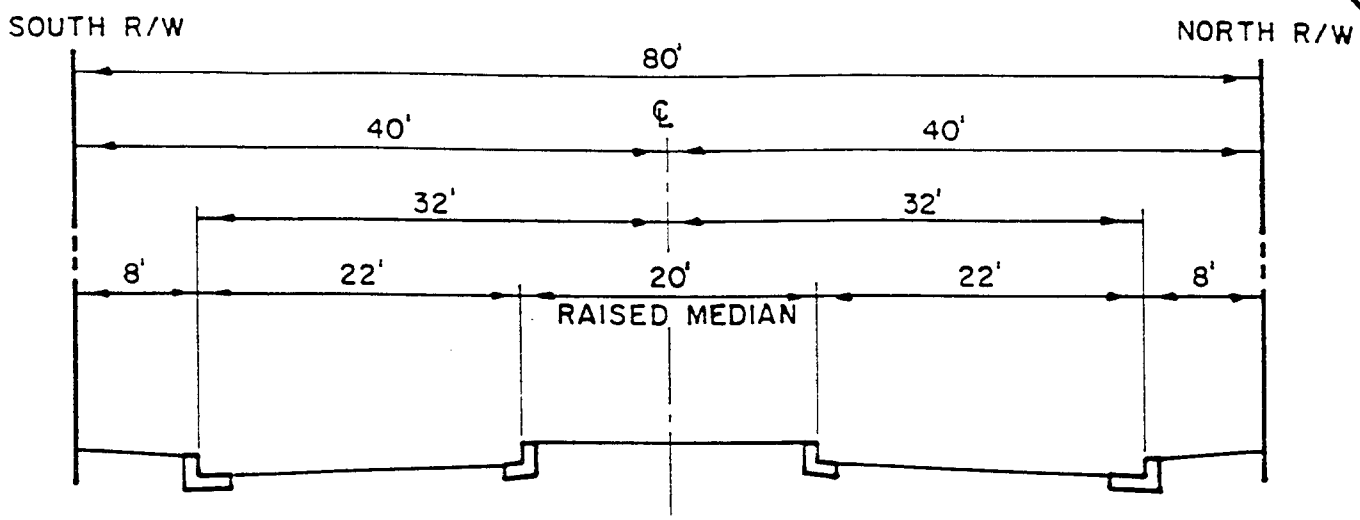
** 8' BIKE TRAIL

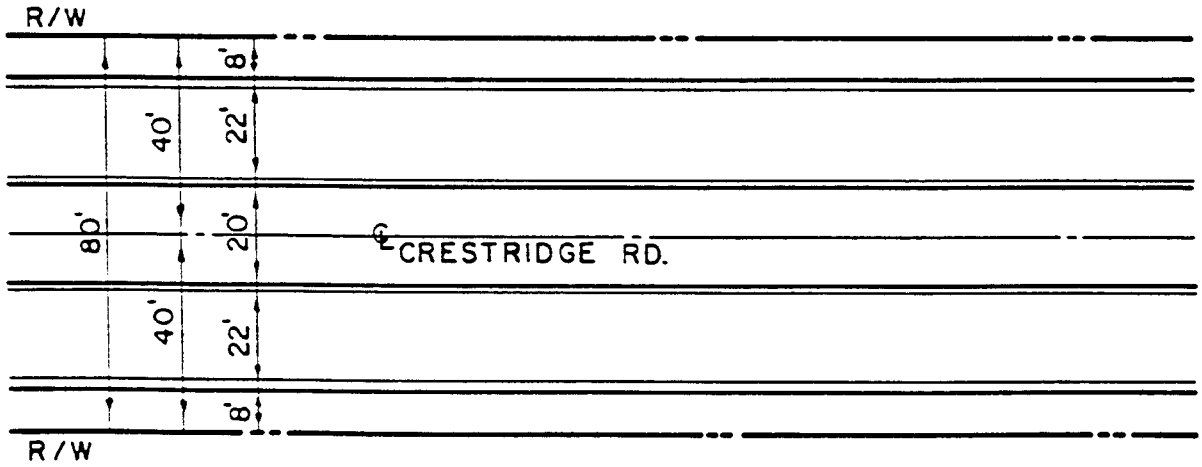
CREST ROAD
CRENSHAW TO HAWTHORNE

figure no.

9

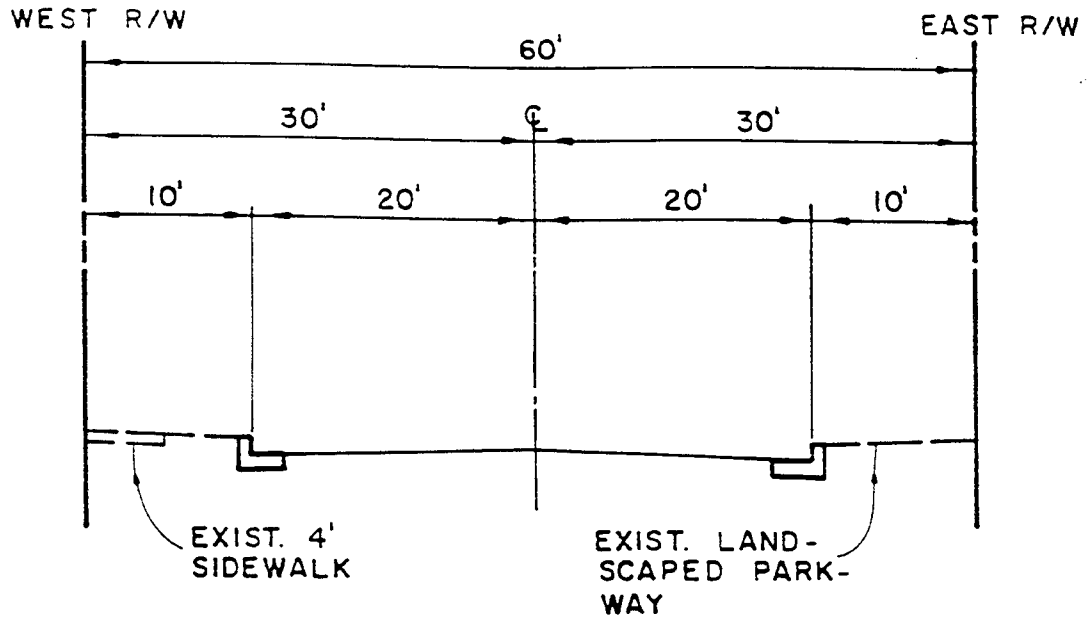
rancho palos verdes

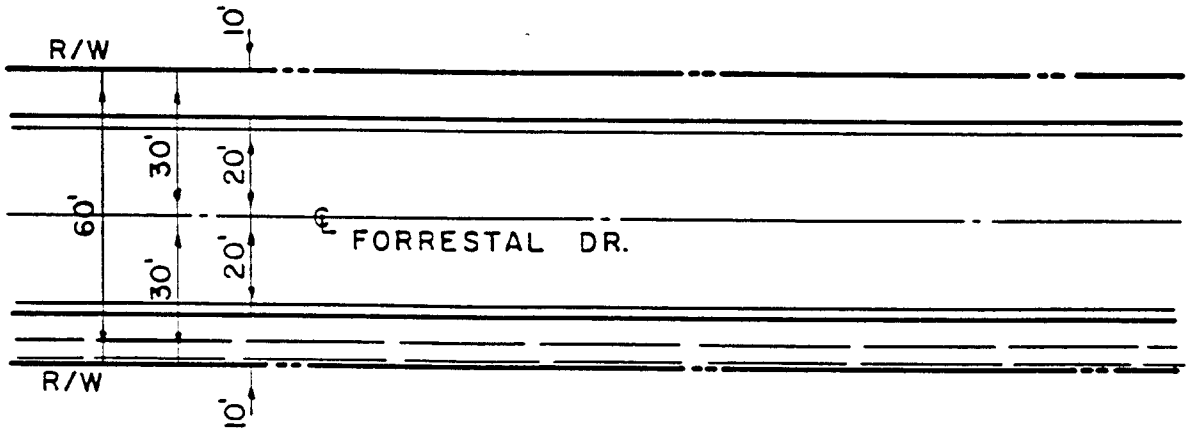




NOTE: ALLOWS FOR ON STREET PARKING AND/OR LOADING ZONES FOR INSTITUTIONS AND RIGHT TURNS INTO DRIVEWAYS.

CRESTRIDGE ROAD HIGHRIDGE TO CRENSHAW	figure no.
rancho palos verdes	10



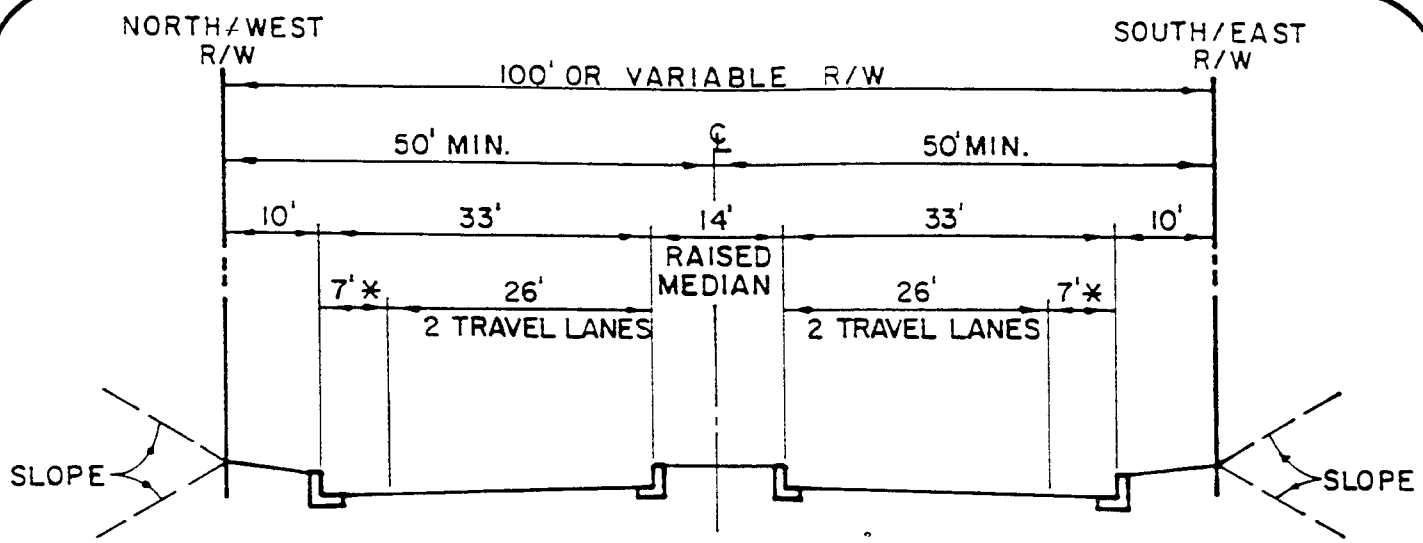


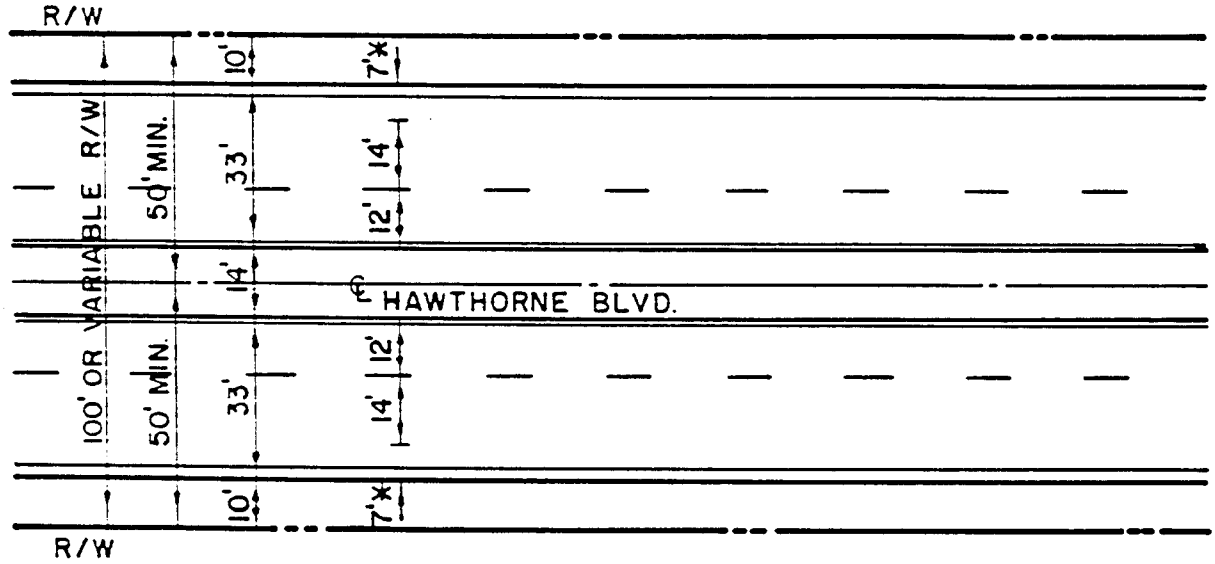
FORRESTAL DRIVE

figure no.

11

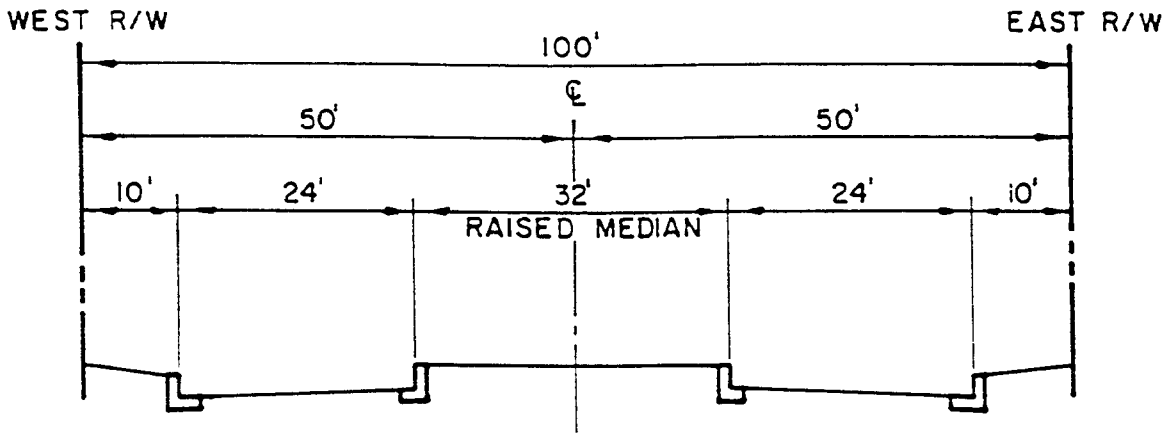
rancho palos verdes

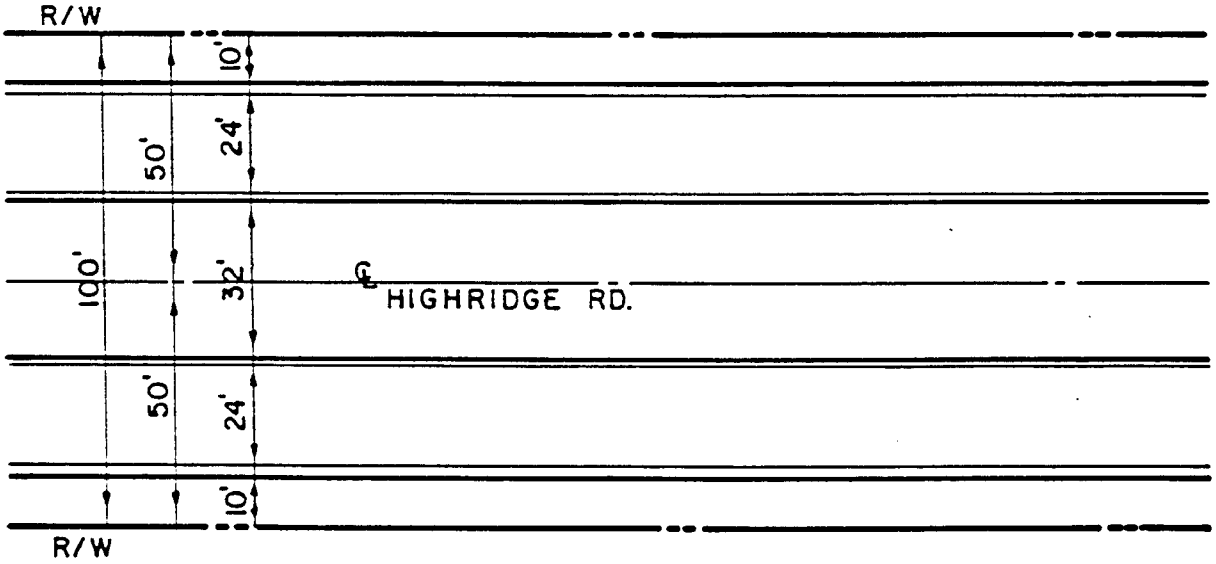




* 7' BIKE TRAIL & EMERGENCY PARKING (UNSTRIPED)

HAWTHORNE BOULEVARD	figure no.
rancho palos verdes	12



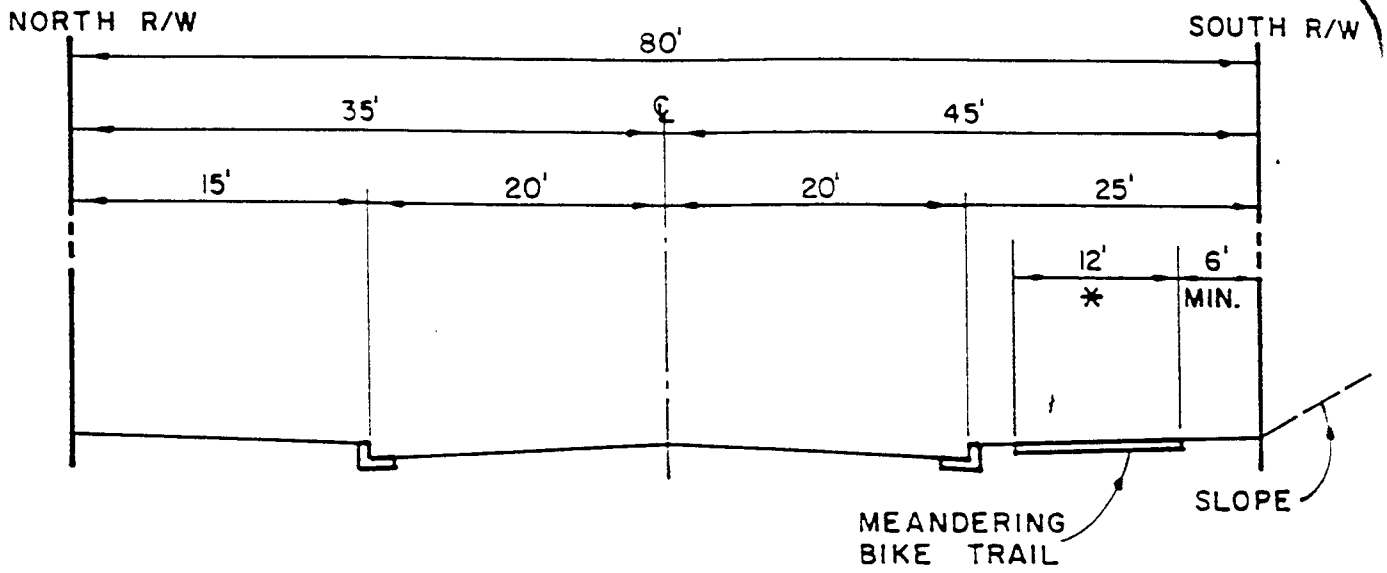


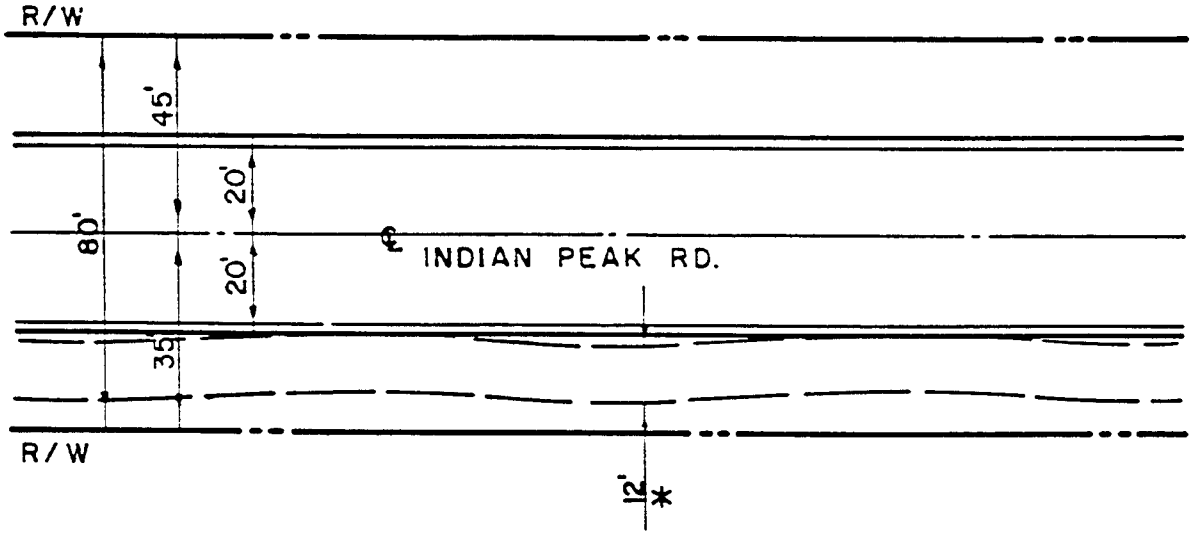
HIGHRIDGE ROAD
HAWTHORNE TO CITY LIMIT

figure no.

13

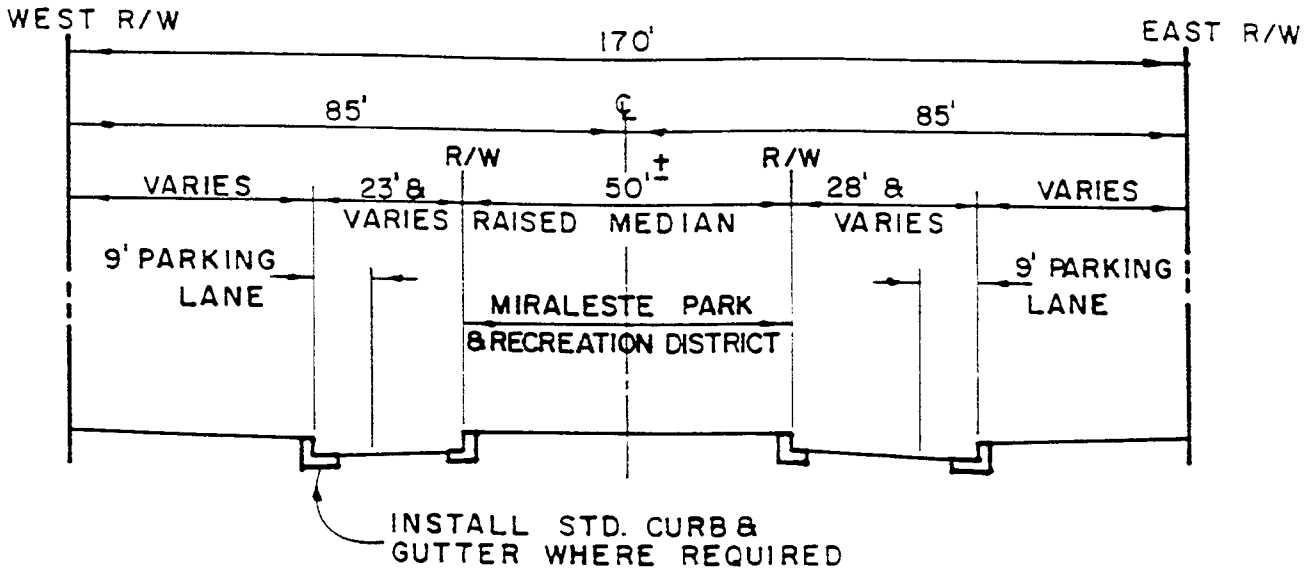
rancho palos verdes

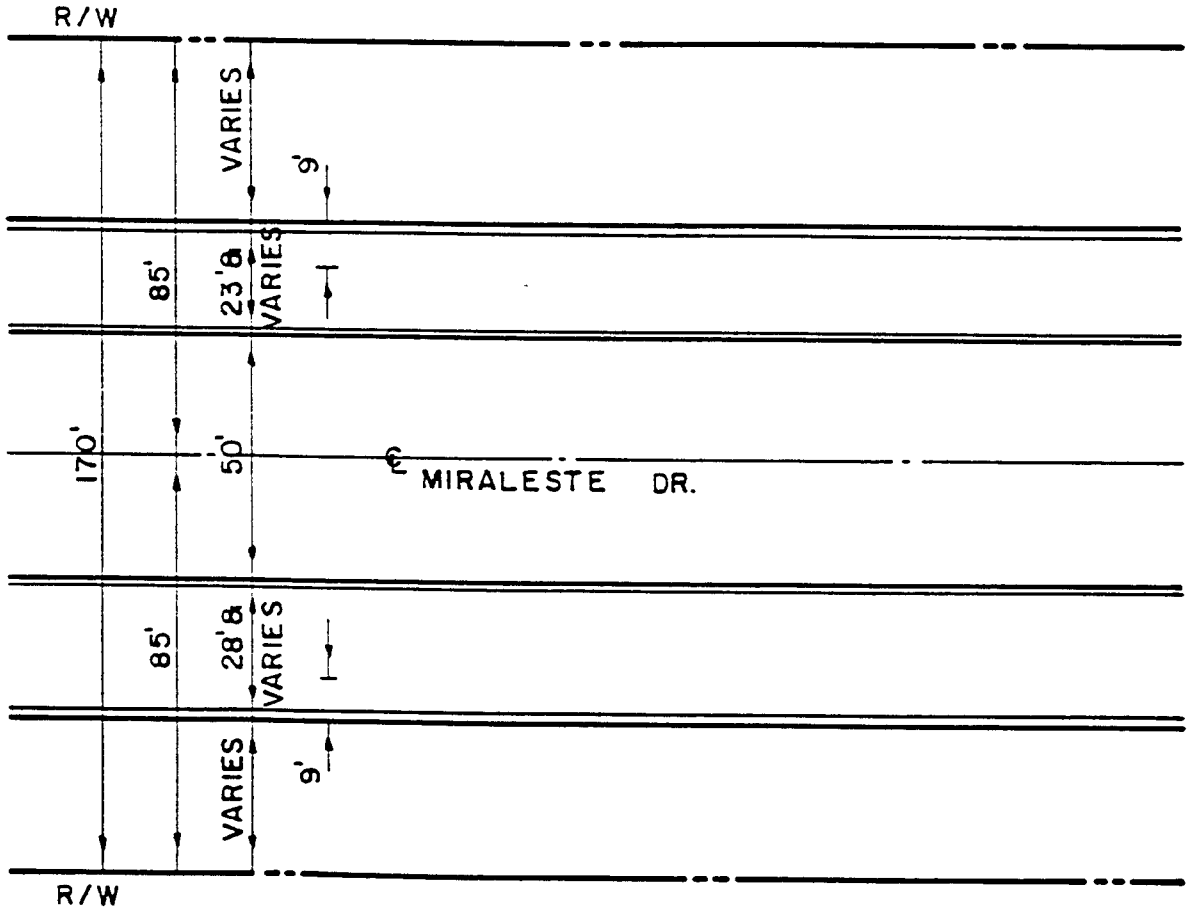




* 13.5' AGAINST CURB

INDIAN PEAK ROAD	figure no.
	14
rancho palos verdes	



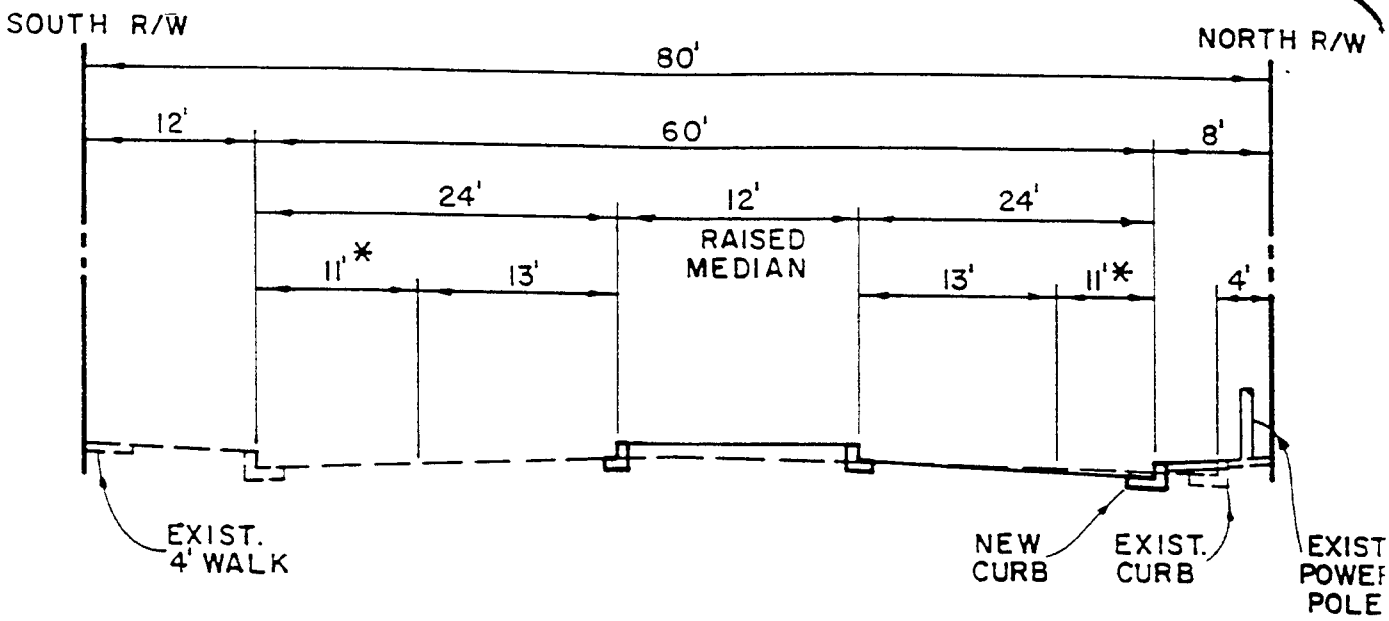


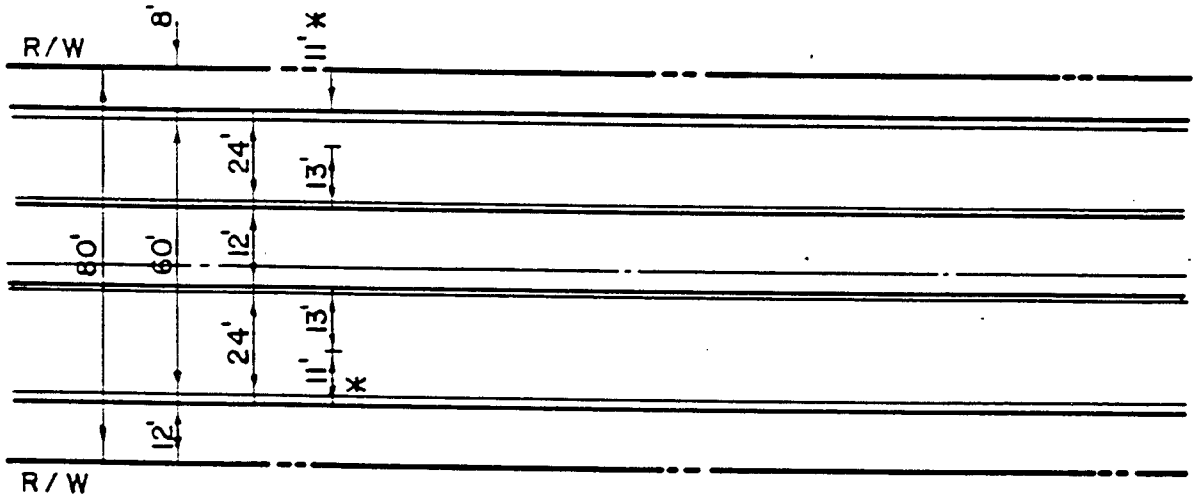
MIRALESTE DRIVE

figure no.

15

rancho palos verdes





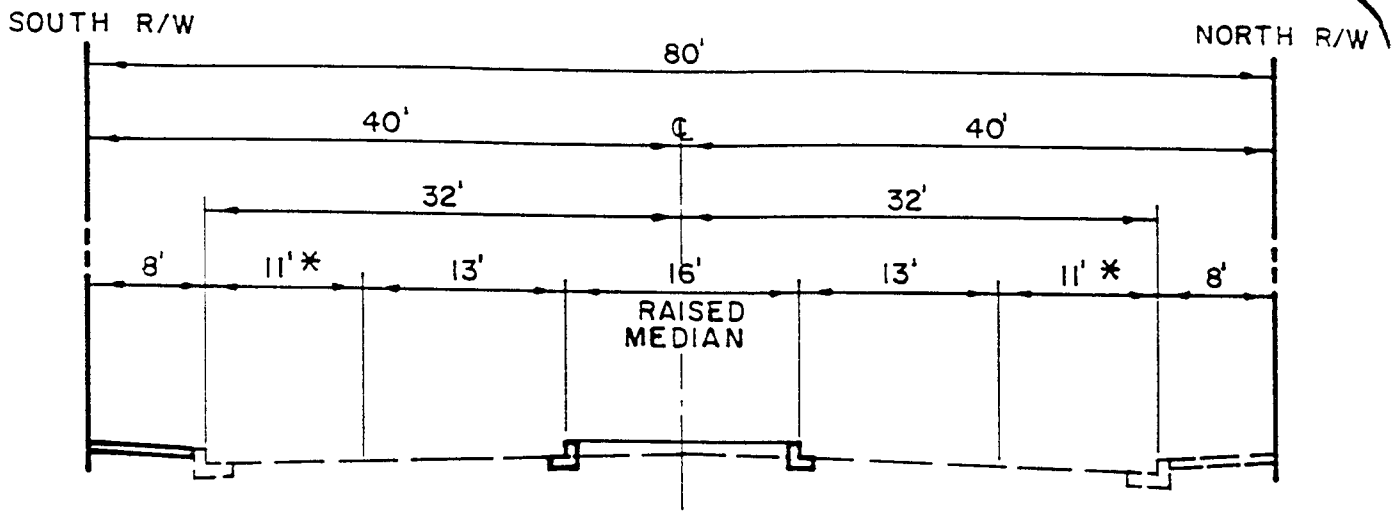
* UNSTRIPED PARKING AND BIKE LANE

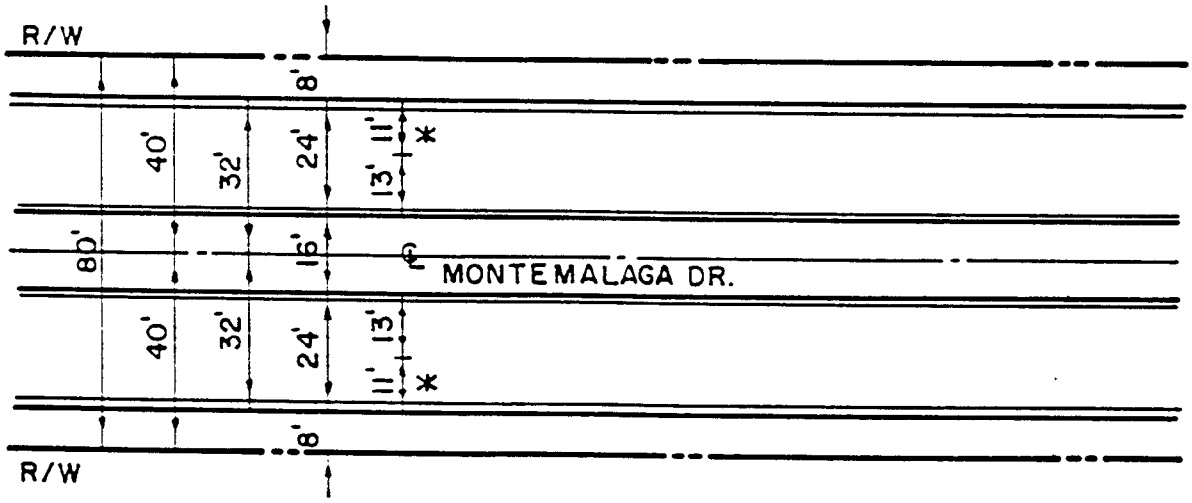
OPTION: UNDERGROUND UTILITIES AND LEAVE CURB AT SAME LOCATION.

MONTEMALAGA DRIVE
BASSWOOD AVE. TO SILVER SPUR RD.

figure no. **16**

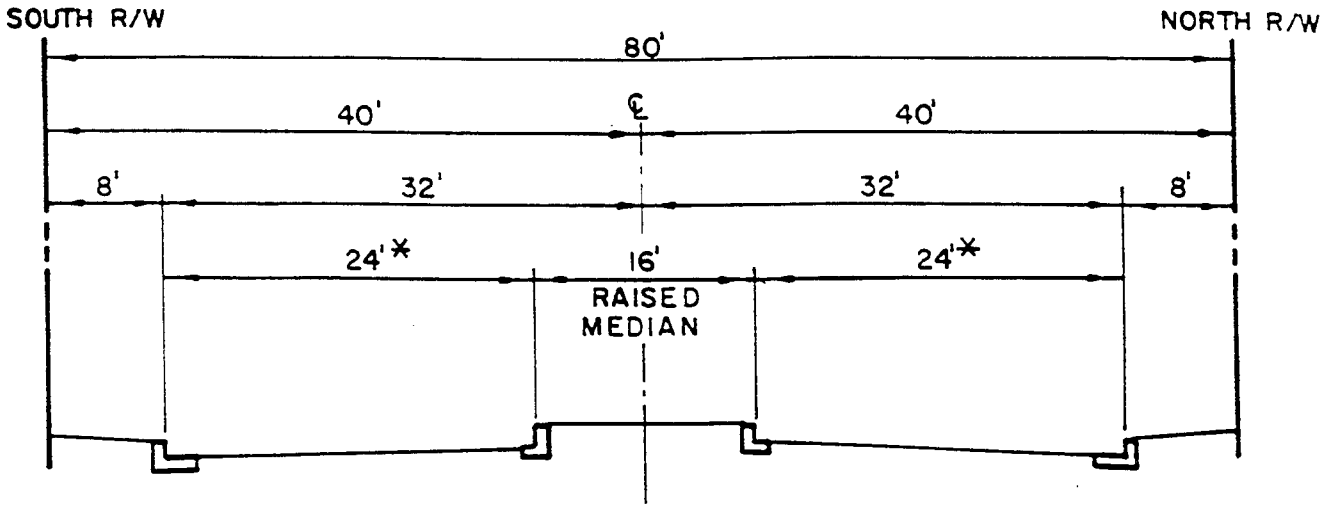
rancho palos verdes

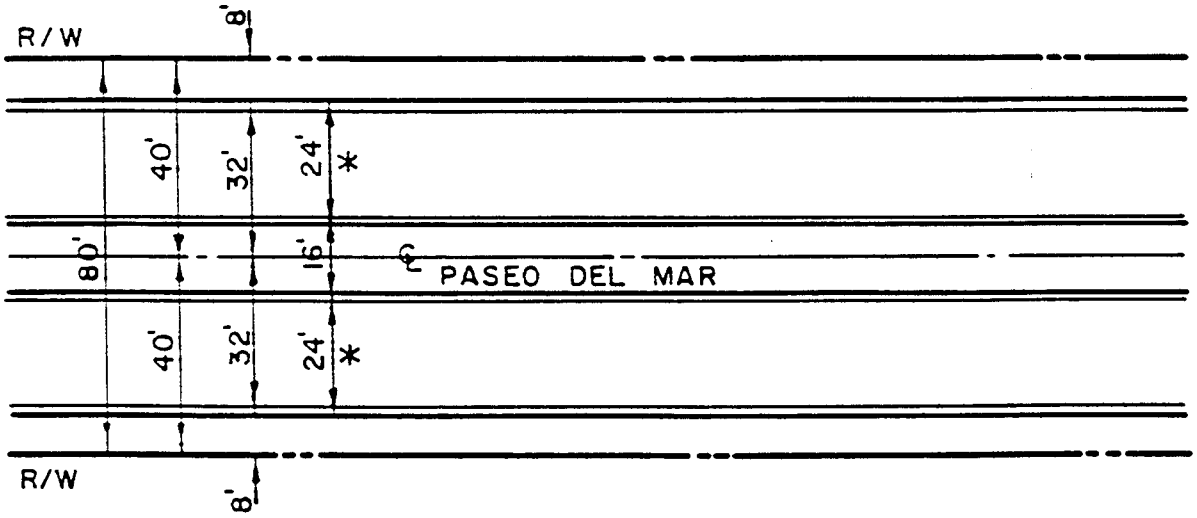




* UNSTRIPED BIKE LANE AND EMERGENCY PARKING

MONTEMALAGA DRIVE BASSWOOD AVE. TO CITY LIMITS	figure no.
rancho palos verdes	17





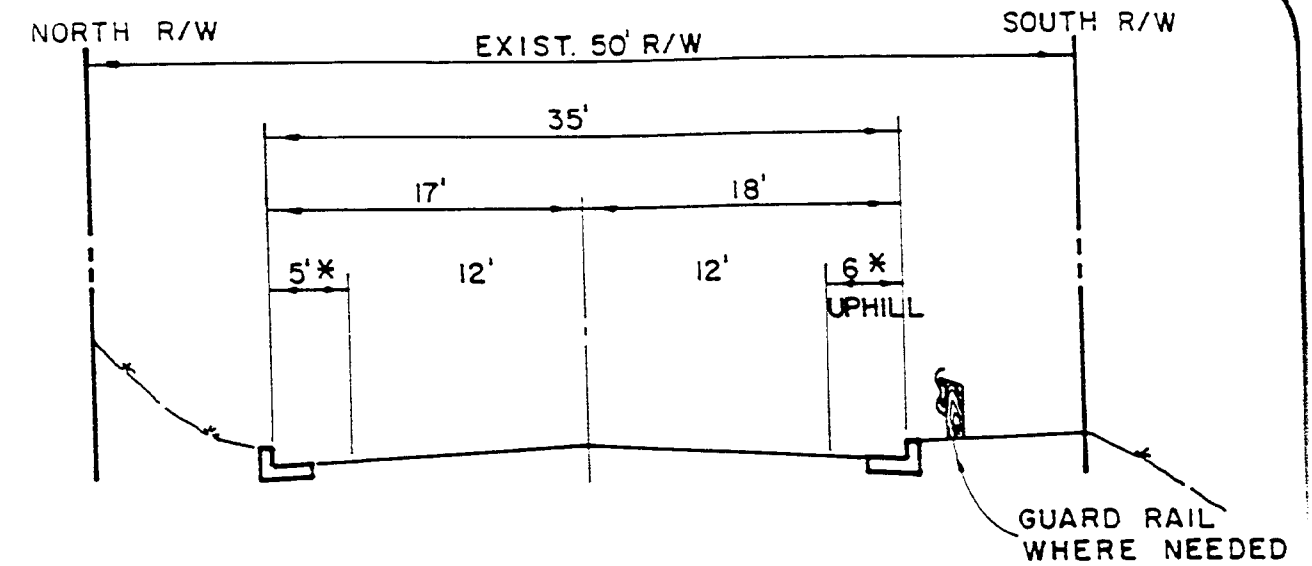
* TRAVEL LANE PLUS PARKING

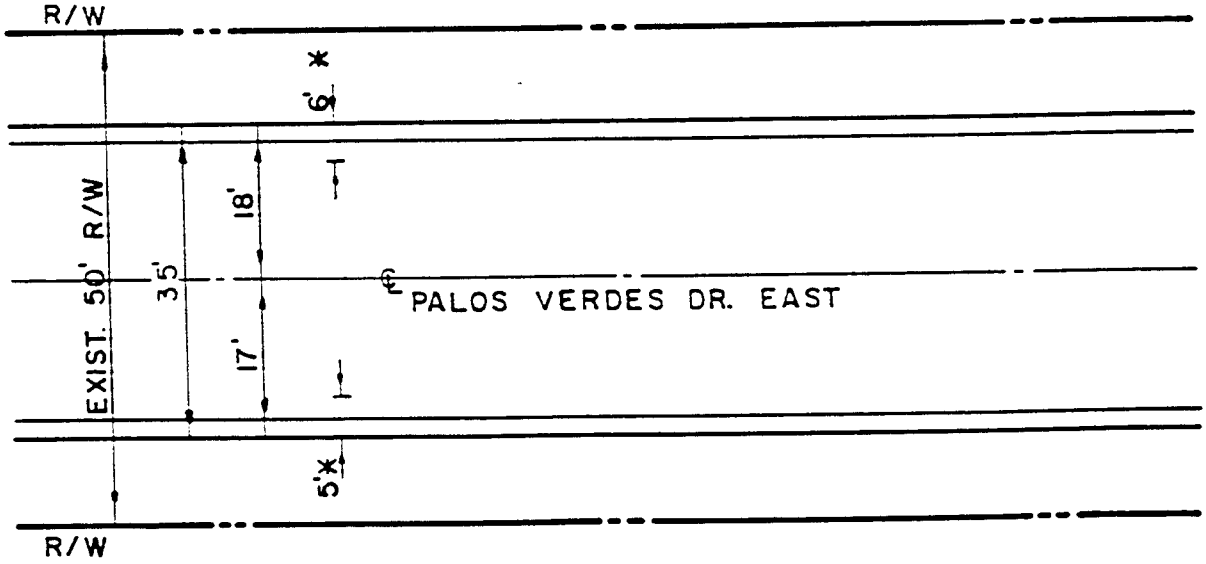
PASEO DEL MAR

figure no.

18

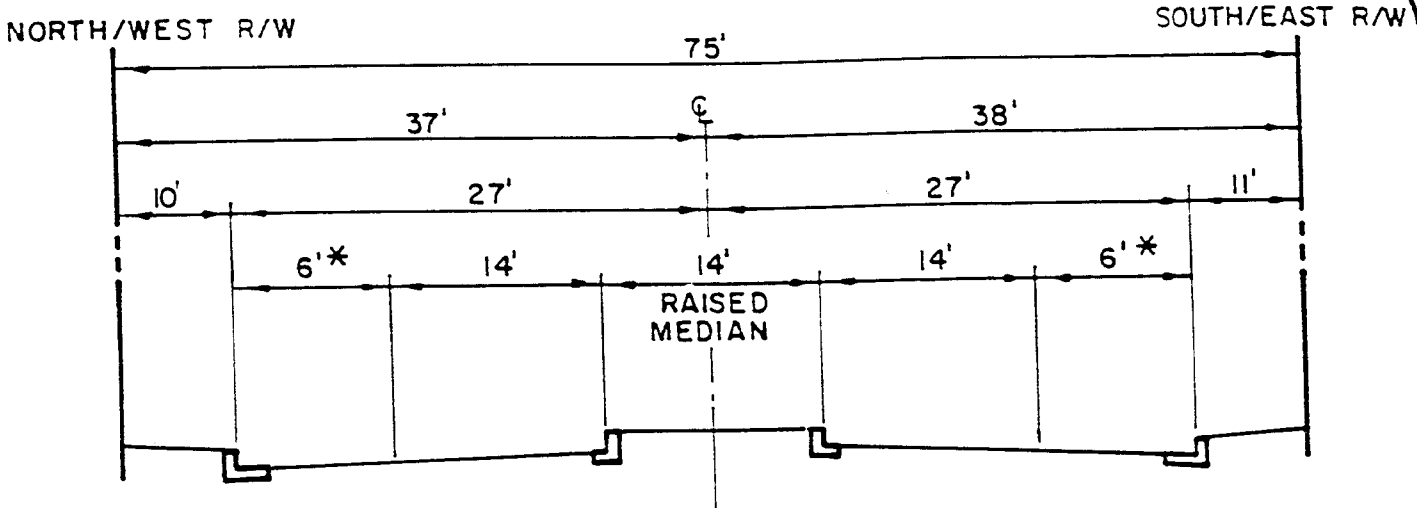
rancho palos verdes

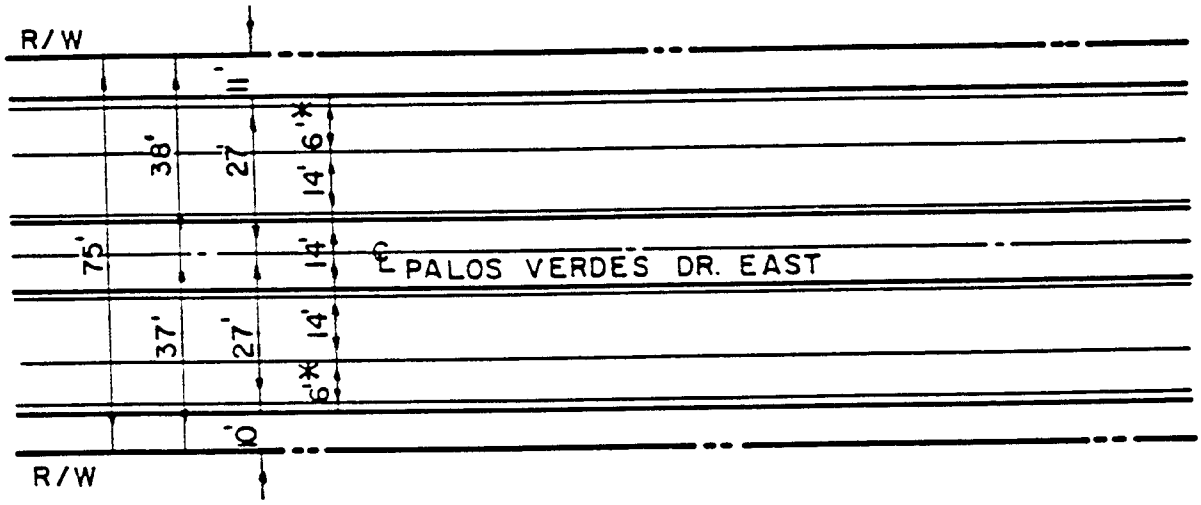




* BIKE TRAIL

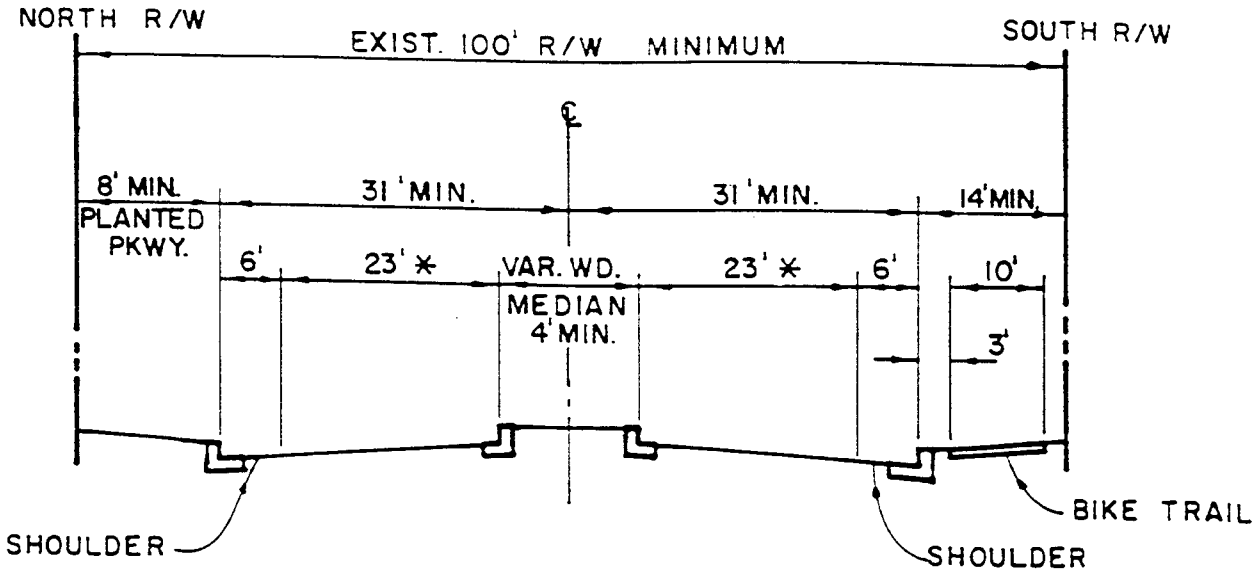
PALOS VERDES DRIVE EAST SOUTH OF GANADO DR. TO PALOS VERDES DR. SOUTH & 25TH. ST	figure no
rancho palos verdes	**19**

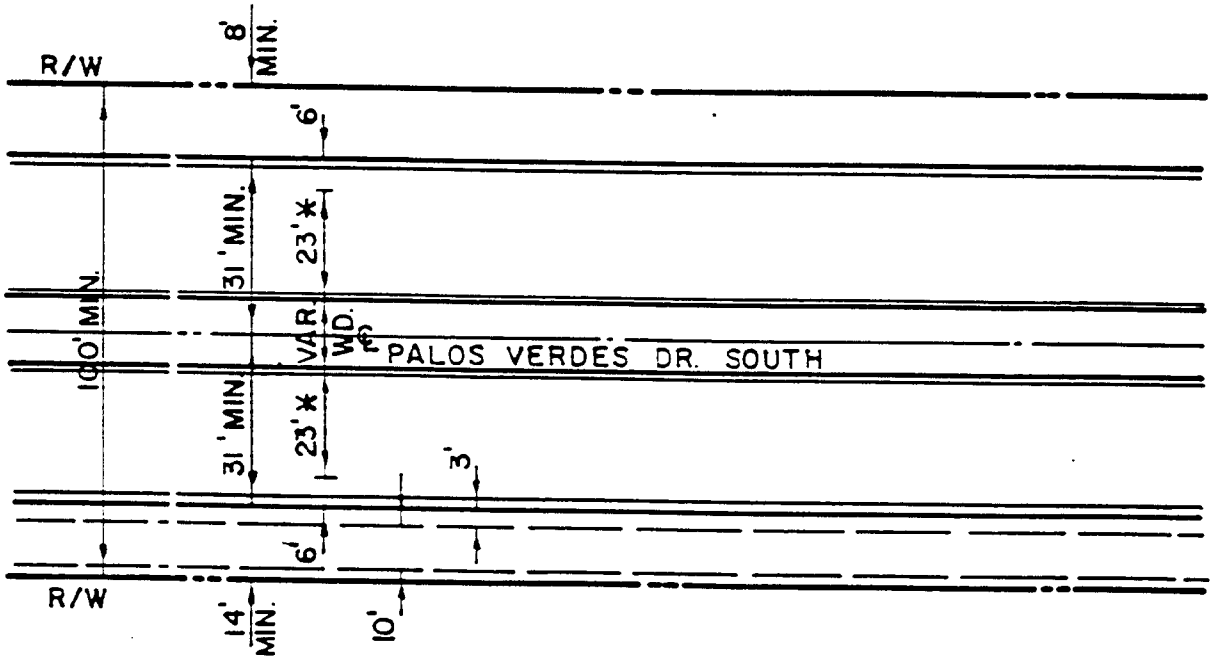




* EMERGENCY PARKING AND BIKE LANE. DELINEATE WITH STRIPE AND DOTS.

PALOS VERDES DRIVE EAST GANADO DR. TO CALLE AVENTURA	figure no. **20**
rancho palos verdes	





* 2 TRAVEL LANES

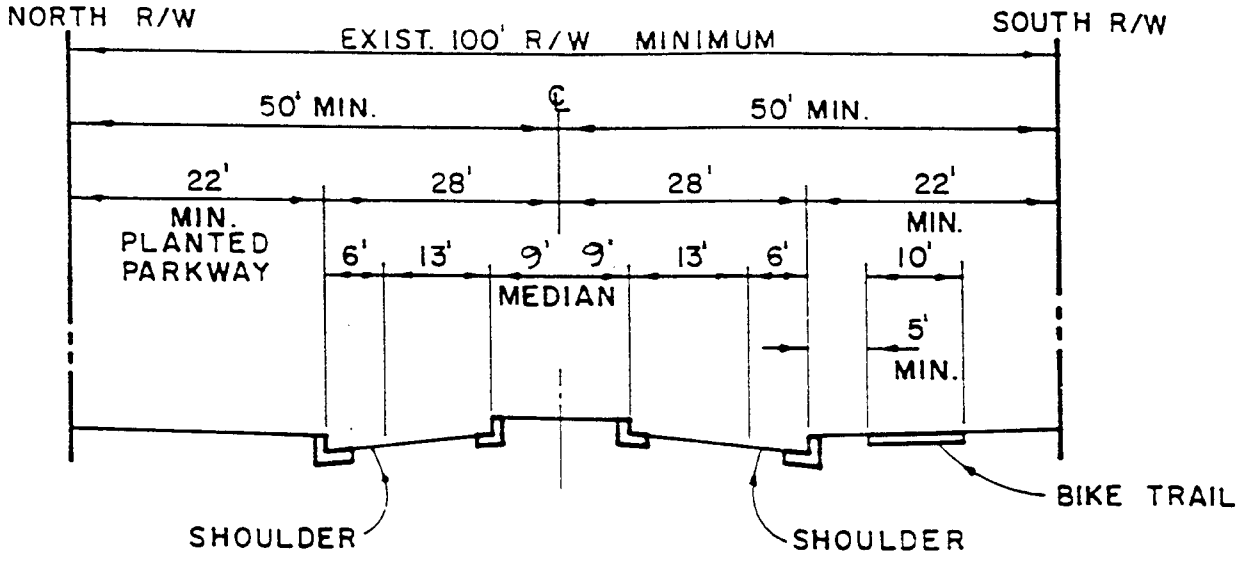
PALOS VERDES DRIVE SOUTH

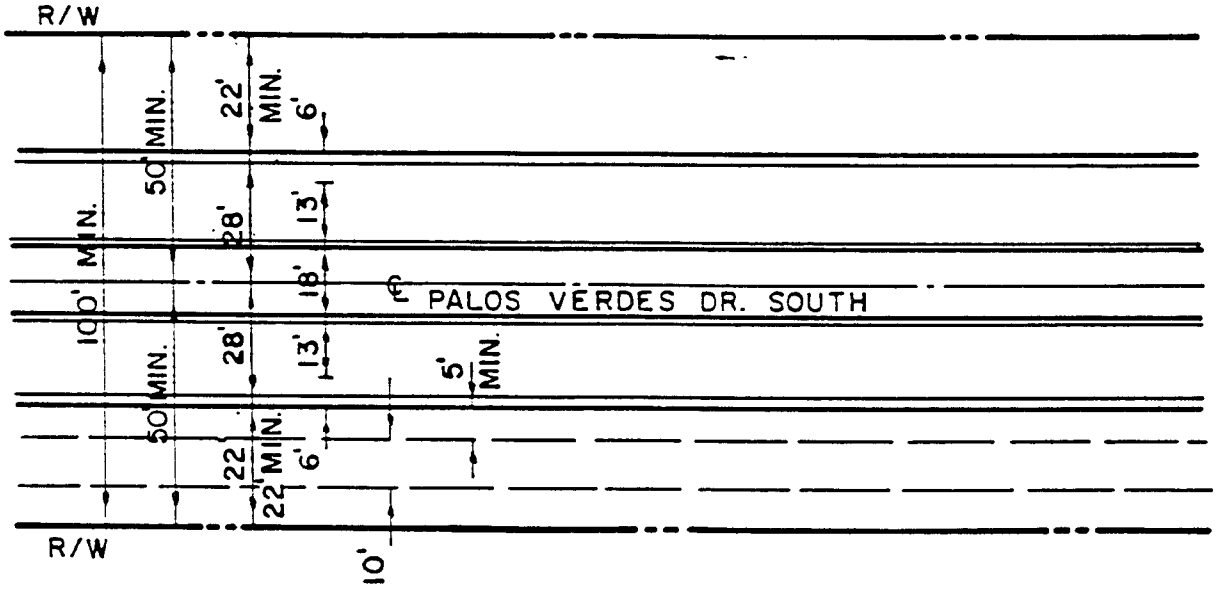
PALOS VERDES DRIVE WEST TO NARCISSA DRIVE

figure no.

21

rancho palos verdes



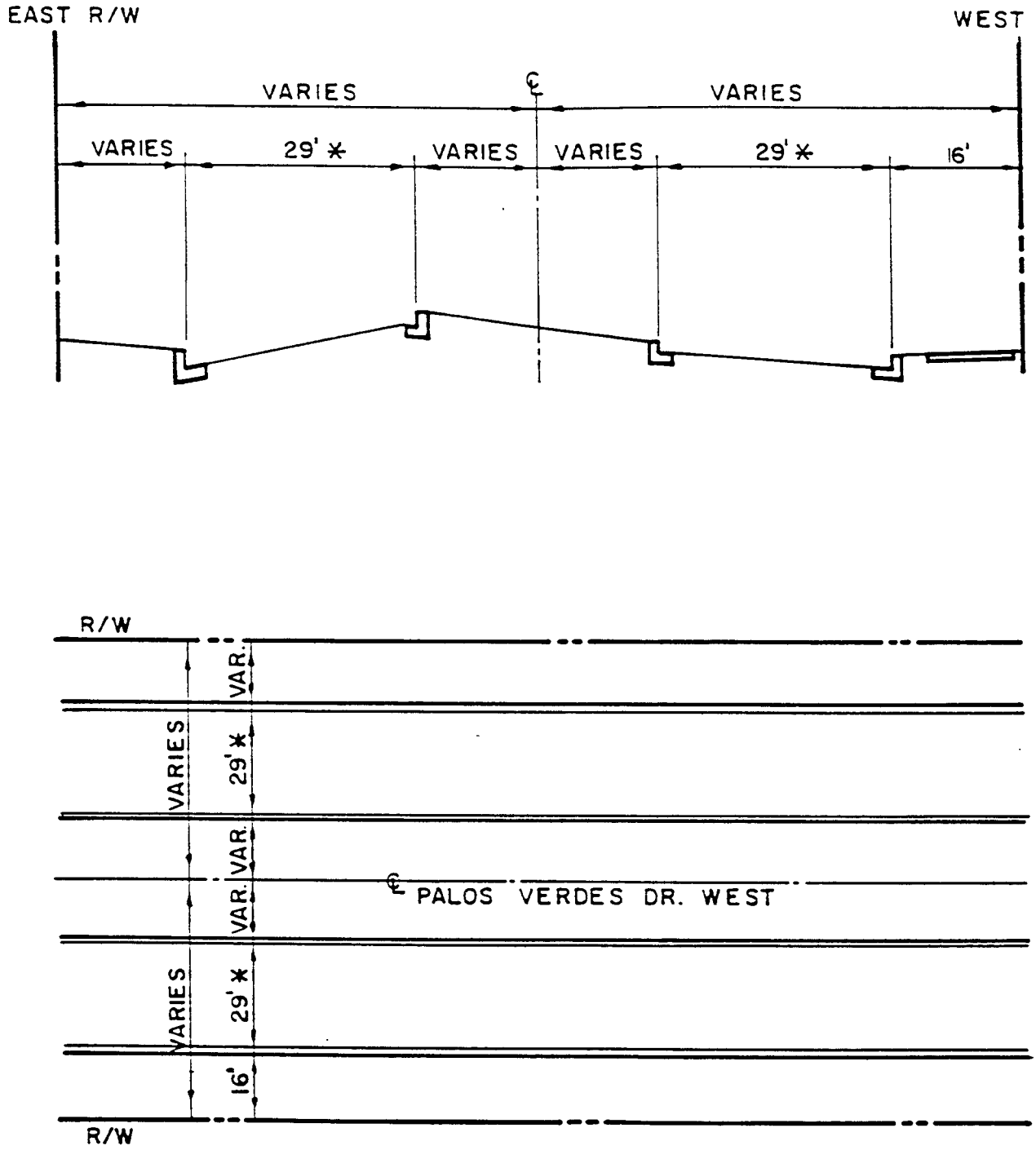


PALOS VERDES DRIVE SOUTH
VICINITY OF SCHOONER DR. TO 25 TH. STREET

figure no.

22

rancho palos verdes

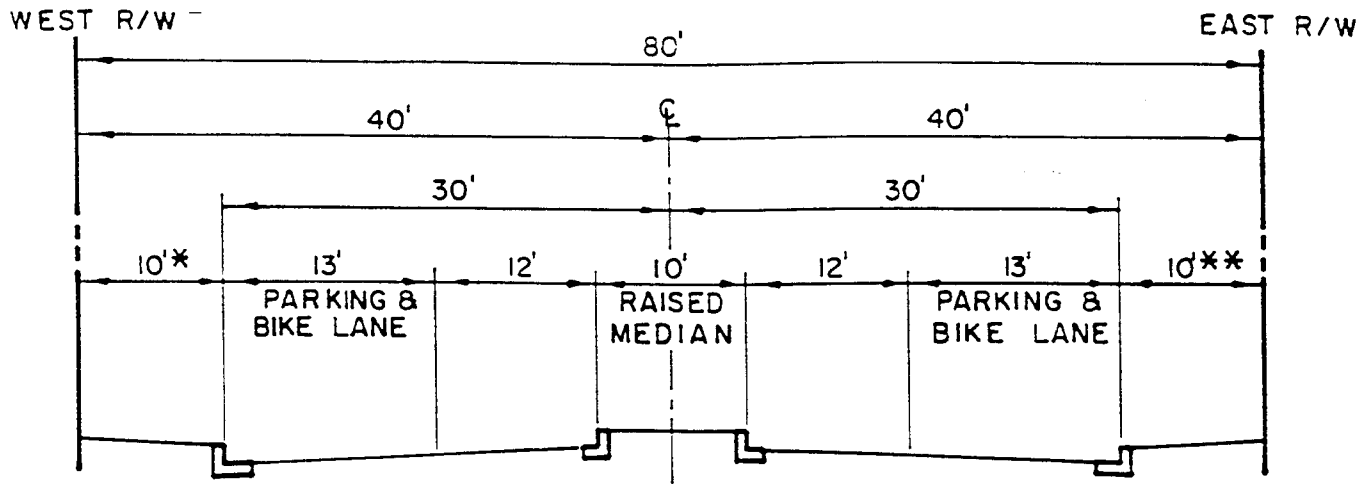


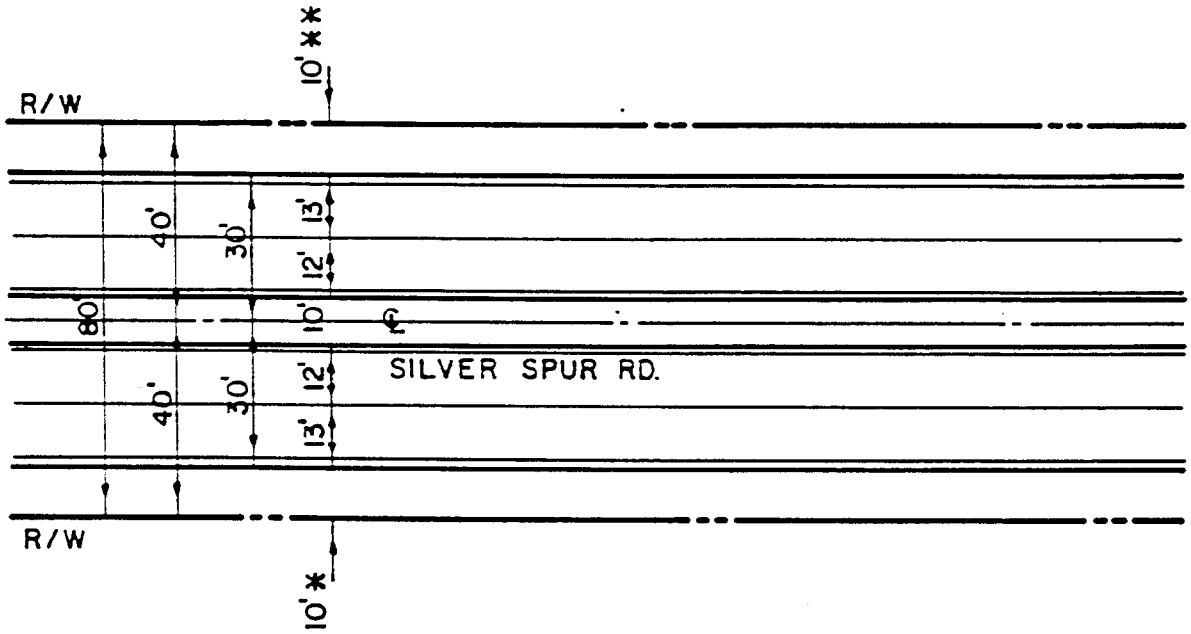
* 2 TRAVEL LANES AND EMERGENCY PARKING

PALOS VERDES DRIVE WEST
HAWTHORNE TO NORTH CITY LIMIT

figure no.
23

rancho palos verdes





* LANDSCAPED PARKWAY

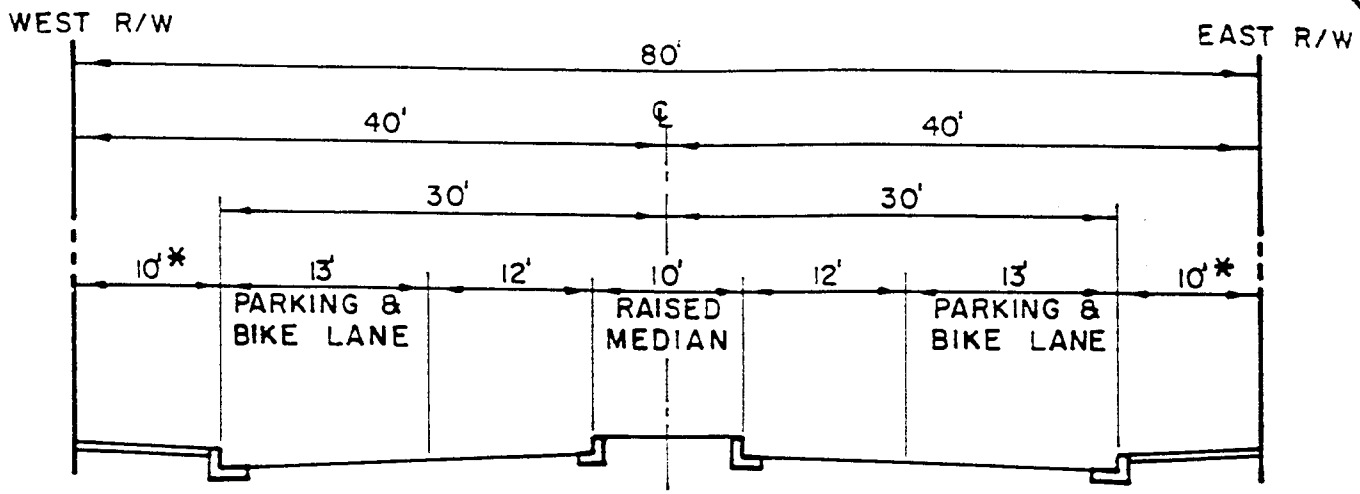
** SIDEWALK WITH PLANTER WELLS

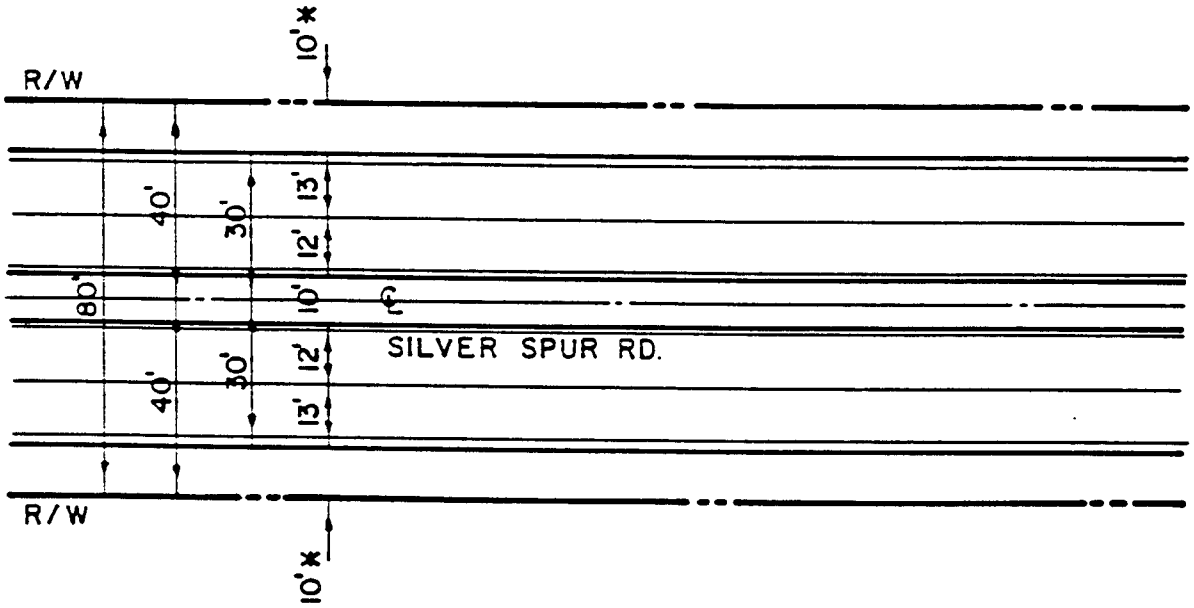
SILVER SPUR ROAD
BASSWOOD TO NORTH CITY LIMITS

figure no.

24

rancho palos verdes





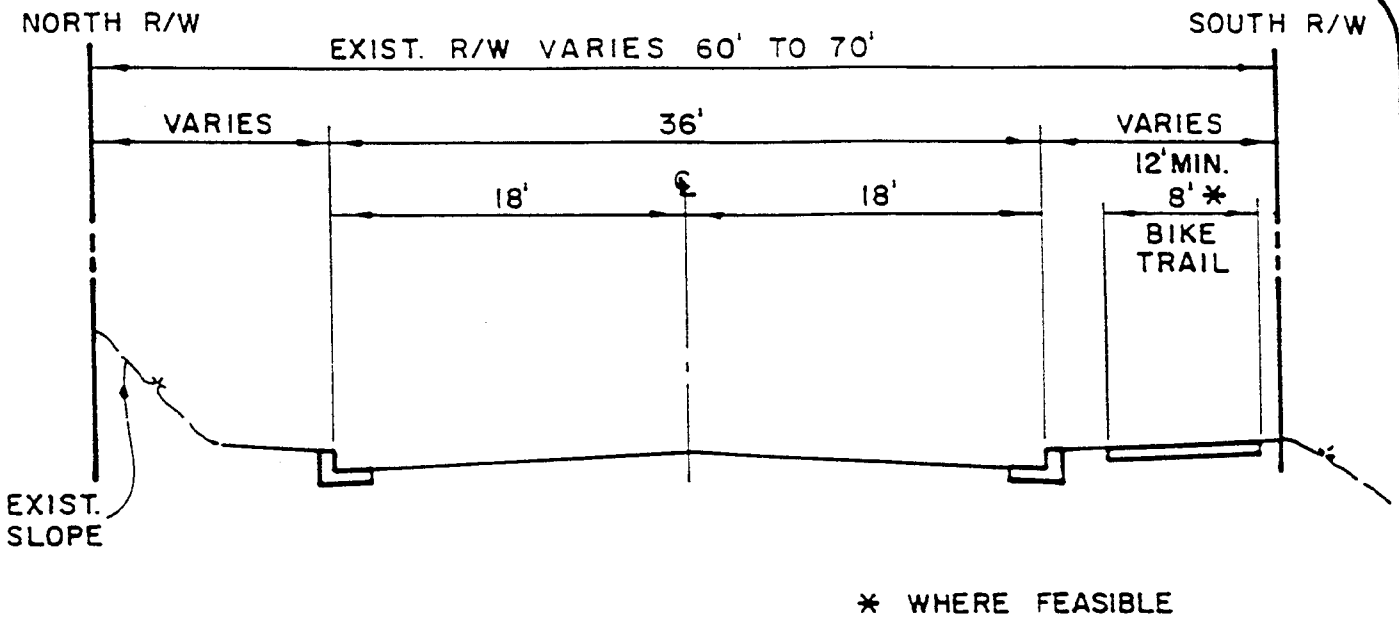
* SIDEWALK WITH PLANTER WELLS

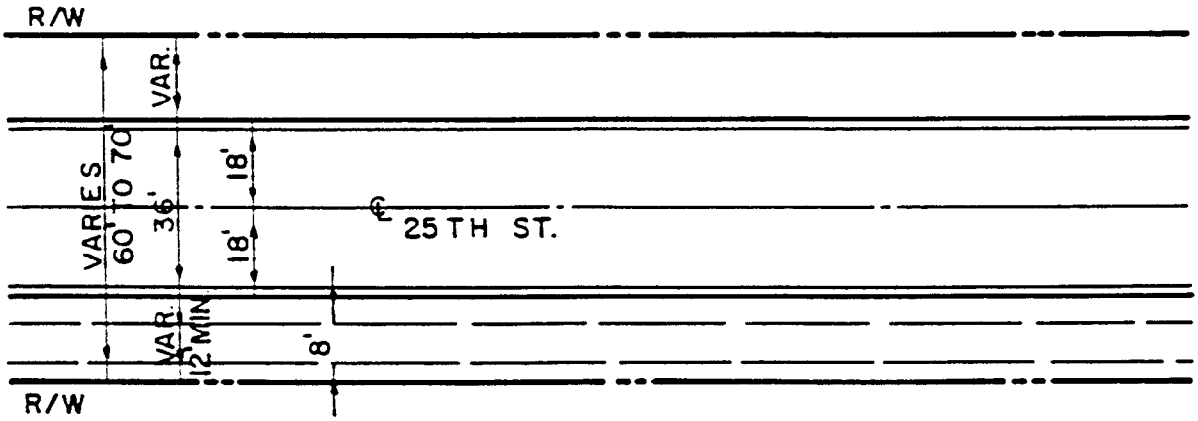
SILVER SPUR ROAD
BASSWOOD TO HAWTHORNE

figure no.

25

rancho palos verdes





25TH STREET

figure no.

26

rancho palos verdes

APPENDIX B

LEVEL OF SERVICE DESCRIPTION

LEVEL OF SERVICE - DEFINITIONS*

Service Level	General Definition	Freeways Criteria for measurement: Density (cars per lane-mile)	Arterials Criteria for measurement: Average travel speed (mph)
A	Free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist, passenger, or pedestrian is excellent.	Free flow operations. Average travel speeds near 60 mph generally prevail on 70-mph freeway elements. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream. The average spacing between vehicles is about 440 ft, or 22 car-lengths, with a maximum density of 12 cars/mi/ln. The effects of minor incidents or breakdowns are easily absorbed at this level. Although they may cause a deterioration in LOS in the vicinity of the incident, standing queues will not form, and traffic quickly returns to LOS A on passing the disruption.	Primarily free flow-operations at average travel speeds usually within 90 percent of the free flow speed. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Stopped delay at signalized intersections is minimal.
B	Stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS A. The level of comfort and convenience provided is somewhat less than at LOS A, because the presence of others in the traffic stream begins to affect individual behavior.	Reasonably free-flow conditions, and speeds of over 57 mph are maintained on 70-mph freeway elements. The average spacing between vehicles is about 260 ft, or 13 car-lengths, with a maximum density of 20 cars/mi/ln. The ability to maneuver within the traffic stream is only slightly restricted. The effects of minor incidents and breakdowns are still easily absorbed, though local deterioration in service would be more severe than for LOS A.	Unimpeded operations at average travel speeds usually within 70 percent of the free flow speed. The ability to maneuver within the traffic stream is slightly restricted and stopped delays are not bothersome.
C	Stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream. The selection of speed is affected by the presence of others, and maneuvering within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines noticeably at this level.	Stable operations, but flows approach the range in which small increases in flow will cause substantial deterioration in service. Average travel speeds are still over 54 mph. Freedom to maneuver within the traffic stream is noticeably restricted at LOS C, and lane changes require additional care and vigilance by the driver. Average spacings are in the range of 175 ft, or 9 car-lengths, with a maximum density of 30/cars/mi/ln. Minor incidents may still be absorbed, but the local deterioration in service will be substantial. Queues may be expected to form behind any significant blockage. Additional vigilance by driver required for safe operation.	Stable operations. Ability to maneuver and change lanes in midblock locations may be more restricted than in LOS B, and longer queues and/or adverse signal coordination may contribute to lower average travel speeds of about 50 percent of the average free flow speed.

D	High-density, but stable, flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.	Borders on unstable flow. In this range, small increases in flow cause substantial deterioration in service. Average travel speeds of 46 mph or more can still be maintained on 70-mph freeway elements. Freedom to maneuver within the traffic stream is severely limited. Even minor incidents can be expected to create substantial queuing, because the traffic stream has little space to absorb disruptions. Average spacings are about 125 ft, or 6 car-lengths, with a maximum density of 42 cars/mi/ln.	Borders on a range on which small increases in flow may cause substantial increases in approach delay and, hence, decreases in arterial speed. This may be due to adverse signal progression, inappropriate signal timing, high volumes, or some combination of these. Average travel speeds are about 40 percent of free flow speed.
E	Operating conditions at or near the capacity level. All speeds are reduced to a low but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult, and it is generally accomplished by forcing a vehicle or pedestrian to "give way" to accommodate such maneuvers. Comfort and convenience levels are extremely poor, and driver or pedestrian frustration is generally high. Operations at this level are usually unstable, because small increases in flow or minor perturbations within the traffic stream will cause breakdowns.	The boundary between LOS D and LOS E describes operation at capacity. Operations in this level are extremely unstable, because there are virtually no usable gaps in the traffic stream. Vehicles are spaced at approximately 80 ft, or 4 car-lengths, at relatively uniform headways. This, however, represents the minimum spacing at which stable flow can be accommodated. Any disruption to the traffic stream, such as a vehicle entering from a ramp, or a vehicle changing lanes, causes following vehicles to give way to admit the vehicle. At capacity, the traffic stream has no ability to dissipate even the most minor disruptions. Any incident can be expected to produce a serious breakdown with extensive queuing. The range of flows encompassed by LOS E is relatively small compared to other levels, but reflects a substantial deterioration in service. Maneuverability within the traffic stream is extremely limited. Average travel speeds at capacity are approximately 30 mph.	Significant approach delays and average travel speeds of one-third the free flow speed or lower. Such operations are caused by some combination or adverse progression, high signal density, extensive queuing at critical intersections, and inappropriate signal timing.
F	Level-of-service F. Forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations. Arrival flow exceeds discharge flow.	Level F describes forced or breakdown flow. Such conditions generally exist within queues forming behind breakdown points. Breakdown occurs when the ratio of actual arrival flow rate to actual capacity or the forecasted flow rate to estimated capacity exceeds 1.00. Operations at such a point will generally be at or near capacity, and downstream operations may be better as vehicles pass the bottleneck (assuming that there are no additional downstream problems). The LOS F operations observed within a queue are the result of a breakdown or bottleneck at a downstream point.	Arterial flow at extremely low speeds below one-third to one-quarter of the free flow speed. Intersection congestion is likely at critical signalized locations, with high approach delays resulting. Adverse progression is frequently a contributor to this condition.

*Source: "Highway Capacity Manual, Special Report 209"
Transportation Research Board, Washington D.C., 1985

APPENDIX C

TRAFFIC COUNT WORKSHEETS

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: PALOS VERDES DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: PALOS VERDES DAY: TUESDAY
NORTH/PALOS VERDES WEST PROJECT# 0501002A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:				1		1	1	1			1	1	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM				18		54	197	36			24	55	384
15 AM				38		73	198	26			29	86	450
30 AM				32		89	228	27			31	84	491
45 AM				47		158	252	45			60	88	650
8:00 AM				51		131	241	68			30	77	598
15 AM				40		128	286	31			29	92	606
30 AM				76		148	239	43			42	108	656
45 AM				74		149	202	59			63	85	632
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	0	0	0	376	0	930	1843	335	0	0	308	675	4467
PEAK VOLUMES =	0	0	0	214	0	565	1018	187	0	0	161	365	2510

AM Peak Hr Begins at 745 AM

ADDITIONS: 2-WAY STOP
SOUTH/WEST

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: PALOS VERDES DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: PALOS VERDES DAY: TUESDAY
NORTH/PALOS VERDES WEST PROJECT# 0501002P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:				1		1	1	1			1	1	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM													
15 PM				70		221	159	51			41	66	608
30 PM				95		194	201	63			43	93	689
45 PM				107		245	180	47			52	69	700
5:00 PM				90		261	168	53			51	72	695
15 PM				99		213	191	77			46	84	710
30 PM				92		231	162	62			40	83	670
45 PM				99		265	166	43			57	101	731
6:00 PM				89		230	157	49			62	73	660
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	0	0	0	741	0	1860	1384	445	0	0	392	641	5463

PM Peak Hr Begins at 500 PM

PEAK VOLUMES =	0	0	0	380	0	970	687	235	0	0	194	340	2806

ADDITIONS: 2-WAY STOP
SOUTH/WEST

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: HAWTHORNE DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: PALOS VERDES DRIVE WEST DAY: TUESDAY PROJECT# 0501017A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	1	1	1	1	2	0	1	2	1	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	0	0	0	16	4	17	31	19	0	2	31	64	184
15 AM	0	0	0	18	12	22	35	27	2	3	42	78	239
30 AM	0	0	0	19	9	64	49	42	1	2	67	73	326
45 AM	0	0	1	22	3	121	78	55	2	2	75	75	434
8:00 AM	0	0	0	44	4	71	51	54	1	4	73	71	373
15 AM	0	0	0	54	0	35	36	60	0	5	71	69	330
30 AM	0	0	0	43	1	33	34	51	1	4	66	66	299
45 AM	0	0	1	41	1	32	33	43	2	4	62	61	280
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	0	0	2	257	34	395	347	351	9	26	487	557	2465

AM Peak Hr Begins at 730 AM

PEAK VOLUMES =	0	0	1	139	16	291	214	211	4	13	286	288	1463

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: HAWTHORNE DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: PALOS VERDES DRIVE WEST DAY: TUESDAY PROJECT# 0501017P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	1	1	1	1	2	0	1	2	1	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	0	0	0	59	0	27	29	44	0	1	60	48	268
15 PM	0	0	1	58	1	30	37	52	0	1	44	51	275
30 PM	0	0	2	59	0	30	34	47	0	0	34	63	269
45 PM	0	0	0	58	0	33	40	54	0	0	46	66	297
5:00 PM	0	0	2	71	0	34	41	55	1	0	49	71	324
15 PM	0	0	4	75	1	36	39	60	1	1	66	63	346
30 PM	0	0	1	66	0	29	51	54	0	0	65	64	330
45 PM	0	0	1	58	0	37	40	53	0	0	59	54	302
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	0	0	11	504	2	256	311	419	2	3	423	480	2411

PM Peak Hr Begins at 500 PM

PEAK VOLUMES =	0	0	8	270	1	136	171	222	2	1	239	252	1302

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: GRANVIA ALTAMIRA
E-W STREET: HAWTHORNE

DATE: 7/20/99
DAY: TUESDAY

CITY: PALOS VERDES

PROJECT# 0501001A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	1	2	1	1	1	2	0	1	2	0	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	3	9	9	74	6	8	18	180	2	6	50	22	387
15 AM	4	8	13	91	6	3	17	250	2	11	110	43	558
30 AM	6	12	11	71	5	12	23	194	1	6	128	39	508
45 AM	8	13	11	93	8	5	20	210	3	8	98	47	524
8:00 AM	9	17	9	111	11	12	29	182	6	4	138	45	573
15 AM	5	11	6	96	22	17	18	215	9	9	120	41	569
30 AM	3	10	9	90	8	8	24	208	8	3	109	32	512
45 AM	5	10	11	72	16	12	22	167	3	7	97	34	456
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	43	90	79	698	82	77	171	1606	34	54	850	303	4087

AM Peak Hr Begins at 745 AM

PEAK VOLUMES =	25	51	35	390	49	42	91	815	26	24	465	165	2178

ADDITIONS:SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: GRANVIA ALTAMIRA
E-W STREET: HAWTHORNE

DATE: 7/20/99
DAY: TUESDAY

CITY: PALOS VERDES

PROJECT# 0501001P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	1	2	1	1	1	2	0	1	2	0	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	8	10	12	39	13	25	14	121	7	12	170	65	496
15 PM	7	12	13	47	15	19	16	145	5	14	205	72	570
30 PM	8	14	9	46	14	18	17	156	10	10	189	85	576
45 PM	7	9	7	41	8	21	21	152	8	11	204	95	584
5:00 PM	5	10	5	61	11	18	22	158	9	16	215	82	612
15 PM	4	11	14	51	20	20	22	124	4	15	214	64	563
30 PM	4	11	7	58	12	22	19	135	7	24	225	62	586
45 PM	9	8	6	48	11	14	37	129	3	15	231	76	587
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	52	85	73	391	104	157	168	1120	53	117	1653	601	4574

PM Peak Hr Begins at 500 PM

PEAK VOLUMES =	22	40	32	218	54	74	100	546	23	70	885	284	2348

ADDITIONS:SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: HIGHRIDGE DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: HAWTHORNE DAY: TUESDAY

PROJECT# 0501003A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	1	0	1	0	1	2	0	1	2	0	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	1	3	97	26	1	0	0	292	0	23	82	4	529
15 AM	6	8	121	36	2	1	0	299	3	44	157	10	687
30 AM	5	4	104	26	3	3	1	256	2	36	125	13	578
45 AM	7	6	85	48	0	1	1	245	2	51	129	14	589
8:00 AM	7	9	107	49	2	6	2	302	1	24	153	14	676
15 AM	8	3	105	31	3	2	1	290	1	39	124	16	623
30 AM	9	8	102	41	4	4	2	302	6	38	135	16	667
45 AM	8	5	84	39	4	7	1	258	5	32	105	10	558
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	51	46	805	296	19	24	8	2244	20	287	1010	97	4907
PEAK VOLUMES =	31	26	399	169	9	13	6	1139	10	152	541	60	2555

AM Peak Hr Begins at 745 AM

ADDITIONS:SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: HIGHRIDGE DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: HAWTHORNE DAY: TUESDAY

PROJECT# 0501003P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	1	0	1	0	1	2	0	1	2	0	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	7	3	79	23	6	7	2	231	5	63	234	26	686
15 PM	7	9	76	21	1	5	3	195	5	66	241	31	660
30 PM	6	5	68	22	5	2	7	194	1	91	267	24	692
45 PM	8	6	71	23	5	3	3	176	8	83	254	34	674
5:00 PM	9	5	67	26	7	5	6	165	7	98	285	47	727
15 PM	4	5	56	19	6	7	4	161	6	104	310	42	724
30 PM	8	4	49	18	4	4	6	149	7	108	321	38	716
45 PM	4	3	38	15	3	2	3	168	4	119	315	36	710
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	53	40	504	167	37	35	34	1439	43	732	2227	278	5589
PEAK VOLUMES =	25	17	210	78	20	18	19	643	24	429	1231	163	2877

PM Peak Hr Begins at 500 PM

ADDITIONS:SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: HIGHRIDGE RD. DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: CREST RD. DAY: TUESDAY

PROJECT# 0501012A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	1	1	0	1	2	0	1	2	0	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	0	2	8	0	0	1	7	74	1	2	41	4	140
15 AM	0	1	5	7	2	3	2	90	0	0	50	7	167
30 AM	1	0	14	3	3	3	4	100	1	2	57	12	200
45 AM	2	0	10	4	0	5	9	96	2	4	53	12	197
8:00 AM	2	2	6	6	4	7	7	113	3	4	72	7	233
15 AM	4	2	8	2	1	9	10	91	0	4	33	3	167
30 AM	3	3	5	2	0	7	8	86	1	2	37	4	158
45 AM	6	5	7	4	2	15	28	96	3	3	47	5	221
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	18	15	63	28	12	50	75	746	11	21	390	54	1483

PM Peak Hr Begins at 730 AM

PEAK VOLUMES =	9	4	38	15	8	24	30	400	6	14	215	34	797

ADDITIONS: 2-WAY STOP
NORTH/SOUTH

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: HIGHRIDGE RD. DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: CREST RD. DAY: TUESDAY

PROJECT# 0501012P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	1	1	0	1	2	0	1	2	0	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	2	1	3	1	3	5	5	52	0	7	83	3	165
15 PM	2	4	1	5	2	7	4	56	0	1	76	7	165
30 PM	1	1	3	5	2	10	7	62	1	1	73	5	171
45 PM	0	1	3	3	1	12	9	48	2	6	78	5	168
5:00 PM	2	2	4	6	2	12	6	64	2	4	89	8	201
15 PM	0	6	1	5	1	5	9	49	3	4	83	13	179
30 PM	1	3	3	4	0	8	7	44	2	2	86	8	168
45 PM	0	2	2	3	1	7	4	59	2	3	88	10	181
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	8	20	20	32	12	66	51	434	12	28	656	59	1398

PM Peak Hr Begins at 500 PM

PEAK VOLUMES =	3	13	10	18	4	32	26	216	9	13	346	39	729

ADDITIONS: 2-WAY STOP
NORTH/SOUTH

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: INDIAN PEAK DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: HAWTHORNE BLVD. DAY: TUESDAY

PROJECT# 0501004A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2		1					2	1	1	2		
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	14		8					356	58	20	98		554
15 AM	36		7					406	55	20	147		671
30 AM	34		8					304	69	15	133		563
45 AM	19		7					395	60	22	173		676
8:00 AM	33		13					385	65	23	210		729
15 AM	27		13					337	87	34	153		651
30 AM	50		12					312	63	28	153		618
45 AM	51		11					273	78	37	173		623
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	264	0	79	0	0	0	0	2768	535	199	1240	0	5085

AM Peak Hr Begins at 745 AM

PEAK VOLUMES =	129	0	45	0	0	0	0	1429	275	107	689	0	2674

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: INDIAN PEAK DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: HAWTHORNE BLVD. DAY: TUESDAY

PROJECT# 0501004P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2		1					2	1	1	2		
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	126		37					258	39	30	219		709
15 PM	110		29					223	42	33	200		637
30 PM	107		23					233	42	25	289		719
45 PM	102		18					224	28	36	321		729
5:00 PM	132		28					263	39	26	308		796
15 PM	114		17					237	54	23	353		798
30 PM	118		23					204	43	33	329		750
45 PM	136		16					193	48	21	332		746
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	945	0	191	0	0	0	0	1835	335	227	2351	0	5884

PM Peak Hr Begins at 500 PM

PEAK VOLUMES =	500	0	84	0	0	0	0	897	184	103	1322	0	3090

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: CRENSHAW BLVD. DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: INDIAN PEAK RD. DAY: TUESDAY

PROJECT# 0501010A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2			2	1	1		1				
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	20	169			86	8	41		3				327
15 AM	21	275			102	11	52		20				481
30 AM	12	311			77	19	68		21				508
45 AM	17	278			125	24	44		20				508
8:00 AM	18	271			122	20	59		18				508
15 AM	16	254			106	22	48		19				465
30 AM	15	322			131	13	48		10				539
45 AM	24	260			106	25	43		16				474
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	143	2140	0	0	855	142	403	0	127	0	0	0	3810

AM Peak Hr Begins at 745 AM

PEAK VOLUMES =	66	1125	0	0	484	79	199	0	67	0	0	0	2020

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: CRENSHAW BLVD. DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: INDIAN PEAK RD. DAY: TUESDAY

PROJECT# 0501010P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2			2	1	1		1				
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	30	129			208	36	17		35				455
15 PM	27	123			178	38	27		25				418
30 PM	26	136			209	39	28		41				479
45 PM	17	130			195	49	26		50				467
5:00 PM	14	132			226	58	32		46				508
15 PM	31	148			258	56	38		51				582
30 PM	29	151			204	44	20		32				480
45 PM	30	159			189	54	24		48				504
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	204	1108	0	0	1667	374	212	0	328	0	0	0	3893

AM Peak Hr Begins at 500 PM

PEAK VOLUMES =	104	590	0	0	877	212	114	0	177	0	0	0	2074

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: SILVER SPUR DATE: 7/21/99 CITY: PALOS VERDES

E-W STREET: HAWTHORNE BLVD. DAY: WEDNESDAY

PROJECT# 0501005A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	2	1	1	2	1	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	18	91	18	13	35	36	36	282	3	23	96	14	665
15 AM	13	130	22	26	57	38	76	226	34	31	76	36	765
30 AM	30	61	35	50	53	38	31	238	47	30	108	1	722
45 AM	64	50	17	34	83	38	24	281	119	35	132	7	884
8:00 AM	96	51	44	35	60	18	64	316	70	39	140	10	943
15 AM	30	42	22	27	52	21	43	369	51	50	108	17	832
30 AM	55	33	27	11	32	25	24	343	60	49	147	11	817
45 AM	38	64	32	25	78	30	8	232	49	63	82	9	710
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	344	522	217	221	450	244	306	2287	433	320	889	105	6338

AM Peak Hr Begins at 745 AM

PEAK VOLUMES =	245	176	110	107	227	102	155	1309	300	173	527	45	3476

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: SILVER SPUR DATE: 7/21/99 CITY: PALOS VERDES

E-W STREET: HAWTHORNE BLVD. DAY: WEDNESDAY

PROJECT# 0501005P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	2	1	1	2	1	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	60	68	41	16	90	47	45	176	37	39	189	11	819
15 PM	80	71	37	12	83	32	64	190	49	60	237	20	935
30 PM	75	43	35	12	75	35	28	148	33	51	176	22	733
45 PM	82	107	37	7	145	51	76	141	43	41	180	31	941
5:00 PM	99	61	55	18	102	54	77	217	54	52	253	20	1062
15 PM	87	67	39	19	78	28	60	194	50	51	287	19	979
30 PM	92	66	48	19	76	48	55	166	52	36	229	16	903
45 PM	85	62	30	7	71	44	43	150	41	48	246	31	858
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	660	545	322	110	720	339	448	1382	359	378	1797	170	7230

AM Peak Hr Begins at 445 PM

PEAK VOLUMES =	360	301	179	63	401	181	268	718	199	180	949	86	3885

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: CRENSHAW BLVD. DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: SILVER SPUR DAY: TUESDAY

PROJECT# 0501009A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	2	0	1				
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	26	202	0	0	63	55	75		8				429
15 AM	41	266	0	0	92	82	118		10				609
30 AM	47	332	0	0	85	81	143		12				700
45 AM	56	266	0	1	109	143	107		22				704
8:00 AM	38	303	0	0	124	100	128		25				718
15 AM	46	252	0	0	131	112	103		17				661
30 AM	49	257	0	0	103	101	101		20				631
45 AM	69	306	0	1	150	109	96		27				758
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	372	2184	0	2	857	783	871	0	141	0	0	0	5210

AM Peak Hr Begins at 730 AM

PEAK VOLUMES =	187	1153	0	1	449	436	481	0	76	0	0	0	2783

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: CRENSHAW BLVD. DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: SILVER SPUR DAY: TUESDAY

PROJECT# 0501009P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	2	0	1				
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	45	112	0	0	158	160	113		77				665
15 PM	41	118	0	0	141	148	93		64				605
30 PM	49	116	0	0	153	155	134		79				686
45 PM	37	100	0	0	163	163	98		78				639
5:00 PM	38	110	0	0	155	142	128		103				676
15 PM	54	111	0	0	189	130	113		89				686
30 PM	33	148	0	0	193	135	195		111				815
45 PM	53	154	0	0	197	157	116		84				761
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	350	969	0	0	1349	1190	990	0	685	0	0	0	5533

AM Peak Hr Begins at 500 PM

PEAK VOLUMES =	178	523	0	0	734	564	552	0	387	0	0	0	2938

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: HAWTHORNE DATE: 5/11/99 CITY: TORRANCE

E-W STREET: SEPULVEDA DAY: TUESDAY

PROJECT# 0334A85A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	4	1	2	4	1	2	3	0	2	3	0	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	8	337	46	10	231	14	61	177	16	59	95	40	1094
15 AM	11	476	66	22	268	18	67	151	13	65	109	69	1335
30 AM	16	548	70	27	311	25	96	278	12	71	177	79	1710
45 AM	23	560	73	43	416	28	83	229	12	94	201	86	1848
8:00 AM	27	577	84	61	441	54	104	322	34	93	230	79	2106
15 AM	23	535	75	32	345	35	83	228	27	114	173	89	1759
30 AM	24	466	81	37	363	29	100	293	32	132	172	78	1807
45 AM	27	530	90	52	396	23	88	232	21	110	180	69	1818
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	159	4029	585	284	2771	226	682	1910	167	738	1337	589	13477
PEAK VOLUMES =	97	2138	313	173	1565	146	370	1072	105	433	776	332	7520

AM Peak Hr Begins at 745 AM

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: HAWTHORNE DATE: 5/13/99 CITY: TORRANCE

E-W STREET: SEPULVEDA DAY: THURSDAY

PROJECT# 0334C85P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	4	1	2	4	1	2	3	0	2	3	1	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	32	437	139	74	473	33	76	145	20	189	222	56	1896
15 PM	59	665	185	95	452	36	82	198	26	243	232	90	2363
30 PM	55	482	164	87	578	38	96	211	22	180	239	69	2221
45 PM	57	488	148	91	538	40	90	186	28	210	246	86	2208
5:00 PM	70	536	138	89	375	47	84	221	42	137	265	59	2063
15 PM	76	592	184	95	669	57	89	209	28	191	299	73	2562
30 PM	64	514	177	119	588	33	61	194	35	240	378	85	2488
45 PM	71	558	218	86	537	20	92	208	43	249	355	66	2503
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	484	4272	1353	736	4210	304	670	1572	244	1639	2236	584	18304

PM Peak Hr Begins at 500 PM

PEAK VOLUMES =	281	2200	717	389	2169	157	326	832	148	817	1297	283	9616

ADDITIONS:SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: HAWTHORNE DATE: 8/10/99 CITY: TORRANCE

E-W STREET: PACIFIC COAST HWY. DAY: TUESDAY

PROJECT# 0577001A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	0	2	2	1	1	3	0	1	3	0	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	62	301	7	35	106	33	66	174	29	24	174	36	1047
15 AM	60	376	10	36	122	48	71	196	27	29	182	41	1198
30 AM	61	394	13	39	136	53	73	221	42	28	201	52	1313
45 AM	85	381	14	53	179	52	81	235	42	39	226	63	1450
8:00 AM	73	362	8	51	169	45	74	237	43	42	199	58	1361
15 AM	52	436	9	53	201	37	76	223	48	45	208	40	1428
30 AM	61	371	15	31	180	62	74	182	37	64	218	27	1322
45 AM	56	368	7	40	189	43	62	163	28	27	139	43	1165
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	510	2989	83	338	1282	373	577	1631	296	298	1547	360	10284

AM Peak Hr Begins at 745 AM

PEAK VOLUMES =	271	1550	46	188	729	196	305	877	170	190	851	188	5561

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: HAWTHORNE DATE: 8/10/99 CITY: TORRANCE

E-W STREET: PACIFIC COAST HWY. DAY: TUESDAY

PROJECT# 0577001P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	0	2	2	1	1	3	0	1	3	0	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	30	501	155	77	466	35	48	156	20	199	240	68	1995
15 PM	55	611	181	90	480	35	78	177	18	205	235	80	2245
30 PM	50	501	190	80	501	37	86	201	25	178	222	79	2150
45 PM	60	490	150	81	499	38	80	190	30	180	240	99	2137
5:00 PM	71	530	144	80	478	40	88	201	35	166	236	80	2149
15 PM	80	550	171	99	611	50	77	211	40	178	271	78	2416
30 PM	66	521	160	101	592	50	76	196	38	204	280	77	2361
45 PM	70	541	150	78	530	50	69	178	40	165	315	60	2246
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	482	4245	1301	686	4157	335	602	1510	246	1475	2039	621	17699

PM Peak Hr Begins at 500 PM

PEAK VOLUMES =	287	2142	625	358	2211	190	310	786	153	713	1102	295	9172

ADDITIONS:SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: HAWTHORNE DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: PALOS VERDES DRIVE NORTH DAY: TUESDAY PROJECT# 0501006A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	2	1	1	1.5	1.5	1	1	1	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	3	185	67	10	87	24	51	63	1	48	54	26	619
15 AM	6	203	58	11	125	20	64	91	1	55	53	25	712
30 AM	7	331	126	18	133	18	115	141	1	38	62	47	1037
45 AM	7	236	97	30	134	15	117	135	4	44	72	29	920
8:00 AM	4	286	119	32	136	38	95	103	3	48	70	64	998
15 AM	3	298	97	15	123	16	113	125	4	52	88	48	982
30 AM	4	239	75	24	105	19	79	93	4	51	94	26	813
45 AM	1	240	74	34	157	35	92	172	2	37	79	28	951
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	35	2018	713	174	1000	185	726	923	20	373	572	293	7032

AM Peak Hr Begins at 730 AM

PEAK VOLUMES =	21	1151	439	95	526	87	440	504	12	182	292	188	3937

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: HAWTHORNE DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: PALOS VERDES DRIVE NORTH DAY: TUESDAY PROJECT# 0501006P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	2	1	1	1.5	1.5	1	1	1	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	3	156	38	22	255	50	61	82	3	52	73	20	815
15 PM	4	165	41	24	211	63	58	89	5	37	106	24	827
30 PM	5	153	44	31	224	79	51	87	3	68	84	22	851
45 PM	4	137	45	24	242	68	56	112	7	56	86	23	860
5:00 PM	3	144	49	25	213	62	58	85	3	44	79	20	785
15 PM	14	218	48	30	273	86	57	129	7	65	91	30	1048
30 PM	4	166	50	36	279	97	23	85	5	57	98	14	914
45 PM	3	170	49	35	282	96	22	87	6	56	97	13	916
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	40	1309	364	227	1979	601	386	756	39	435	714	166	7016

AM Peak Hr Begins at 500 PM

PEAK VOLUMES =	24	698	196	126	1047	341	160	386	21	222	365	77	3663

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: HAWTHORNE DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: CREST DAY: TUESDAY

PROJECT# 0501018A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	1	2	0	1	2	0	1	1	1	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	1	63	56	12	62	18	15	20	4	18	4	5	278
15 AM	4	64	69	18	71	19	19	19	2	21	4	4	314
30 AM	2	66	67	16	79	21	16	24	6	22	6	6	331
45 AM	4	121	64	18	88	19	31	19	7	30	7	17	425
8:00 AM	6	180	63	11	94	20	46	16	0	33	9	24	502
15 AM	3	109	65	17	79	34	33	21	4	34	7	14	420
30 AM	1	96	86	21	82	40	30	27	1	39	9	11	443
45 AM	3	101	66	17	67	31	23	19	1	33	8	9	378
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	24	800	536	130	622	202	213	165	25	230	54	90	3091

PM Peak Hr Begins at 745 AM

PEAK VOLUMES =	14	506	278	67	343	113	140	83	12	136	32	66	1790

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: HAWTHORNE DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: CREST DAY: TUESDAY

PROJECT# 0501018P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	1	2	0	1	2	0	1	1	1	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	5	64	33	9	79	31	36	11	0	51	12	15	346
15 PM	5	80	37	13	91	31	31	12	5	47	12	19	383
30 PM	9	109	31	5	97	22	39	10	3	49	11	19	404
45 PM	7	77	26	8	98	24	44	14	4	51	11	18	382
5:00 PM	4	83	35	7	101	32	51	17	1	66	17	11	425
15 PM	5	94	33	10	107	26	47	19	2	63	14	16	436
30 PM	4	85	30	9	107	21	44	14	4	58	12	20	408
45 PM	4	99	31	10	93	20	33	11	3	53	12	14	383
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	43	691	256	71	773	207	325	108	22	438	101	132	3167

PM Peak Hr Begins at 500 PM

PEAK VOLUMES =	17	361	129	36	408	99	175	61	10	240	55	61	1652

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: CRENSHAW DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: PALOS VERDES DRIVE NORTH DAY: TUESDAY PROJECT# 0501007A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	2	1	2	2	0	2	2	0	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	5	115	110	8	68	12	44	114	3	85	101	16	681
15 AM	8	210	152	15	96	18	56	125	3	79	121	13	896
30 AM	7	285	147	12	67	26	88	159	2	78	99	20	990
45 AM	5	281	160	19	115	27	89	125	7	141	110	23	1102
8:00 AM	5	233	149	15	116	30	87	115	5	109	121	29	1014
15 AM	14	254	138	19	96	23	93	118	13	111	98	38	1015
30 AM	12	222	151	20	129	28	104	136	10	113	115	44	1084
45 AM	13	213	125	18	107	24	98	117	11	104	107	35	972
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	69	1813	1132	126	794	188	659	1009	54	820	872	218	7754

AM Peak Hr Begins at 745 AM

PEAK VOLUMES =	36	990	598	73	456	108	373	494	35	474	444	134	4215

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: CRENSHAW DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: PALOS VERDES DRIVE NORTH DAY: TUESDAY PROJECT# 0501007P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	2	1	2	2	0	2	2	0	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	9	142	98	25	187	39	41	104	8	98	82	17	850
15 PM	8	126	92	19	178	32	37	114	8	104	106	15	839
30 PM	10	133	101	17	162	28	41	121	11	99	120	19	862
45 PM	11	122	97	24	170	38	46	115	13	109	117	19	881
5:00 PM	9	143	124	28	175	31	52	127	14	112	93	14	922
15 PM	6	136	112	27	197	41	41	136	10	122	97	16	941
30 PM	9	161	123	21	183	49	57	110	8	116	106	17	960
45 PM	9	149	116	23	176	38	48	101	8	101	99	16	884
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	71	1112	863	184	1428	296	363	928	80	861	820	133	713

AM Peak Hr Begins at 500 PM

PEAK VOLUMES =	33	589	475	99	731	159	198	474	40	451	395	63	3707

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: CRENSHAW BLVD. DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: CREST RD. DAY: TUESDAY

PROJECT# 0501011A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1.5	1.5	1.5	0.5	1	0	1	1	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	6	19	5	17	8	34	101	1	4	3	10	18	226
15 AM	5	35	2	10	16	46	118	2	4	2	5	22	267
30 AM	6	25	5	13	21	53	172	5	2	2	11	11	326
45 AM	5	20	2	18	17	50	119	3	16	4	9	21	284
8:00 AM	4	23	2	12	21	61	121	6	3	2	5	15	275
15 AM	13	31	4	21	29	41	143	4	5	4	5	17	317
30 AM	11	45	3	15	19	49	151	7	5	5	5	24	339
45 AM	12	36	3	16	15	52	115	3	2	3	8	12	277
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	62	234	26	122	146	386	1040	31	41	25	58	140	2311

AM Peak Hr Begins at 745 AM

PEAK VOLUMES =	33	119	11	66	86	201	534	20	29	15	24	77	1215

ADDITIONS: 4-WAY STOP

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: CRENSHAW BLVD. DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: CREST RD. DAY: TUESDAY

PROJECT# 0501011P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1.5	1.5	1.5	0.5	1	0	1	1	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	13	24	1	27	22	101	54	8	11	1	9	28	299
15 PM	8	24	1	16	21	87	58	6	9	1	8	26	265
30 PM	8	18	1	18	27	103	68	5	9	0	3	23	283
45 PM	7	16	0	19	29	93	43	3	7	2	4	16	239
5:00 PM	10	24	0	32	35	97	68	9	21	1	5	16	318
15 PM	8	17	1	27	31	99	72	3	9	0	4	24	295
30 PM	6	15	2	24	29	112	59	8	7	0	14	14	290
45 PM	7	16	2	26	30	118	69	7	8	2	14	20	319
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	67	154	8	189	224	810	491	49	81	7	61	167	2308

AM Peak Hr Begins at 500 PM

PEAK VOLUMES =	31	72	5	109	125	426	268	27	45	3	37	74	1222

ADDITIONS: 4-WAY STOP

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: PALOS VERDES DRIVE EAST
DATE: 7/20/99
CITY: PALOS VERDES
E-W STREET: PALOS VERDES DRIVE NORTH
DAY: TUESDAY
PROJECT# 0501008A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	2	1	1	2	1	1	2	1	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	84	59	45	25	30	26	7	243	7	14	192	30	762
15 AM	96	68	52	27	30	29	8	257	27	17	225	34	870
30 AM	53	51	37	13	18	6	8	297	33	16	210	33	775
45 AM	80	69	50	25	23	9	12	310	79	40	275	56	1028
8:00 AM	99	83	48	15	23	11	13	261	35	29	214	68	899
15 AM	60	62	29	28	24	10	15	270	39	16	209	62	824
30 AM	51	58	32	26	20	19	10	297	30	28	219	50	840
45 AM	89	58	55	34	14	16	19	272	46	20	245	38	906
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	612	508	348	193	182	126	92	2207	296	180	1789	371	6904

PM Peak Hr Begins at 745 AM

PEAK VOLUMES =	290	272	159	94	90	49	50	1138	183	113	917	236	3591

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: PALOS VERDES DRIVE EAST
DATE: 7/20/99
CITY: PALOS VERDES
E-W STREET: PALOS VERDES DRIVE NORTH
DAY: TUESDAY
PROJECT# 0501008P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	2	1	1	2	1	1	2	1	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	38	18	23	43	31	22	11	242	71	19	207	28	753
15 PM	41	28	18	72	48	23	19	256	77	25	225	36	868
30 PM	37	23	21	52	34	26	11	247	61	24	213	31	780
45 PM	28	28	24	51	29	21	21	277	70	23	260	27	859
5:00 PM	48	25	13	48	49	16	18	237	67	22	207	19	769
15 PM	47	29	21	53	57	31	21	311	70	26	282	34	982
30 PM	37	25	25	58	58	20	13	321	83	38	284	28	990
45 PM	36	29	34	49	52	17	19	260	71	27	272	19	885
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	312	205	179	426	358	176	133	2151	570	204	1950	222	6886

AM Peak Hr Begins at 500 PM

PEAK VOLUMES =	168	108	93	208	216	84	71	1129	291	113	1045	100	3626

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: PALOS VERDES DRIVE EAST
DATE: 7/20/99
CITY: PALOS VERDES

E-W STREET: PALOS VERDES DRIVE SOUTH
DAY: TUESDAY
PROJECT# 0501013A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:				1		1	1	1			1	0	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM				2		7	1	63			103	3	179
15 AM				2		6	3	102			87	8	208
30 AM				5		13	8	101			95	9	231
45 AM				9		17	23	98			113	8	268
8:00 AM				6		23	17	114			99	7	266
15 AM				7		19	19	101			100	7	253
30 AM				6		12	13	107			108	11	257
45 AM				4		13	15	108			102	10	252
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	0	0	0	41	0	110	99	794	0	0	807	63	1914

AM Peak Hr Begins at 745 AM

PEAK VOLUMES =	0	0	0	28	0	71	72	420	0	0	420	33	1044

ADDITIONS: 1-WAY STOP
SOUTH

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: PALOS VERDES DRIVE EAST
DATE: 7/20/99
CITY: PALOS VERDES

E-W STREET: PALOS VERDES DRIVE SOUTH
DAY: TUESDAY
PROJECT# 0501013P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:				1		1	1	1			1	0	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM				4		10	13	127			94	13	261
15 PM				7		8	10	128			99	15	267
30 PM				12		14	11	121			84	8	250
45 PM				11		17	12	121			106	19	286
5:00 PM				10		10	16	149			116	15	316
15 PM				8		9	12	122			138	18	307
30 PM				9		16	11	169			101	9	315
45 PM				10		12	17	141			101	10	291
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	0	0	0	71	0	96	102	1078	0	0	839	107	2293

PM Peak Hr Begins at 500 PM

PEAK VOLUMES =	0	0	0	37	0	47	56	581	0	0	456	52	1229

ADDITIONS: 1-WAY STOP SOUTH

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: WESTERN AVE. DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: PALOS VERDES DRIVE NORTH DAY: TUESDAY PROJECT# 0501016A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	3	1	1	3	0	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	112	163	58	9	98	43	20	239	36	19	103	26	926
15 AM	128	190	56	6	117	46	17	257	49	23	133	17	1039
30 AM	136	199	58	11	120	39	18	299	51	32	131	22	1116
45 AM	130	226	47	9	112	35	19	280	53	32	143	12	1098
8:00 AM	147	207	43	9	79	36	19	258	47	17	140	11	1013
15 AM	131	193	52	12	114	48	24	236	56	26	132	9	1033
30 AM	98	216	59	8	142	36	23	241	43	28	126	14	1034
45 AM	93	220	54	6	129	32	22	232	34	31	91	15	959
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	975	1614	427	70	911	315	162	2042	369	208	999	126	8218

AM Peak Hr Begins at 715 AM

PEAK VOLUMES =	541	822	204	35	428	156	73	1094	200	104	547	62	4266

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: WESTERN AVE. DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: PALOS VERDES DRIVE NORTH DAY: TUESDAY PROJECT# 0501016P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	1	1	3	1	1	3	0	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	89	167	38	12	181	36	46	138	86	76	180	2	1051
15 PM	75	169	29	14	161	44	40	141	171	81	149	6	1080
30 PM	74	170	39	9	153	56	42	156	167	69	150	11	1096
45 PM	83	169	29	3	179	51	34	182	156	67	199	7	1159
5:00 PM	89	198	43	0	190	68	38	201	174	63	190	7	1261
15 PM	103	174	24	8	184	64	48	174	178	71	180	10	1218
30 PM	95	176	30	13	188	48	44	161	164	85	181	6	1191
45 PM	91	182	43	15	185	61	62	125	138	78	170	9	1159
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	699	1405	275	74	1421	428	354	1278	1234	590	1399	58	9215

PM Peak Hr Begins at 500 PM

PEAK VOLUMES =	378	730	140	36	747	241	192	661	654	297	721	32	4829

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: WESTERN AVE. DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: 9TH ST. DAY: TUESDAY

PROJECT# 0501014A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	2	0	1	2	0	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	12	213	11	3	78	3	6	12	7	8	15	19	387
15 AM	20	209	11	8	90	4	5	11	15	7	12	8	400
30 AM	18	226	14	12	96	8	4	18	12	12	23	13	456
45 AM	49	236	19	14	110	9	4	28	19	25	34	29	576
8:00 AM	26	200	13	7	104	6	7	32	18	15	27	11	466
15 AM	27	195	35	15	132	5	11	40	27	22	35	20	564
30 AM	25	179	11	10	98	7	8	22	27	16	27	14	444
45 AM	19	178	16	11	34	9	9	38	19	28	28	13	402
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	196	1636	130	80	742	51	54	201	144	133	201	127	3695
PEAK VOLUMES =	120	857	81	48	442	28	26	118	76	74	119	73	2062

AM Peak Hr Begins at 730 AM

ADDITIONS:SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: WESTERN AVE. DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: 9TH ST. DAY: TUESDAY

PROJECT# 0501014P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	2	0	1	2	0	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	29	144	13	12	170	13	9	31	35	26	28	16	526
15 PM	17	154	17	20	180	12	2	19	36	15	23	10	505
30 PM	22	205	13	16	194	16	6	23	32	20	25	14	586
45 PM	18	151	9	23	226	19	2	24	45	25	32	17	591
5:00 PM	20	139	12	15	205	15	5	29	27	24	34	14	539
15 PM	30	165	20	15	246	17	9	42	37	35	24	18	658
30 PM	19	173	5	23	252	17	8	27	52	31	45	26	678
45 PM	23	150	22	23	246	21	8	31	40	22	34	10	630
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	178	1281	111	147	1719	130	49	226	304	198	245	125	4713

PM Peak Hr Begins at 500 PM

PEAK VOLUMES =	92	627	59	76	949	70	30	129	156	112	137	68	2505

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: WESTERN AVE. DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: 25TH ST. DAY: TUESDAY

PROJECT# 0501015A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	1.5	1.5	1	2	1	1	2	0	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	7	26	4	9	19	52	98	36	10	5	64	39	369
15 AM	3	40	8	5	18	71	100	53	8	5	51	38	400
30 AM	11	45	5	19	23	86	126	76	11	4	65	51	522
45 AM	7	45	12	19	28	74	99	43	9	6	46	53	441
8:00 AM	13	26	7	20	28	75	101	63	18	5	58	43	457
15 AM	10	40	8	18	23	74	84	47	16	4	59	36	419
30 AM	16	41	7	17	35	67	87	72	9	11	49	34	445
45 AM	9	29	10	24	18	69	84	42	9	7	55	45	401
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	76	292	61	131	192	568	779	432	90	47	447	339	3454

PM Peak Hr Begins at 730 AM

PEAK VOLUMES =	41	156	32	76	102	309	410	229	54	19	228	183	1839

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: WESTERN AVE. DATE: 7/20/99 CITY: PALOS VERDES

E-W STREET: 25TH ST. DAY: TUESDAY

PROJECT# 0501015P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	1.5	1.5	1	2	1	1	2	0	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	20	36	9	45	39	84	84	74	3	6	68	30	498
15 PM	15	22	19	38	31	85	99	82	15	13	69	49	537
30 PM	20	54	12	53	64	105	119	68	12	13	77	30	627
45 PM	16	49	14	58	43	106	111	84	13	21	77	43	635
5:00 PM	17	40	11	53	45	115	88	93	20	24	85	49	640
15 PM	16	40	6	72	50	98	106	101	12	35	57	35	628
30 PM	26	31	17	67	41	116	95	95	9	24	69	44	634
45 PM	20	35	18	61	65	125	91	88	11	21	77	35	647
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL VOLUMES =	150	307	106	447	378	834	793	685	95	157	579	315	4846

PM Peak Hr Begins at 500 PM

PEAK VOLUMES =	79	146	52	253	201	454	380	377	52	104	288	163	2549

ADDITIONS: SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: GAFFEY DATE: 8/10/99 CITY: TORRANCE

E-W STREET: 9TH ST. DAY: TUESDAY

PROJECT# 0577002A

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1	1	1	1	0	
6:00 AM													
15 AM													
30 AM													
45 AM													
7:00 AM	2	319	2	10	113	7	58	24	7	7	15	10	574
15 AM	5	283	2	7	153	14	59	29	2	5	22	17	598
30 AM	13	325	7	10	150	14	83	53	2	12	36	8	713
45 AM	11	290	3	8	210	13	66	65	10	18	36	13	743
8:00 AM	14	247	9	9	173	14	71	63	9	14	35	9	667
15 AM	14	236	11	12	131	14	69	51	7	14	33	10	602
30 AM	17	223	10	20	116	13	57	42	4	6	31	11	550
45 AM	10	204	9	11	103	9	53	38	5	7	33	9	491
9:00 AM													
15 AM													
30 AM													
45 AM													
10:00 AM													
15 AM													
30 AM													
45 AM													
TOTAL VOLUMES =	86	2127	53	87	1149	98	516	365	46	83	241	87	4938

AM Peak Hr Begins at 730 AM

PEAK VOLUMES =	52	1098	30	39	664	55	289	232	28	58	140	40	2725

ADDITIONS:SIGNALIZED

SOUTHLAND CAR COUNTERS
VEHICLE AND MANUAL COUNTS

N-S STREET: GAFFEY DATE: 8/10/99 CITY: TORRANCE

E-W STREET: 9TH ST. DAY: TUESDAY

PROJECT# 0577002P

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	1	1	1	1	0	
2:00 PM													
15 PM													
30 PM													
45 PM													
3:00 PM													
15 PM													
30 PM													
45 PM													
4:00 PM	4	234	6	8	237	17	21	31	4	8	50	6	626
15 PM	6	246	8	11	239	19	24	35	4	11	54	6	663
30 PM	7	253	7	12	228	22	26	38	7	15	66	7	688
45 PM	4	238	10	18	227	16	24	21	2	9	48	10	627
5:00 PM	8	277	2	12	301	20	25	33	1	13	45	14	751
15 PM	15	257	5	24	306	27	36	33	9	12	51	19	794
30 PM	14	251	3	14	363	25	19	37	11	13	57	16	823
45 PM	11	253	2	13	371	24	12	44	16	12	68	12	838
6:00 PM													
15 PM													
30 PM													
45 PM													
TOTAL	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
VOLUMES =	69	2009	43	112	2272	170	187	272	54	93	439	90	5810

PM Peak Hr Begins at 500 PM

PEAK VOLUMES =	48	1038	12	63	1341	96	92	147	37	50	221	61	3206

ADDITIONS:SIGNALIZED

APPENDIX D

EXISTING CALCULATION WORKSHEETS

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	1.0	1600	1018	0.64*
NR	0.0	0	0	0.00
SL	1.0	1600	214	0.13*
ST	1.0	1600	565	0.35
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	0.0	0	0	0.00*
WT	0.0	0	0	0.00
WR >>	1.0	1600	365	0.23
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.87 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	1.0	1600	687	0.43*
NR	0.0	0	0	0.00
SL	1.0	1600	380	0.24*
ST	1.0	1600	970	0.61
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	0.0	0	0	0.00*
WT	0.0	0	0	0.00
WR >>	1.0	1600	340	0.21
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.77 C

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - South (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	1.0	1600	1018	0.64*
NR >>	1.0	1600	187	0.12
SL	0.0	0	0	0.00*
ST	1.0	1600	565	0.35
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	1.0	1600	161	0.10*
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.84 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00*
NT	1.0	1600	687	0.43
NR >>	1.0	1600	235	0.15
SL	0.0	0	0	0.00
ST	1.0	1600	970	0.61*
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	1.0	1600	194	0.12*
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.83 D

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - East (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	1.0	1600	187	0.12*
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00*
ST	1.0	1600	161	0.10
SR	1.0	1600	365	0.23
EL	1.0	1600	214	0.13*
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.35 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	1.0	1600	235	0.15*
NR	0.0	0	0	0.00
SL	0.0	0	0	0.00*
ST	1.0	1600	194	0.12
SR	1.0	1600	340	0.21
EL	1.0	1600	380	0.24*
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	0.0	0	0	0.00
WT	0.0	0	0	0.00
WR	0.0	0	0	0.00
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.49 A

* denotes critical movement

Intersection: Palos Verdes Dr. West (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	2.0	3200	286	0.09*
NR	1.0	1600	288	0.18
SL	1.0	1600	214	0.13*
ST	2.0	3200	211	0.07
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	1.0	1600	139	0.09
WT	0.0	0	0	0.00
WR	1.0	1600	291	0.18*
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.50 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	2.0	3200	239	0.07*
NR	1.0	1600	252	0.16
SL	1.0	1600	171	0.11*
ST	2.0	3200	222	0.07
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	0.0	0	0	0.00
ER	0.0	0	0	0.00
WL	1.0	1600	270	0.17*
WT	0.0	0	0	0.00
WR	1.0	1600	136	0.09
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.45 A

* denotes critical movement

Intersection: Granvia Altamira (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	1600	25	0.02
NT	1.0	1600	51	0.05*
NR	1.0	1600	35	0.02
SL	1.5	2400	390	0.16*
ST	0.5	800	49	0.06
SR	1.0	1600	42	0.03
EL	1.0	1600	91	0.06
ET	2.0	3200	815	0.25*
ER	1.0	1600	26	0.02
WL	1.0	1600	24	0.02*
WT	2.0	3200	465	0.15
WR	1.0	1600	165	0.10
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.58 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	1600	22	0.01
NT	1.0	1600	40	0.04*
NR	1.0	1600	32	0.02
SL	1.5	2400	218	0.09*
ST	0.5	800	54	0.07
SR	1.0	1600	74	0.05
EL	1.0	1600	100	0.06*
ET	2.0	3200	546	0.17
ER	1.0	1600	23	0.01
WL	1.0	1600	70	0.04
WT	2.0	3200	885	0.28*
WR	1.0	1600	284	0.18
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.57 A

* denotes critical movement

Intersection: Highridge Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	31	0.02
NT	1.0	1600	26	0.02
NR >	1.0	1600	399	0.25*
SL	0.0	1600	169	0.11*
ST	1.0	1600	9	0.12
SR	0.0	1600	13	0.01
EL	1.0	1600	6	0.01
ET	2.0	3200	1139	0.36*
ER	1.0	1600	10	0.01
WL	1.0	1600	152	0.10
WT	2.0	3200	541	0.17
WR	1.0	1600	60	0.04
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.82 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	25	0.02*
NT	1.0	1600	17	0.01
NR >	1.0	1600	210	0.13
SL	0.0	1600	78	0.05
ST	1.0	1600	20	0.07*
SR	0.0	1600	18	0.01
EL	1.0	1600	19	0.01
ET	2.0	3200	643	0.20*
ER	1.0	1600	24	0.02
WL	1.0	1600	429	0.27*
WT	2.0	3200	1231	0.38
WR	1.0	1600	163	0.10
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.66 B

* denotes critical movement
> denotes protected right turn

Intersection: Highridge Rd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	1600	9	0.01
NT	1.0	1600	4	0.03*
NR	0.0	1600	38	0.02
SL	1.0	1600	15	0.01*
ST	1.0	1600	8	0.02
SR	0.0	1600	24	0.02
EL	1.0	1600	30	0.02
ET	2.0	3200	400	0.13*
ER	0.0	1600	6	0.01
WL	1.0	1600	14	0.01*
WT	2.0	3200	215	0.08
WR	0.0	1600	34	0.02
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.28 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	1600	3	0.01*
NT	1.0	1600	13	0.02
NR	0.0	1600	10	0.01
SL	1.0	1600	18	0.01
ST	1.0	1600	4	0.02*
SR	0.0	1600	32	0.02
EL	1.0	1600	26	0.02*
ET	2.0	3200	216	0.07
ER	0.0	1600	9	0.01
WL	1.0	1600	13	0.01
WT	2.0	3200	346	0.12*
WR	0.0	1600	39	0.02
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.27 A

* denotes critical movement

Intersection: Indian Peak Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	2880	129	0.04*
NT	0.0	0	0	0.00
NR >	1.0	1600	45	0.03
SL	0.0	0	0	0.00
ST	0.0	0	0	0.00
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00
ET	2.0	3200	1429	0.45*
ER >	1.0	1600	275	0.17
WL	1.0	1600	107	0.07*
WT	2.0	3200	689	0.22
WR	0.0	0	0	0.00
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.66 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	2880	500	0.17*
NT	0.0	0	0	0.00
NR >	1.0	1600	84	0.05
SL	0.0	0	0	0.00
ST	0.0	0	0	0.00
SR	0.0	0	0	0.00
EL	0.0	0	0	0.00*
ET	2.0	3200	897	0.28
ER >	1.0	1600	184	0.12
WL	1.0	1600	103	0.06
WT	2.0	3200	1322	0.41*
WR	0.0	0	0	0.00
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.68 B

* denotes critical movement
> denotes protected right turn

Intersection: Indian Peak Rd. (NS) / Crenshaw Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	0.0	0	0	0.00
NR	0.0	0	0	0.00
SL	1.0	1600	199	0.12*
ST	0.0	0	0	0.00
SR >	1.0	1600	67	0.04
EL	1.0	1600	66	0.04
ET	2.0	3200	1125	0.35*
ER	0.0	0	0	0.00
WL	0.0	0	0	0.00*
WT	2.0	3200	484	0.15
WR	1.0	1600	79	0.05
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.57 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	0.0	0	0	0.00
NR	0.0	0	0	0.00
SL	1.0	1600	114	0.07
ST	0.0	0	0	0.00
SR >	1.0	1600	177	0.11*
EL	1.0	1600	104	0.07*
ET	2.0	3200	590	0.18
ER	0.0	0	0	0.00
WL	0.0	0	0	0.00
WT	2.0	3200	877	0.27*
WR	1.0	1600	212	0.13
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.55 A

* denotes critical movement
> denotes protected right turn

Intersection: Silver Spur Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	245	0.15*
NT	2.0	3200	176	0.06
NR >	1.0	1600	110	0.07
SL	1.0	1600	107	0.07
ST	2.0	3200	227	0.10*
SR	0.0	1600	102	0.06
EL	1.0	1600	155	0.10
ET	2.0	3200	1309	0.41*
ER	1.0	1600	300	0.19
WL	1.0	1600	173	0.11*
WT	2.0	3200	527	0.16
WR	1.0	1600	45	0.03
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.87 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	360	0.23*
NT	2.0	3200	301	0.09
NR >	1.0	1600	179	0.11
SL	1.0	1600	63	0.04
ST	2.0	3200	401	0.18*
SR	0.0	1600	181	0.11
EL	1.0	1600	268	0.17*
ET	2.0	3200	718	0.22
ER	1.0	1600	199	0.12
WL	1.0	1600	180	0.11
WT	2.0	3200	949	0.30*
WR	1.0	1600	86	0.05
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.98 E

* denotes critical movement
> denotes protected right turn

Intersection: Silver Spur Rd. (NS) / Crenshaw Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	1600	1	0.01*
NT	1.0	1600	1	0.01
NR	0.0	1600	1	0.01
SL	1.5	2400	481	0.20*
ST	0.5	800	1	0.01
SR >	1.0	1600	76	0.05
EL	1.0	1600	187	0.12
ET	2.0	3200	1153	0.36*
ER	0.0	1600	1	0.01
WL	1.0	1600	1	0.01*
WT	2.0	3200	449	0.14
WR	1.0	1600	436	0.27
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.68 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	1600	1	0.01*
NT	1.0	1600	1	0.01
NR	0.0	1600	1	0.01
SL	1.5	2400	552	0.23
ST	0.5	800	1	0.01
SR >	1.0	1600	387	0.24*
EL	1.0	1600	178	0.11*
ET	2.0	3200	523	0.16
ER	0.0	1600	1	0.01
WL	1.0	1600	1	0.01
WT	2.0	3200	734	0.23*
WR	1.0	1600	564	0.35
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.69 B

* denotes critical movement
> denotes protected right turn

Intersection: Hawthorne Blvd. (NS) / Sepulveda Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	2880	97	0.03
NT	4.0	6400	2138	0.33*
NR >>	1.0	1600	313	0.20
SL	2.0	2880	173	0.06*
ST	4.0	6400	1565	0.24
SR >>	1.0	1600	146	0.09
EL	2.0	2880	370	0.13
ET	3.0	4800	1072	0.25*
ER	0.0	1600	105	0.07
WL	2.0	2880	433	0.15*
WT	3.0	4800	776	0.23
WR	0.0	1600	332	0.21
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.89 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	2880	281	0.10
NT	4.0	6400	2200	0.34*
NR >>	1.0	1600	717	0.45
SL	2.0	2880	389	0.14*
ST	4.0	6400	2169	0.34
SR >>	1.0	1600	157	0.10
EL	2.0	2880	326	0.11
ET	3.0	4800	832	0.20*
ER	0.0	1600	148	0.09
WL	2.0	2880	817	0.28*
WT	3.0	4800	1297	0.33
WR	0.0	1600	283	0.18
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				1.06 F

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Pacific Coast Hwy. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	2880	271	0.09
NT	3.0	4800	1550	0.33*
NR	0.0	1600	46	0.03
SL	2.0	2880	188	0.07*
ST	3.0	4800	729	0.15
SR >>	1.0	1600	196	0.12
EL	1.0	1600	305	0.19*
ET	3.0	4800	877	0.22
ER	0.0	1600	170	0.11
WL	1.0	1600	190	0.12
WT	3.0	4800	851	0.22*
WR	0.0	1600	188	0.12
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.91 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	2.0	2880	287	0.10
NT	3.0	4800	2142	0.58*
NR	0.0	1600	625	0.39
SL	2.0	2880	358	0.12*
ST	3.0	4800	2211	0.46
SR >>	1.0	1600	190	0.12
EL	1.0	1600	310	0.19
ET	3.0	4800	786	0.20*
ER	0.0	1600	153	0.10
WL	1.0	1600	713	0.45*
WT	3.0	4800	1102	0.29
WR	0.0	1600	295	0.18
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				1.45 F

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	21	0.01
NT	2.0	3200	1151	0.36*
NR >>	1.0	1600	439	0.27
SL	1.0	1600	95	0.06*
ST	2.0	3200	526	0.16
SR	1.0	1600	87	0.05
EL	1.5	2400	440	0.18
ET	1.5	2400	504	0.22*
ER	0.0	1600	12	0.01
WL	1.0	1600	182	0.11
WT	1.0	1600	292	0.18*
WR	1.0	1600	188	0.12
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.92 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	24	0.02*
NT	2.0	3200	698	0.22
NR >>	1.0	1600	196	0.12
SL	1.0	1600	126	0.08
ST	2.0	3200	1047	0.33*
SR	1.0	1600	341	0.21
EL	1.5	2400	160	0.07
ET	1.5	2400	386	0.17*
ER	0.0	1600	21	0.01
WL	1.0	1600	222	0.14
WT	1.0	1600	365	0.23*
WR	1.0	1600	77	0.05
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.85 D

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	14	0.01
NT	2.0	3200	506	0.16*
NR	1.0	1600	278	0.17
SL	1.0	1600	67	0.04*
ST	2.0	3200	343	0.11
SR	1.0	1600	113	0.07
EL	1.0	1600	140	0.09
ET	1.0	1600	83	0.06*
ER	0.0	1600	12	0.01
WL	1.0	1600	136	0.09*
WT	1.0	1600	32	0.02
WR	1.0	1600	66	0.04
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.45 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	17	0.01*
NT	2.0	3200	361	0.11
NR	1.0	1600	129	0.08
SL	1.0	1600	36	0.02
ST	2.0	3200	408	0.13*
SR	1.0	1600	99	0.06
EL	1.0	1600	175	0.11
ET	1.0	1600	61	0.04*
ER	0.0	1600	10	0.01
WL	1.0	1600	240	0.15*
WT	1.0	1600	55	0.03
WR	1.0	1600	61	0.04
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.43 A

* denotes critical movement

Intersection: Crenshaw Blvd. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	36	0.02
NT	2.0	3200	990	0.31*
NR	1.0	1600	598	0.37
SL	1.0	1600	73	0.05*
ST	2.0	3200	456	0.14
SR	1.0	1600	108	0.07
EL	2.0	2880	373	0.13
ET	2.0	3200	494	0.17*
ER	0.0	1600	35	0.02
WL	2.0	2880	474	0.16*
WT	2.0	3200	444	0.18
WR	0.0	1600	134	0.08
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.79 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	33	0.02*
NT	2.0	3200	589	0.18
NR	1.0	1600	475	0.30
SL	1.0	1600	99	0.06
ST	2.0	3200	731	0.23*
SR	1.0	1600	159	0.10
EL	2.0	2880	198	0.07
ET	2.0	3200	474	0.16*
ER	0.0	1600	40	0.03
WL	2.0	2880	451	0.16*
WT	2.0	3200	395	0.14
WR	0.0	1600	63	0.04
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.67 B

* denotes critical movement

Intersection: Crenshaw Blvd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	33	0.02
NT	1.0	1600	119	0.07*
NR	1.0	1600	11	0.01
SL	1.0	1600	66	0.04*
ST	1.5	2400	86	0.04
SR	1.5	2400	201	0.08
EL	1.5	2400	534	0.22*
ET	0.5	800	20	0.03
ER >>	1.0	1600	29	0.02
WL	0.0	1600	15	0.01
WT	1.0	1600	24	0.02
WR	1.0	1600	77	0.05*
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.48 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	31	0.02
NT	1.0	1600	72	0.05*
NR	1.0	1600	5	0.01
SL	1.0	1600	109	0.07*
ST	1.5	2400	125	0.05
SR	1.5	2400	426	0.18
EL	1.5	2400	268	0.11*
ET	0.5	800	27	0.03
ER >>	1.0	1600	45	0.03
WL	0.0	1600	3	0.01
WT	1.0	1600	37	0.03
WR	1.0	1600	74	0.05*
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.38 A

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Dr. East (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	290	0.18*
NT	2.0	3200	272	0.09
NR	1.0	1600	159	0.10
SL	1.0	1600	94	0.06
ST	2.0	3200	90	0.03*
SR	1.0	1600	49	0.03
EL	1.0	1600	50	0.03
ET	2.0	3200	1138	0.36*
ER	1.0	1600	183	0.11
WL	1.0	1600	113	0.07*
WT	2.0	3200	917	0.29
WR >>	1.0	1600	236	0.15
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.74 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	168	0.11*
NT	2.0	3200	108	0.03
NR	1.0	1600	93	0.06
SL	1.0	1600	208	0.13
ST	2.0	3200	216	0.07*
SR	1.0	1600	84	0.05
EL	1.0	1600	71	0.04
ET	2.0	3200	1129	0.35*
ER	1.0	1600	291	0.18
WL	1.0	1600	113	0.07*
WT	2.0	3200	1045	0.33
WR >>	1.0	1600	100	0.06
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.70 B

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Dr. East (NS) / Palos Verdes Dr. South (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	0.0	0	0	0.00
NR	0.0	0	0	0.00
SL	1.0	1600	28	0.02
ST	0.0	0	0	0.00
SR	1.0	1600	71	0.04*
EL	1.0	1600	72	0.05*
ET	1.0	1600	420	0.26
ER	0.0	0	0	0.00
WL	0.0	0	0	0.00
WT	1.0	1600	420	0.28*
WR	0.0	1600	33	0.02
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.47 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	0.0	0	0	0.00
NT	0.0	0	0	0.00
NR	0.0	0	0	0.00
SL	1.0	1600	37	0.02
ST	0.0	0	0	0.00
SR	1.0	1600	47	0.03*
EL	1.0	1600	56	0.04
ET	1.0	1600	581	0.36*
ER	0.0	0	0	0.00
WL	0.0	0	0	0.00*
WT	1.0	1600	456	0.32
WR	0.0	1600	52	0.03
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.49 A

* denotes critical movement

Intersection: Western Ave. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	541	0.34*
NT	2.0	3200	822	0.26
NR	1.0	1600	204	0.13
SL	1.0	1600	35	0.02
ST	2.0	3200	428	0.13*
SR	1.0	1600	156	0.10
EL	1.0	1600	73	0.05
ET	3.0	4800	1094	0.23*
ER	1.0	1600	200	0.13
WL	1.0	1600	104	0.07*
WT	3.0	4800	547	0.11
WR	1.0	1600	62	0.04
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.87 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	378	0.24
NT	2.0	3200	730	0.23
NR	1.0	1600	140	0.09
SL	1.0	1600	36	0.02
ST	2.0	3200	747	0.23*
SR	1.0	1600	241	0.15
EL	1.0	1600	192	0.12
ET	3.0	4800	661	0.14
ER	1.0	1600	654	0.41*
WL	1.0	1600	297	0.19*
WT	3.0	4800	721	0.15
WR	1.0	1600	32	0.02
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.93 E

* denotes critical movement

Intersection: Western Ave. (NS) / 9th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	120	0.08
NT	2.0	3200	857	0.27*
NR	1.0	1600	81	0.05
SL	1.0	1600	48	0.03*
ST	2.0	3200	442	0.14
SR	1.0	1600	28	0.02
EL	1.0	1600	26	0.02
ET	2.0	3200	118	0.04*
ER	1.0	1600	76	0.05
WL	1.0	1600	74	0.05*
WT	2.0	3200	119	0.04
WR	1.0	1600	73	0.05
				=======
			Clearance Interval Percentage =	0.10
			Sum of Critical Movements =	0.49 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	92	0.06*
NT	2.0	3200	627	0.20
NR	1.0	1600	59	0.04
SL	1.0	1600	76	0.05
ST	2.0	3200	949	0.30*
SR	1.0	1600	70	0.04
EL	1.0	1600	30	0.02
ET	2.0	3200	129	0.04*
ER	1.0	1600	156	0.10
WL	1.0	1600	112	0.07*
WT	2.0	3200	137	0.04
WR	1.0	1600	68	0.04
				=======
			Clearance Interval Percentage =	0.10
			Sum of Critical Movements =	0.57 A

* denotes critical movement

Intersection: Western Ave. (NS) / 25th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	41	0.03
NT	2.0	3200	156	0.05*
NR	1.0	1600	32	0.02
SL	1.0	1600	76	0.05*
ST	2.0	3200	102	0.03
SR >	1.0	1600	309	0.19
EL	1.0	1600	410	0.26*
ET	2.0	3200	229	0.07
ER	1.0	1600	54	0.03
WL	1.0	1600	19	0.01
WT	2.0	3200	228	0.13*
WR	0.0	1600	183	0.11
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.59 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	79	0.05
NT	2.0	3200	146	0.05*
NR	1.0	1600	52	0.03
SL	1.0	1600	253	0.16*
ST	2.0	3200	201	0.06
SR >	1.0	1600	454	0.28
EL	1.0	1600	380	0.24*
ET	2.0	3200	377	0.12
ER	1.0	1600	52	0.03
WL	1.0	1600	104	0.07
WT	2.0	3200	288	0.14*
WR	0.0	1600	163	0.10
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.69 B

* denotes critical movement
> denotes protected right turn

Intersection: Gaffey St. (NS) / 9th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	52	0.03
NT	2.0	3200	1098	0.34*
NR	1.0	1600	30	0.02
SL	1.0	1600	39	0.02*
ST	2.0	3200	664	0.21
SR	1.0	1600	55	0.03
EL	1.0	1600	289	0.18*
ET	1.0	1600	232	0.15
ER	1.0	1600	28	0.02
WL	1.0	1600	58	0.04
WT	1.0	1600	140	0.11*
WR	0.0	1600	40	0.03
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.75 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	Volume	V/C Ratio
NL	1.0	1600	48	0.03*
NT	2.0	3200	1038	0.32
NR	1.0	1600	12	0.01
SL	1.0	1600	63	0.04
ST	2.0	3200	1341	0.42*
SR	1.0	1600	96	0.06
EL	1.0	1600	92	0.06*
ET	1.0	1600	147	0.09
ER	1.0	1600	37	0.02
WL	1.0	1600	50	0.03
WT	1.0	1600	221	0.18*
WR	0.0	1600	61	0.04
				=======
Clearance Interval Percentage =				0.10
Sum of Critical Movements =				0.79 C

* denotes critical movement

APPENDIX E

TRAFFIC SIGNAL WARRANTS

TRAFFIC SIGNAL WARRANT

(Based on Estimated Average Daily Traffic-See Note 2)

Major St: Crenshaw Blvd. Minor St: Crest Rd. Year = E-AG

Volume = 10,750 Lanes= 2 Volume = 4,400 Lanes= 2 (one-way)

URBAN XX RURAL	Minimum Requirements EADT	
1. Minimum Vehicular Satisfied XX Not Satisfied	Vehicles per day on major street (both approaches)	Vehicles per day on higher volume minor-street approach (one direction only)
Number of lanes for moving traffic on each approach.		
Major Street / Minor Street	Urban / Rural	Urban / Rural
1 / 1	8,000 / 5,600	2,400 / 1,680
2 + / 1	9,600 / 6,720	2,400 / 1,680
2 + 10,750 / 2 + 4,400	9,600 / 6,720	3,200 / 2,240
1 / 2 +	8,000 / 5,600	3,200 / 2,240
2. Interruption of Continuous traffic Satisfied Not Satisfied XX	Vehicles per day on major street (both approaches)	Vehicles per day on higher volume minor-street approach (one direction only)
Number of lanes for moving traffic on each approach.		
Major Street / Minor Street	Urban / Rural	Urban / Rural
1 / 1	12,000 / 8,400	1,200 / 850
2 + / 1	14,400 / 10,080	1,200 / 850
2 + 10,750 / 2 + 4,400	14,000 / 10,080	1,600 / 1,120
1 / 2 +	12,000 / 8,400	1,600 / 1,120
3. Combination Satisfied Not Satisfied XX No one warrant satisfied but following warrants fulfilled 80% or more.. 100% 77% 1 2	2 Warrants	2 Warrants

NOTES: 1. Heavier left turn movement from the major street may be included with minor street volume if a separate signal phase is to be provided for the left-turn movement.

2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

TRAFFIC SIGNAL WARRANT

(Based on Estimated Average Daily Traffic-See Note 2)

Major St: Palos Verdes Dr. South Minor St: Project Entrance Year = E+AG+P

Volume = 14,700 Lanes= 2 Volume = 3,150 Lanes= 2 (one-way)

URBAN XX RURAL	Minimum Requirements EADT	
1. Minimum Vehicular Satisfied Not Satisfied XX	Vehicles per day on major street (both approaches)	Vehicles per day on higher volume minor-street approach (one direction only)
Number of lanes for moving traffic on each approach. Major Street / Minor Street	Urban / Rural	Urban / Rural
1 / 1	8,000 / 5,600	2,400 / 1,680
2 + / 1	9,600 / 6,720	2,400 / 1,680
2 + 14,700 / 2 + 3,150	9,600 / 6,720	3,200 / 2,240
1 / 2 +	8,000 / 5,600	3,200 / 2,240
2. Interruption of Continuous traffic Satisfied Not Satisfied XX	Vehicles per day on major street (both approaches)	Vehicles per day on higher volume minor-street approach (one direction only)
Number of lanes for moving traffic on each approach. Major Street / Minor Street	Urban / Rural	Urban / Rural
1 / 1	12,000 / 8,400	1,200 / 850
2 + / 1	14,400 / 10,080	1,200 / 850
2 + 14,700 / 2 + 3,150	14,000 / 10,080	1,600 / 1,120
1 / 2 +	12,000 / 8,400	1,600 / 1,120
3. Combination Satisfied Not Satisfied XX No one warrant satisfied but following warrants fulfilled 80% or more.. 98% 100% 1 2	2 Warrants	2 Warrants

NOTES: 1. Heavier left turn movement from the major street may be included with minor street volume if a separate signal phase is to be provided for the left-turn movement.

2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

TRAFFIC SIGNAL WARRANT

(Based on Estimated Average Daily Traffic-See Note 2)

Major St: Palos Verdes Dr. South Minor St: Palos Verdes Dr. East Year = E+AG+O

Volume = 17,000 Lanes= 1 Volume = 1,250 Lanes= 1 (one-way)

URBAN XX RURAL	Minimum Requirements EADT	
1. Minimum Vehicular Satisfied Not Satisfied XX	Vehicles per day on major street (both approaches)	Vehicles per day on higher volume minor-street approach (one direction only)
Number of lanes for moving traffic on each approach.		
Major Street / Minor Street	Urban / Rural	Urban / Rural
1 17,000 / 1 1,250	8,000 / 5,600	2,400 / 1,680
2 + / 1	9,600 / 6,720	2,400 / 1,680
2 + / 2 +	9,600 / 6,720	3,200 / 2,240
1 / 2 +	8,000 / 5,600	3,200 / 2,240
2. Interruption of Continuous traffic Satisfied Not Satisfied XX	Vehicles per day on major street (both approaches)	Vehicles per day on higher volume minor-street approach (one direction only)
Number of lanes for moving traffic on each approach.		
Major Street / Minor Street	Urban / Rural	Urban / Rural
1 17,000 / 1 1,250	12,000 / 8,400	1,200 / 850
2 + / 1	14,400 / 10,080	1,200 / 850
2 + / 2 +	14,000 / 10,080	1,600 / 1,120
1 / 2 +	12,000 / 8,400	1,600 / 1,120
3. Combination Satisfied Not Satisfied XX No one warrant satisfied but following warrants fulfilled 80% or more.. 52% 100% 1 2	2 Warrants	2 Warrants

NOTES: 1. Heavier left turn movement from the major street may be included with minor street volume if a separate signal phase is to be provided for the left-turn movement.

2. To be used only for NEW INTERSECTIONS or other locations where actual traffic volumes cannot be counted.

APPENDIX F

EXISTING PLUS AMBIENT GROWTH CALCULATION WORKSHEETS

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	1079	0	0	1079	0.67*
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	226	0	0	226	0.14*
ST	1.0	1600	598	0	0	598	0.37
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00*
WT	0.0	0	0	0	0	0	0.00
WR >>	1.0	1600	386	0	0	386	0.24
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.91 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	728	0	0	728	0.46*
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	402	0	0	402	0.25*
ST	1.0	1600	1028	0	0	1028	0.64
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00*
WT	0.0	0	0	0	0	0	0.00
WR >>	1.0	1600	360	0	0	360	0.23
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.81 D

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - South (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	1079	0	0	1079	0.67*
NR >>	1.0	1600	198	0	0	198	0.12
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1600	598	0	0	598	0.37
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1600	170	0	0	170	0.11*
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00

Clearance Interval Percentage = 0.10
Sum of Critical Movements = 0.88 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1600	728	0	0	728	0.46
NR >>	1.0	1600	249	0	0	249	0.16
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1600	1028	0	0	1028	0.64*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1600	205	0	0	205	0.13*
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00

Clearance Interval Percentage = 0.10
Sum of Critical Movements = 0.87 D

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - East (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	198	0	0	198	0.12*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1600	170	0	0	170	0.11
SR	1.0	1600	386	0	0	386	0.24
EL	1.0	1600	226	0	0	226	0.14*
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.36 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	249	0	0	249	0.16*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1600	205	0	0	205	0.13
SR	1.0	1600	360	0	0	360	0.23
EL	1.0	1600	402	0	0	402	0.25*
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.51 A

* denotes critical movement

Intersection: Palos Verdes Dr. West (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	2.0	3200	303	0	0	303	0.09*
NR	1.0	1600	305	0	0	305	0.19
SL	1.0	1600	226	0	0	226	0.14*
ST	2.0	3200	223	0	0	223	0.07
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1600	147	0	0	147	0.09
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1600	308	0	0	308	0.19*
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.52 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	2.0	3200	253	0	0	253	0.08*
NR	1.0	1600	267	0	0	267	0.17
SL	1.0	1600	181	0	0	181	0.11*
ST	2.0	3200	235	0	0	235	0.07
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1600	286	0	0	286	0.18*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1600	144	0	0	144	0.09
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.47 A

* denotes critical movement

Intersection: Granvia Altamira (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	26	0	0	26	0.02
NT	1.0	1600	54	0	0	54	0.05*
NR	1.0	1600	37	0	0	37	0.02
SL	1.5	2400	413	0	0	413	0.17*
ST	0.5	800	51	0	0	51	0.06
SR	1.0	1600	44	0	0	44	0.03
EL	1.0	1600	96	0	0	96	0.06
ET	2.0	3200	863	0	0	863	0.27*
ER	1.0	1600	27	0	0	27	0.02
WL	1.0	1600	25	0	0	25	0.02*
WT	2.0	3200	492	0	0	492	0.15
WR	1.0	1600	174	0	0	174	0.11
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.61 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	23	0	0	23	0.01
NT	1.0	1600	42	0	0	42	0.04*
NR	1.0	1600	33	0	0	33	0.02
SL	1.5	2400	231	0	0	231	0.10*
ST	0.5	800	57	0	0	57	0.07
SR	1.0	1600	78	0	0	78	0.05
EL	1.0	1600	105	0	0	105	0.07*
ET	2.0	3200	578	0	0	578	0.18
ER	1.0	1600	24	0	0	24	0.02
WL	1.0	1600	74	0	0	74	0.05
WT	2.0	3200	938	0	0	938	0.29*
WR	1.0	1600	301	0	0	301	0.19
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.60 A

* denotes critical movement

Intersection: Highridge Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	32	0	0	32	0.02
NT	1.0	1600	27	0	0	27	0.02
NR >	1.0	1600	422	0	0	422	0.26*
SL	0.0	1600	179	0	0	179	0.11*
ST	1.0	1600	9	0	0	9	0.13
SR	0.0	1600	13	0	0	13	0.01
EL	1.0	1600	6	0	0	6	0.01
ET	2.0	3200	1207	0	0	1207	0.38*
ER	1.0	1600	10	0	0	10	0.01
WL	1.0	1600	161	0	0	161	0.10
WT	2.0	3200	573	0	0	573	0.18
WR	1.0	1600	63	0	0	63	0.04
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.85 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	26	0	0	26	0.02*
NT	1.0	1600	18	0	0	18	0.01
NR >	1.0	1600	222	0	0	222	0.14
SL	0.0	1600	82	0	0	82	0.05
ST	1.0	1600	21	0	0	21	0.08*
SR	0.0	1600	19	0	0	19	0.01
EL	1.0	1600	20	0	0	20	0.01
ET	2.0	3200	681	0	0	681	0.21*
ER	1.0	1600	25	0	0	25	0.02
WL	1.0	1600	454	0	0	454	0.28*
WT	2.0	3200	1304	0	0	1304	0.41
WR	1.0	1600	172	0	0	172	0.11
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.69 B

* denotes critical movement
> denotes protected right turn

Intersection: Highridge Rd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	9	0	0	9	0.01
NT	1.0	1600	4	0	0	4	0.03*
NR	0.0	1600	40	0	0	40	0.03
SL	1.0	1600	15	0	0	15	0.01*
ST	1.0	1600	8	0	0	8	0.02
SR	0.0	1600	25	0	0	25	0.02
EL	1.0	1600	31	0	0	31	0.02
ET	2.0	3200	423	0	0	423	0.13*
ER	0.0	1600	6	0	0	6	0.01
WL	1.0	1600	14	0	0	14	0.01*
WT	2.0	3200	227	0	0	227	0.08
WR	0.0	1600	36	0	0	36	0.02

Clearance Interval Percentage = 0.10
Sum of Critical Movements = 0.28 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	3	0	0	3	0.01*
NT	1.0	1600	13	0	0	13	0.02
NR	0.0	1600	10	0	0	10	0.01
SL	1.0	1600	19	0	0	19	0.01
ST	1.0	1600	4	0	0	4	0.02*
SR	0.0	1600	33	0	0	33	0.02
EL	1.0	1600	27	0	0	27	0.02*
ET	2.0	3200	228	0	0	228	0.07
ER	0.0	1600	9	0	0	9	0.01
WL	1.0	1600	13	0	0	13	0.01
WT	2.0	3200	366	0	0	366	0.13*
WR	0.0	1600	41	0	0	41	0.03

Clearance Interval Percentage = 0.10
Sum of Critical Movements = 0.28 A

* denotes critical movement

Intersection: Indian Peak Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	136	0	0	136	0.05*
NT	0.0	0	0	0	0	0	0.00
NR >	1.0	1600	47	0	0	47	0.03
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	2.0	3200	1514	0	0	1514	0.47*
ER >	1.0	1600	291	0	0	291	0.18
WL	1.0	1600	113	0	0	113	0.07*
WT	2.0	3200	730	0	0	730	0.23
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.69 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	529	0	0	529	0.18*
NT	0.0	0	0	0	0	0	0.00
NR >	1.0	1600	89	0	0	89	0.06
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00*
ET	2.0	3200	950	0	0	950	0.30
ER >	1.0	1600	195	0	0	195	0.12
WL	1.0	1600	109	0	0	109	0.07
WT	2.0	3200	1401	0	0	1401	0.44*
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.72 C

* denotes critical movement
> denotes protected right turn

Intersection: Indian Peak Rd. (NS) / Crenshaw Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	210	0	0	210	0.13*
ST	0.0	0	0	0	0	0	0.00
SR >	1.0	1600	71	0	0	71	0.04
EL	1.0	1600	69	0	0	69	0.04
ET	2.0	3200	1192	0	0	1192	0.37*
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00*
WT	2.0	3200	513	0	0	513	0.16
WR	1.0	1600	83	0	0	83	0.05
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.60 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	120	0	0	120	0.08
ST	0.0	0	0	0	0	0	0.00
SR >	1.0	1600	187	0	0	187	0.12*
EL	1.0	1600	110	0	0	110	0.07*
ET	2.0	3200	625	0	0	625	0.20
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	2.0	3200	929	0	0	929	0.29*
WR	1.0	1600	224	0	0	224	0.14
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.58 A

* denotes critical movement
> denotes protected right turn

Intersection: Silver Spur Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	259	0	0	259	0.16*
NT	2.0	3200	186	0	0	186	0.06
NR >	1.0	1600	116	0	0	116	0.07
SL	1.0	1600	113	0	0	113	0.07
ST	2.0	3200	240	0	0	240	0.11*
SR	0.0	1600	108	0	0	108	0.07
EL	1.0	1600	164	0	0	164	0.10
ET	2.0	3200	1387	0	0	1387	0.43*
ER	1.0	1600	317	0	0	317	0.20
WL	1.0	1600	183	0	0	183	0.11*
WT	2.0	3200	558	0	0	558	0.17
WR	1.0	1600	47	0	0	47	0.03
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.91 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	381	0	0	381	0.24*
NT	2.0	3200	319	0	0	319	0.10
NR >	1.0	1600	189	0	0	189	0.12
SL	1.0	1600	66	0	0	66	0.04
ST	2.0	3200	425	0	0	425	0.19*
SR	0.0	1600	191	0	0	191	0.12
EL	1.0	1600	284	0	0	284	0.18*
ET	2.0	3200	761	0	0	761	0.24
ER	1.0	1600	210	0	0	210	0.13
WL	1.0	1600	190	0	0	190	0.12
WT	2.0	3200	1005	0	0	1005	0.31*
WR	1.0	1600	91	0	0	91	0.06
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	1.02 F

* denotes critical movement
> denotes protected right turn

Intersection: Silver Spur Rd. (NS) / Crenshaw Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	1	0	0	1	0.01*
NT	1.0	1600	1	0	0	1	0.01
NR	0.0	1600	1	0	0	1	0.01
SL	1.5	2400	509	0	0	509	0.21*
ST	0.5	800	1	0	0	1	0.01
SR >	1.0	1600	80	0	0	80	0.05
EL	1.0	1600	198	0	0	198	0.12
ET	2.0	3200	1222	0	0	1222	0.38*
ER	0.0	1600	1	0	0	1	0.01
WL	1.0	1600	1	0	0	1	0.01*
WT	2.0	3200	475	0	0	475	0.15
WR	1.0	1600	462	0	0	462	0.29
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.71 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	1	0	0	1	0.01*
NT	1.0	1600	1	0	0	1	0.01
NR	0.0	1600	1	0	0	1	0.01
SL	1.5	2400	585	0	0	585	0.24
ST	0.5	800	1	0	0	1	0.01
SR >	1.0	1600	410	0	0	410	0.26*
EL	1.0	1600	188	0	0	188	0.12*
ET	2.0	3200	554	0	0	554	0.17
ER	0.0	1600	1	0	0	1	0.01
WL	1.0	1600	1	0	0	1	0.01
WT	2.0	3200	778	0	0	778	0.24*
WR	1.0	1600	597	0	0	597	0.37
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.73 C

* denotes critical movement
> denotes protected right turn

Intersection: Hawthorne Blvd. (NS) / Sepulveda Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	102	0	0	102	0.04
NT	4.0	6400	2266	0	0	2266	0.35*
NR >>	1.0	1600	331	0	0	331	0.21
SL	2.0	2880	183	0	0	183	0.06*
ST	4.0	6400	1658	0	0	1658	0.26
SR >>	1.0	1600	154	0	0	154	0.10
EL	2.0	2880	392	0	0	392	0.14
ET	3.0	4800	1136	0	0	1136	0.26*
ER	0.0	1600	111	0	0	111	0.07
WL	2.0	2880	458	0	0	458	0.16*
WT	3.0	4800	822	0	0	822	0.24
WR	0.0	1600	351	0	0	351	0.22
							=======
			Clearance Interval Percentage =				0.10
			Sum of Critical Movements =				0.93 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	297	0	0	297	0.10
NT	4.0	6400	2331	0	0	2331	0.36*
NR >>	1.0	1600	760	0	0	760	0.48
SL	2.0	2880	412	0	0	412	0.14*
ST	4.0	6400	2299	0	0	2299	0.36
SR >>	1.0	1600	166	0	0	166	0.10
EL	2.0	2880	345	0	0	345	0.12
ET	3.0	4800	881	0	0	881	0.22*
ER	0.0	1600	156	0	0	156	0.10
WL	2.0	2880	866	0	0	866	0.30*
WT	3.0	4800	1374	0	0	1374	0.35
WR	0.0	1600	299	0	0	299	0.19
							=======
			Clearance Interval Percentage =				0.10
			Sum of Critical Movements =				1.12 F

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Pacific Coast Hwy. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	287	0	0	287	0.10
NT	3.0	4800	1642	0	0	1642	0.35*
NR	0.0	1600	48	0	0	48	0.03
SL	2.0	2880	199	0	0	199	0.07*
ST	3.0	4800	772	0	0	772	0.16
SR >>	1.0	1600	207	0	0	207	0.13
EL	1.0	1600	323	0	0	323	0.20*
ET	3.0	4800	929	0	0	929	0.23
ER	0.0	1600	180	0	0	180	0.11
WL	1.0	1600	201	0	0	201	0.13
WT	3.0	4800	902	0	0	902	0.23*
WR	0.0	1600	199	0	0	199	0.12
							=======
			Clearance Interval Percentage =				0.10
			Sum of Critical Movements =				0.95 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	304	0	0	304	0.11
NT	3.0	4800	2270	0	0	2270	0.61*
NR	0.0	1600	662	0	0	662	0.41
SL	2.0	2880	379	0	0	379	0.13*
ST	3.0	4800	2343	0	0	2343	0.49
SR >>	1.0	1600	201	0	0	201	0.13
EL	1.0	1600	328	0	0	328	0.21
ET	3.0	4800	833	0	0	833	0.21*
ER	0.0	1600	162	0	0	162	0.10
WL	1.0	1600	755	0	0	755	0.47*
WT	3.0	4800	1168	0	0	1168	0.31
WR	0.0	1600	312	0	0	312	0.20
							=======
			Clearance Interval Percentage =				0.10
			Sum of Critical Movements =				1.52 F

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	22	0	0	22	0.01
NT	2.0	3200	1220	0	0	1220	0.38*
NR >>	1.0	1600	465	0	0	465	0.29
SL	1.0	1600	100	0	0	100	0.06*
ST	2.0	3200	557	0	0	557	0.17
SR	1.0	1600	92	0	0	92	0.06
EL	1.5	2400	466	0	0	466	0.19
ET	1.5	2400	534	0	0	534	0.23*
ER	0.0	1600	12	0	0	12	0.01
WL	1.0	1600	192	0	0	192	0.12
WT	1.0	1600	309	0	0	309	0.19*
WR	1.0	1600	199	0	0	199	0.12
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.96 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	25	0	0	25	0.02*
NT	2.0	3200	739	0	0	739	0.23
NR >>	1.0	1600	207	0	0	207	0.13
SL	1.0	1600	133	0	0	133	0.08
ST	2.0	3200	1109	0	0	1109	0.35*
SR	1.0	1600	361	0	0	361	0.23
EL	1.5	2400	169	0	0	169	0.07
ET	1.5	2400	409	0	0	409	0.18*
ER	0.0	1600	22	0	0	22	0.01
WL	1.0	1600	235	0	0	235	0.15
WT	1.0	1600	386	0	0	386	0.24*
WR	1.0	1600	81	0	0	81	0.05
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.89 D

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	14	0	0	14	0.01
NT	2.0	3200	536	0	0	536	0.17*
NR	1.0	1600	294	0	0	294	0.18
SL	1.0	1600	71	0	0	71	0.04*
ST	2.0	3200	363	0	0	363	0.11
SR	1.0	1600	119	0	0	119	0.07
EL	1.0	1600	148	0	0	148	0.09
ET	1.0	1600	87	0	0	87	0.06*
ER	0.0	1600	12	0	0	12	0.01
WL	1.0	1600	144	0	0	144	0.09*
WT	1.0	1600	33	0	0	33	0.02
WR	1.0	1600	69	0	0	69	0.04
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.46 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	18	0	0	18	0.01*
NT	2.0	3200	382	0	0	382	0.12
NR	1.0	1600	136	0	0	136	0.09
SL	1.0	1600	38	0	0	38	0.02
ST	2.0	3200	432	0	0	432	0.14*
SR	1.0	1600	104	0	0	104	0.07
EL	1.0	1600	185	0	0	185	0.12
ET	1.0	1600	64	0	0	64	0.05*
ER	0.0	1600	10	0	0	10	0.01
WL	1.0	1600	254	0	0	254	0.16*
WT	1.0	1600	58	0	0	58	0.04
WR	1.0	1600	64	0	0	64	0.04
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.46 A

* denotes critical movement

Intersection: Crenshaw Blvd. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	38	0	0	38	0.02
NT	2.0	3200	1049	0	0	1049	0.33*
NR	1.0	1600	633	0	0	633	0.40
SL	1.0	1600	77	0	0	77	0.05*
ST	2.0	3200	483	0	0	483	0.15
SR	1.0	1600	114	0	0	114	0.07
EL	2.0	2880	395	0	0	395	0.14
ET	2.0	3200	523	0	0	523	0.18*
ER	0.0	1600	37	0	0	37	0.02
WL	2.0	2880	502	0	0	502	0.17*
WT	2.0	3200	470	0	0	470	0.19
WR	0.0	1600	142	0	0	142	0.09
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.83 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	34	0	0	34	0.02
NT	2.0	3200	624	0	0	624	0.20*
NR	1.0	1600	503	0	0	503	0.31
SL	1.0	1600	104	0	0	104	0.07*
ST	2.0	3200	774	0	0	774	0.24
SR	1.0	1600	168	0	0	168	0.11
EL	2.0	2880	209	0	0	209	0.07
ET	2.0	3200	502	0	0	502	0.17*
ER	0.0	1600	42	0	0	42	0.03
WL	2.0	2880	478	0	0	478	0.17*
WT	2.0	3200	418	0	0	418	0.15
WR	0.0	1600	66	0	0	66	0.04
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.71 C

* denotes critical movement

Intersection: Crenshaw Blvd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	34	0	0	34	0.02
NT	1.0	1600	126	0	0	126	0.08*
NR	1.0	1600	11	0	0	11	0.01
SL	1.0	1600	69	0	0	69	0.04*
ST	1.5	2400	91	0	0	91	0.04
SR	1.5	2400	213	0	0	213	0.09
EL	1.5	2400	566	0	0	566	0.24*
ET	0.5	800	21	0	0	21	0.03
ER >>	1.0	1600	30	0	0	30	0.02
WL	0.0	1600	15	0	0	15	0.01
WT	1.0	1600	25	0	0	25	0.03
WR	1.0	1600	81	0	0	81	0.05*
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.51 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	32	0	0	32	0.02
NT	1.0	1600	76	0	0	76	0.05*
NR	1.0	1600	5	0	0	5	0.01
SL	1.0	1600	115	0	0	115	0.07*
ST	1.5	2400	132	0	0	132	0.06
SR	1.5	2400	451	0	0	451	0.19
EL	1.5	2400	284	0	0	284	0.12*
ET	0.5	800	28	0	0	28	0.04
ER >>	1.0	1600	47	0	0	47	0.03
WL	0.0	1600	3	0	0	3	0.01
WT	1.0	1600	39	0	0	39	0.03
WR	1.0	1600	78	0	0	78	0.05*
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.39 A

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Dr. East (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	307	0	0	307	0.19*
NT	2.0	3200	288	0	0	288	0.09
NR	1.0	1600	168	0	0	168	0.11
SL	1.0	1600	99	0	0	99	0.06
ST	2.0	3200	95	0	0	95	0.03*
SR	1.0	1600	51	0	0	51	0.03
EL	1.0	1600	52	0	0	52	0.03
ET	2.0	3200	1206	0	0	1206	0.38*
ER	1.0	1600	193	0	0	193	0.12
WL	1.0	1600	119	0	0	119	0.07*
WT	2.0	3200	972	0	0	972	0.30
WR >>	1.0	1600	250	0	0	250	0.16
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.77 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	178	0	0	178	0.11*
NT	2.0	3200	114	0	0	114	0.04
NR	1.0	1600	98	0	0	98	0.06
SL	1.0	1600	220	0	0	220	0.14
ST	2.0	3200	228	0	0	228	0.07*
SR	1.0	1600	89	0	0	89	0.06
EL	1.0	1600	75	0	0	75	0.05
ET	2.0	3200	1196	0	0	1196	0.37*
ER	1.0	1600	308	0	0	308	0.19
WL	1.0	1600	119	0	0	119	0.07*
WT	2.0	3200	1107	0	0	1107	0.35
WR >>	1.0	1600	105	0	0	105	0.07
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.72 C

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Dr. East (NS) / Palos Verdes Dr. South (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	29	0	0	29	0.02
ST	0.0	0	0	0	0	0	0.00
SR	1.0	1600	75	0	0	75	0.05*
EL	1.0	1600	76	0	0	76	0.05*
ET	1.0	1600	445	0	0	445	0.28
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	1.0	1600	445	0	0	445	0.30*
WR	0.0	1600	34	0	0	34	0.02
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.50 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	39	0	0	39	0.02
ST	0.0	0	0	0	0	0	0.00
SR	1.0	1600	49	0	0	49	0.03*
EL	1.0	1600	59	0	0	59	0.04*
ET	1.0	1600	615	0	0	615	0.38
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	1.0	1600	483	0	0	483	0.34*
WR	0.0	1600	55	0	0	55	0.03
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.51 A

* denotes critical movement

Intersection: Western Ave. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	573	0	0	573	0.36*
NT	2.0	3200	871	0	0	871	0.27
NR	1.0	1600	216	0	0	216	0.14
SL	1.0	1600	37	0	0	37	0.02
ST	2.0	3200	453	0	0	453	0.14*
SR	1.0	1600	165	0	0	165	0.10
EL	1.0	1600	77	0	0	77	0.05
ET	3.0	4800	1159	0	0	1159	0.24*
ER	1.0	1600	211	0	0	211	0.13
WL	1.0	1600	110	0	0	110	0.07*
WT	3.0	4800	579	0	0	579	0.12
WR	1.0	1600	65	0	0	65	0.04
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.91 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	400	0	0	400	0.25
NT	2.0	3200	773	0	0	773	0.24
NR	1.0	1600	148	0	0	148	0.09
SL	1.0	1600	38	0	0	38	0.02
ST	2.0	3200	791	0	0	791	0.25*
SR	1.0	1600	255	0	0	255	0.16
EL	1.0	1600	203	0	0	203	0.13
ET	3.0	4800	700	0	0	700	0.15
ER	1.0	1600	693	0	0	693	0.43*
WL	1.0	1600	314	0	0	314	0.20*
WT	3.0	4800	764	0	0	764	0.16
WR	1.0	1600	33	0	0	33	0.02
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.98 E

* denotes critical movement

Intersection: Western Ave. (NS) / 9th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	127	0	0	127	0.08
NT	2.0	3200	908	0	0	908	0.28*
NR	1.0	1600	85	0	0	85	0.05
SL	1.0	1600	50	0	0	50	0.03*
ST	2.0	3200	468	0	0	468	0.15
SR	1.0	1600	29	0	0	29	0.02
EL	1.0	1600	27	0	0	27	0.02
ET	2.0	3200	125	0	0	125	0.04*
ER	1.0	1600	80	0	0	80	0.05
WL	1.0	1600	78	0	0	78	0.05*
WT	2.0	3200	126	0	0	126	0.04
WR	1.0	1600	77	0	0	77	0.05
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.50 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	97	0	0	97	0.06*
NT	2.0	3200	664	0	0	664	0.21
NR	1.0	1600	62	0	0	62	0.04
SL	1.0	1600	80	0	0	80	0.05
ST	2.0	3200	1005	0	0	1005	0.31*
SR	1.0	1600	74	0	0	74	0.05
EL	1.0	1600	31	0	0	31	0.02
ET	2.0	3200	136	0	0	136	0.04*
ER	1.0	1600	165	0	0	165	0.10
WL	1.0	1600	118	0	0	118	0.07*
WT	2.0	3200	145	0	0	145	0.05
WR	1.0	1600	72	0	0	72	0.05
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.58 A

* denotes critical movement

Intersection: Western Ave. (NS) / 25th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	43	0	0	43	0.03
NT	2.0	3200	165	0	0	165	0.05*
NR	1.0	1600	33	0	0	33	0.02
SL	1.0	1600	80	0	0	80	0.05*
ST	2.0	3200	108	0	0	108	0.03
SR >	1.0	1600	327	0	0	327	0.20
EL	1.0	1600	434	0	0	434	0.27*
ET	2.0	3200	242	0	0	242	0.08
ER	1.0	1600	57	0	0	57	0.04
WL	1.0	1600	20	0	0	20	0.01
WT	2.0	3200	241	0	0	241	0.14*
WR	0.0	1600	193	0	0	193	0.12
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.61 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	83	0	0	83	0.05
NT	2.0	3200	154	0	0	154	0.05*
NR	1.0	1600	55	0	0	55	0.03
SL	1.0	1600	268	0	0	268	0.17*
ST	2.0	3200	213	0	0	213	0.07
SR >	1.0	1600	481	0	0	481	0.30
EL	1.0	1600	402	0	0	402	0.25*
ET	2.0	3200	399	0	0	399	0.12
ER	1.0	1600	55	0	0	55	0.03
WL	1.0	1600	110	0	0	110	0.07
WT	2.0	3200	305	0	0	305	0.15*
WR	0.0	1600	172	0	0	172	0.11
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.72 C

* denotes critical movement
> denotes protected right turn

Intersection: Gaffey St. (NS) / 9th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	55	0	0	55	0.03
NT	2.0	3200	1163	0	0	1163	0.36*
NR	1.0	1600	31	0	0	31	0.02
SL	1.0	1600	41	0	0	41	0.03*
ST	2.0	3200	703	0	0	703	0.22
SR	1.0	1600	58	0	0	58	0.04
EL	1.0	1600	306	0	0	306	0.19*
ET	1.0	1600	245	0	0	245	0.15
ER	1.0	1600	29	0	0	29	0.02
WL	1.0	1600	61	0	0	61	0.04
WT	1.0	1600	148	0	0	148	0.12*
WR	0.0	1600	42	0	0	42	0.03
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.80 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	50	0	0	50	0.03*
NT	2.0	3200	1100	0	0	1100	0.34
NR	1.0	1600	12	0	0	12	0.01
SL	1.0	1600	66	0	0	66	0.04
ST	2.0	3200	1421	0	0	1421	0.44*
SR	1.0	1600	101	0	0	101	0.06
EL	1.0	1600	97	0	0	97	0.06*
ET	1.0	1600	155	0	0	155	0.10
ER	1.0	1600	39	0	0	39	0.02
WL	1.0	1600	52	0	0	52	0.03
WT	1.0	1600	234	0	0	234	0.19*
WR	0.0	1600	64	0	0	64	0.04
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.82 D

* denotes critical movement

APPENDIX G

EXISTING PLUS AMBIENT GROWTH
PLUS PROPOSED PROJECT CALCULATION WORKSHEETS

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	1079	12	0	1091	0.68*
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	226	0	0	226	0.14*
ST	1.0	1600	598	19	0	617	0.39
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00*
WT	0.0	0	0	0	0	0	0.00
WR >>	1.0	1600	386	0	0	386	0.24
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.92 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	728	24	0	752	0.47*
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	402	0	0	402	0.25*
ST	1.0	1600	1028	24	0	1052	0.66
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00*
WT	0.0	0	0	0	0	0	0.00
WR >>	1.0	1600	360	0	0	360	0.23
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.82 D

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	1079	12	0	1091	0.68*
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	226	0	0	226	0.14*
ST	1.0	1600	598	19	0	617	0.39
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00*
WT	0.0	0	0	0	0	0	0.00
WR >>	1.0	1600	386	0	0	386	0.24
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.92 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	728	25	0	753	0.47*
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	402	0	0	402	0.25*
ST	1.0	1600	1028	25	0	1053	0.66
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00*
WT	0.0	0	0	0	0	0	0.00
WR >>	1.0	1600	360	0	0	360	0.23
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.82 D

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - South (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	1079	12	0	1091	0.68*
NR >>	1.0	1600	198	0	0	198	0.12
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1600	598	19	0	617	0.39
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1600	170	0	0	170	0.11*
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.89 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1600	728	25	0	753	0.47
NR >>	1.0	1600	249	0	0	249	0.16
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1600	1028	25	0	1053	0.66*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1600	205	0	0	205	0.13*
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.89 D

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - East (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	198	0	0	198	0.12*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1600	170	0	0	170	0.11
SR	1.0	1600	386	0	0	386	0.24
EL	1.0	1600	226	0	0	226	0.14*
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.36 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	249	0	0	249	0.16*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1600	205	0	0	205	0.13
SR	1.0	1600	360	0	0	360	0.23
EL	1.0	1600	402	0	0	402	0.25*
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.51 A

* denotes critical movement

Intersection: Palos Verdes Dr. West (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	2.0	3200	303	12	0	315	0.10*
NR	1.0	1600	305	54	0	359	0.22
SL	1.0	1600	226	0	0	226	0.14*
ST	2.0	3200	223	19	0	242	0.08
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1600	147	87	0	234	0.15
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1600	308	0	0	308	0.19*
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.53 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	2.0	3200	253	25	0	278	0.09*
NR	1.0	1600	267	114	0	381	0.24
SL	1.0	1600	181	0	0	181	0.11*
ST	2.0	3200	235	25	0	260	0.08
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1600	286	111	0	397	0.25*
WT	0.0	0	0	0	0	0	0.00
WR	1.0	1600	144	0	0	144	0.09
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.55 A

* denotes critical movement

Intersection: Granvia Altamira (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	26	0	0	26	0.02
NT	1.0	1600	54	0	0	54	0.05*
NR	1.0	1600	37	0	0	37	0.02
SL	1.5	2400	413	0	0	413	0.17*
ST	0.5	800	51	0	0	51	0.06
SR	1.0	1600	44	0	0	44	0.03
EL	1.0	1600	96	0	0	96	0.06
ET	2.0	3200	863	30	0	893	0.28*
ER	1.0	1600	27	0	0	27	0.02
WL	1.0	1600	25	0	0	25	0.02*
WT	2.0	3200	492	49	0	541	0.17
WR	1.0	1600	174	0	0	174	0.11
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.62 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	23	0	0	23	0.01
NT	1.0	1600	42	0	0	42	0.04*
NR	1.0	1600	33	0	0	33	0.02
SL	1.5	2400	231	0	0	231	0.10*
ST	0.5	800	57	0	0	57	0.07
SR	1.0	1600	78	0	0	78	0.05
EL	1.0	1600	105	0	0	105	0.07*
ET	2.0	3200	578	64	0	642	0.20
ER	1.0	1600	24	0	0	24	0.02
WL	1.0	1600	74	0	0	74	0.05
WT	2.0	3200	938	61	0	999	0.31*
WR	1.0	1600	301	0	0	301	0.19
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.62 B

* denotes critical movement

Intersection: Highridge Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	32	0	0	32	0.02
NT	1.0	1600	27	0	0	27	0.02
NR >	1.0	1600	422	0	0	422	0.26*
SL	0.0	1600	179	0	0	179	0.11*
ST	1.0	1600	9	0	0	9	0.13
SR	0.0	1600	13	0	0	13	0.01
EL	1.0	1600	6	0	0	6	0.01
ET	2.0	3200	1207	30	0	1237	0.39*
ER	1.0	1600	10	0	0	10	0.01
WL	1.0	1600	161	0	0	161	0.10
WT	2.0	3200	573	49	0	622	0.19
WR	1.0	1600	63	0	0	63	0.04
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.86 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	26	0	0	26	0.02*
NT	1.0	1600	18	0	0	18	0.01
NR >	1.0	1600	222	0	0	222	0.14
SL	0.0	1600	82	0	0	82	0.05
ST	1.0	1600	21	0	0	21	0.08*
SR	0.0	1600	19	0	0	19	0.01
EL	1.0	1600	20	0	0	20	0.01
ET	2.0	3200	681	64	0	745	0.23*
ER	1.0	1600	25	0	0	25	0.02
WL	1.0	1600	454	0	0	454	0.28*
WT	2.0	3200	1304	61	0	1365	0.43
WR	1.0	1600	172	0	0	172	0.11
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.71 C

* denotes critical movement
> denotes protected right turn

Intersection: Highridge Rd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	9	0	0	9	0.01
NT	1.0	1600	4	0	0	4	0.03*
NR	0.0	1600	40	0	0	40	0.03
SL	1.0	1600	15	0	0	15	0.01*
ST	1.0	1600	8	0	0	8	0.02
SR	0.0	1600	25	0	0	25	0.02
EL	1.0	1600	31	0	0	31	0.02
ET	2.0	3200	423	24	0	447	0.14*
ER	0.0	1600	6	0	0	6	0.01
WL	1.0	1600	14	0	0	14	0.01*
WT	2.0	3200	227	38	0	265	0.09
WR	0.0	1600	36	0	0	36	0.02
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.29 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	3	0	0	3	0.01*
NT	1.0	1600	13	0	0	13	0.02
NR	0.0	1600	10	0	0	10	0.01
SL	1.0	1600	19	0	0	19	0.01
ST	1.0	1600	4	0	0	4	0.02*
SR	0.0	1600	33	0	0	33	0.02
EL	1.0	1600	27	0	0	27	0.02*
ET	2.0	3200	228	50	0	278	0.09
ER	0.0	1600	9	0	0	9	0.01
WL	1.0	1600	13	0	0	13	0.01
WT	2.0	3200	366	50	0	416	0.14*
WR	0.0	1600	41	0	0	41	0.03
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.29 A

* denotes critical movement

Intersection: Indian Peak Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	136	0	0	136	0.05*
NT	0.0	0	0	0	0	0	0.00
NR >	1.0	1600	47	0	0	47	0.03
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	2.0	3200	1514	30	0	1544	0.48*
ER >	1.0	1600	291	0	0	291	0.18
WL	1.0	1600	113	0	0	113	0.07*
WT	2.0	3200	730	49	0	779	0.24
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.70 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	529	0	0	529	0.18*
NT	0.0	0	0	0	0	0	0.00
NR >	1.0	1600	89	0	0	89	0.06
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00*
ET	2.0	3200	950	64	0	1014	0.32
ER >	1.0	1600	195	0	0	195	0.12
WL	1.0	1600	109	0	0	109	0.07
WT	2.0	3200	1401	61	0	1462	0.46*
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.74 C

* denotes critical movement
> denotes protected right turn

Intersection: Indian Peak Rd. (NS) / Crenshaw Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	210	0	0	210	0.13*
ST	0.0	0	0	0	0	0	0.00
SR >	1.0	1600	71	0	0	71	0.04
EL	1.0	1600	69	0	0	69	0.04
ET	2.0	3200	1192	24	0	1216	0.38*
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00*
WT	2.0	3200	513	38	0	551	0.17
WR	1.0	1600	83	0	0	83	0.05
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.61 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	120	0	0	120	0.08
ST	0.0	0	0	0	0	0	0.00
SR >	1.0	1600	187	0	0	187	0.12*
EL	1.0	1600	110	0	0	110	0.07*
ET	2.0	3200	625	50	0	675	0.21
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	2.0	3200	929	50	0	979	0.31*
WR	1.0	1600	224	0	0	224	0.14
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.60 A

* denotes critical movement
> denotes protected right turn

Intersection: Silver Spur Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	259	10	0	269	0.17*
NT	2.0	3200	186	0	0	186	0.06
NR >	1.0	1600	116	0	0	116	0.07
SL	1.0	1600	113	0	0	113	0.07
ST	2.0	3200	240	0	0	240	0.11*
SR	0.0	1600	108	0	0	108	0.07
EL	1.0	1600	164	0	0	164	0.10
ET	2.0	3200	1387	24	0	1411	0.44*
ER	1.0	1600	317	6	0	323	0.20
WL	1.0	1600	183	0	0	183	0.11*
WT	2.0	3200	558	39	0	597	0.19
WR	1.0	1600	47	0	0	47	0.03
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.93 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	381	12	0	393	0.25*
NT	2.0	3200	319	0	0	319	0.10
NR >	1.0	1600	189	0	0	189	0.12
SL	1.0	1600	66	0	0	66	0.04
ST	2.0	3200	425	0	0	425	0.19*
SR	0.0	1600	191	0	0	191	0.12
EL	1.0	1600	284	0	0	284	0.18*
ET	2.0	3200	761	51	0	812	0.25
ER	1.0	1600	210	13	0	223	0.14
WL	1.0	1600	190	0	0	190	0.12
WT	2.0	3200	1005	49	0	1054	0.33*
WR	1.0	1600	91	0	0	91	0.06
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		1.05 F

* denotes critical movement
> denotes protected right turn

Intersection: Silver Spur Rd. (NS) / Crenshaw Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	1	0	0	1	0.01*
NT	1.0	1600	1	0	0	1	0.01
NR	0.0	1600	1	0	0	1	0.01
SL	1.5	2400	509	0	0	509	0.21*
ST	0.5	800	1	0	0	1	0.01
SR >	1.0	1600	80	0	0	80	0.05
EL	1.0	1600	198	0	0	198	0.12
ET	2.0	3200	1222	24	0	1246	0.39*
ER	0.0	1600	1	0	0	1	0.01
WL	1.0	1600	1	0	0	1	0.01*
WT	2.0	3200	475	38	0	513	0.16
WR	1.0	1600	462	0	0	462	0.29
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.72 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	1	0	0	1	0.01*
NT	1.0	1600	1	0	0	1	0.01
NR	0.0	1600	1	0	0	1	0.01
SL	1.5	2400	585	0	0	585	0.24
ST	0.5	800	1	0	0	1	0.01
SR >	1.0	1600	410	0	0	410	0.26*
EL	1.0	1600	188	0	0	188	0.12*
ET	2.0	3200	554	50	0	604	0.19
ER	0.0	1600	1	0	0	1	0.01
WL	1.0	1600	1	0	0	1	0.01
WT	2.0	3200	778	50	0	828	0.26*
WR	1.0	1600	597	0	0	597	0.37
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.75 C

* denotes critical movement
> denotes protected right turn

Intersection: Hawthorne Blvd. (NS) / Sepulveda Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	102	0	0	102	0.04
NT	4.0	6400	2266	12	0	2278	0.36*
NR >>	1.0	1600	331	6	0	337	0.21
SL	2.0	2880	183	0	0	183	0.06*
ST	4.0	6400	1658	19	0	1677	0.26
SR >>	1.0	1600	154	0	0	154	0.10
EL	2.0	2880	392	0	0	392	0.14
ET	3.0	4800	1136	0	0	1136	0.26*
ER	0.0	1600	111	0	0	111	0.07
WL	2.0	2880	458	10	0	468	0.16*
WT	3.0	4800	822	0	0	822	0.24
WR	0.0	1600	351	0	0	351	0.22
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.94 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	297	0	0	297	0.10
NT	4.0	6400	2331	25	0	2356	0.37*
NR >>	1.0	1600	760	13	0	773	0.48
SL	2.0	2880	412	0	0	412	0.14*
ST	4.0	6400	2299	25	0	2324	0.36
SR >>	1.0	1600	166	0	0	166	0.10
EL	2.0	2880	345	0	0	345	0.12
ET	3.0	4800	881	0	0	881	0.22*
ER	0.0	1600	156	0	0	156	0.10
WL	2.0	2880	866	12	0	878	0.30*
WT	3.0	4800	1374	0	0	1374	0.35
WR	0.0	1600	299	0	0	299	0.19
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	1.13 F

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Pacific Coast Hwy. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	287	6	0	293	0.10
NT	3.0	4800	1642	18	0	1660	0.36*
NR	0.0	1600	48	0	0	48	0.03
SL	2.0	2880	199	0	0	199	0.07*
ST	3.0	4800	772	29	0	801	0.17
SR >>	1.0	1600	207	0	0	207	0.13
EL	1.0	1600	323	0	0	323	0.20*
ET	3.0	4800	929	0	0	929	0.23
ER	0.0	1600	180	10	0	190	0.12
WL	1.0	1600	201	0	0	201	0.13
WT	3.0	4800	902	0	0	902	0.23*
WR	0.0	1600	199	0	0	199	0.12
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.96 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	304	13	0	317	0.11
NT	3.0	4800	2270	38	0	2308	0.62*
NR	0.0	1600	662	0	0	662	0.41
SL	2.0	2880	379	0	0	379	0.13*
ST	3.0	4800	2343	37	0	2380	0.50
SR >>	1.0	1600	201	0	0	201	0.13
EL	1.0	1600	328	0	0	328	0.21
ET	3.0	4800	833	0	0	833	0.21*
ER	0.0	1600	162	12	0	174	0.11
WL	1.0	1600	755	0	0	755	0.47*
WT	3.0	4800	1168	0	0	1168	0.31
WR	0.0	1600	312	0	0	312	0.20
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	1.53 F

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	22	0	0	22	0.01
NT	2.0	3200	1220	24	0	1244	0.39*
NR >>	1.0	1600	465	0	0	465	0.29
SL	1.0	1600	100	0	0	100	0.06*
ST	2.0	3200	557	39	0	596	0.19
SR	1.0	1600	92	0	0	92	0.06
EL	1.5	2400	466	0	0	466	0.19
ET	1.5	2400	534	0	0	534	0.23*
ER	0.0	1600	12	0	0	12	0.01
WL	1.0	1600	192	0	0	192	0.12
WT	1.0	1600	309	0	0	309	0.19*
WR	1.0	1600	199	0	0	199	0.12
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.97 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	25	0	0	25	0.02*
NT	2.0	3200	739	51	0	790	0.25
NR >>	1.0	1600	207	0	0	207	0.13
SL	1.0	1600	133	0	0	133	0.08
ST	2.0	3200	1109	49	0	1158	0.36*
SR	1.0	1600	361	0	0	361	0.23
EL	1.5	2400	169	0	0	169	0.07
ET	1.5	2400	409	0	0	409	0.18*
ER	0.0	1600	22	0	0	22	0.01
WL	1.0	1600	235	0	0	235	0.15
WT	1.0	1600	386	0	0	386	0.24*
WR	1.0	1600	81	0	0	81	0.05
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.90 D

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	14	0	0	14	0.01
NT	2.0	3200	536	30	0	566	0.18*
NR	1.0	1600	294	24	0	318	0.20
SL	1.0	1600	71	0	0	71	0.04*
ST	2.0	3200	363	49	0	412	0.13
SR	1.0	1600	119	0	0	119	0.07
EL	1.0	1600	148	0	0	148	0.09
ET	1.0	1600	87	0	0	87	0.06*
ER	0.0	1600	12	0	0	12	0.01
WL	1.0	1600	144	38	0	182	0.11*
WT	1.0	1600	33	0	0	33	0.02
WR	1.0	1600	69	0	0	69	0.04
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.49 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	18	0	0	18	0.01*
NT	2.0	3200	382	64	0	446	0.14
NR	1.0	1600	136	50	0	186	0.12
SL	1.0	1600	38	0	0	38	0.02
ST	2.0	3200	432	61	0	493	0.15*
SR	1.0	1600	104	0	0	104	0.07
EL	1.0	1600	185	0	0	185	0.12
ET	1.0	1600	64	0	0	64	0.05*
ER	0.0	1600	10	0	0	10	0.01
WL	1.0	1600	254	50	0	304	0.19*
WT	1.0	1600	58	0	0	58	0.04
WR	1.0	1600	64	0	0	64	0.04
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.50 A

* denotes critical movement

Intersection: Project Entrance (NS) / Palos Verdes Dr. South (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	0	66	0	66	0.04*
NT	0.0	0	0	0	0	0	0.00
NR	1.0	1600	0	53	0	53	0.03
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	2.0	3200	370	0	0	370	0.15*
ER	0.0	0	0	106	0	106	0.00
WL	1.0	1600	0	88	0	88	0.06*
WT	2.0	3200	608	0	0	608	0.19
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.35 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	0	139	0	139	0.09*
NT	0.0	0	0	0	0	0	0.00
NR	1.0	1600	0	114	0	114	0.07
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	2.0	3200	521	0	0	521	0.21*
ER	0.0	0	0	136	0	136	0.00
WL	1.0	1600	0	110	0	110	0.07*
WT	2.0	3200	520	0	0	520	0.16
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.47 A

* denotes critical movement

Intersection: Crenshaw Blvd. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	38	0	0	38	0.02
NT	2.0	3200	1049	12	0	1061	0.33*
NR	1.0	1600	633	12	0	645	0.40
SL	1.0	1600	77	0	0	77	0.05*
ST	2.0	3200	483	19	0	502	0.16
SR	1.0	1600	114	0	0	114	0.07
EL	2.0	2880	395	0	0	395	0.14
ET	2.0	3200	523	0	0	523	0.18*
ER	0.0	1600	37	0	0	37	0.02
WL	2.0	2880	502	19	0	521	0.18*
WT	2.0	3200	470	0	0	470	0.19
WR	0.0	1600	142	0	0	142	0.09
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.84 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	34	0	0	34	0.02*
NT	2.0	3200	624	25	0	649	0.20
NR	1.0	1600	503	25	0	528	0.33
SL	1.0	1600	104	0	0	104	0.07
ST	2.0	3200	774	25	0	799	0.25*
SR	1.0	1600	168	0	0	168	0.11
EL	2.0	2880	209	0	0	209	0.07
ET	2.0	3200	502	0	0	502	0.17*
ER	0.0	1600	42	0	0	42	0.03
WL	2.0	2880	478	25	0	503	0.17*
WT	2.0	3200	418	0	0	418	0.15
WR	0.0	1600	66	0	0	66	0.04
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.71 C

* denotes critical movement

Intersection: Crenshaw Blvd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	34	0	0	34	0.02
NT	1.0	1600	126	0	0	126	0.08*
NR	1.0	1600	11	0	0	11	0.01
SL	1.0	1600	69	0	0	69	0.04*
ST	1.5	2400	91	0	0	91	0.04
SR	1.5	2400	213	38	0	251	0.10
EL	1.5	2400	566	24	0	590	0.25*
ET	0.5	800	21	0	0	21	0.03
ER >>	1.0	1600	30	0	0	30	0.02
WL	0.0	1600	15	0	0	15	0.01
WT	1.0	1600	25	0	0	25	0.03
WR	1.0	1600	81	0	0	81	0.05*
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.52 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	32	0	0	32	0.02
NT	1.0	1600	76	0	0	76	0.05*
NR	1.0	1600	5	0	0	5	0.01
SL	1.0	1600	115	0	0	115	0.07*
ST	1.5	2400	132	0	0	132	0.06
SR	1.5	2400	451	50	0	501	0.21
EL	1.5	2400	284	50	0	334	0.14*
ET	0.5	800	28	0	0	28	0.04
ER >>	1.0	1600	47	0	0	47	0.03
WL	0.0	1600	3	0	0	3	0.01
WT	1.0	1600	39	0	0	39	0.03
WR	1.0	1600	78	0	0	78	0.05*
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.41 A

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Dr. East (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	307	0	0	307	0.19*
NT	2.0	3200	288	0	0	288	0.09
NR	1.0	1600	168	0	0	168	0.11
SL	1.0	1600	99	0	0	99	0.06
ST	2.0	3200	95	0	0	95	0.03*
SR	1.0	1600	51	0	0	51	0.03
EL	1.0	1600	52	0	0	52	0.03
ET	2.0	3200	1206	12	0	1218	0.38*
ER	1.0	1600	193	0	0	193	0.12
WL	1.0	1600	119	0	0	119	0.07*
WT	2.0	3200	972	19	0	991	0.31
WR >>	1.0	1600	250	0	0	250	0.16
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.77 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	178	0	0	178	0.11*
NT	2.0	3200	114	0	0	114	0.04
NR	1.0	1600	98	0	0	98	0.06
SL	1.0	1600	220	0	0	220	0.14
ST	2.0	3200	228	0	0	228	0.07*
SR	1.0	1600	89	0	0	89	0.06
EL	1.0	1600	75	0	0	75	0.05
ET	2.0	3200	1196	25	0	1221	0.38*
ER	1.0	1600	308	0	0	308	0.19
WL	1.0	1600	119	0	0	119	0.07*
WT	2.0	3200	1107	25	0	1132	0.35
WR >>	1.0	1600	105	0	0	105	0.07
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.73 C

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Dr. East (NS) / Palos Verdes Dr. South (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	29	0	0	29	0.02
ST	0.0	0	0	0	0	0	0.00
SR	1.0	1600	75	0	0	75	0.05*
EL	1.0	1600	76	0	0	76	0.05*
ET	1.0	1600	445	53	0	498	0.31
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	1.0	1600	445	88	0	533	0.36*
WR	0.0	1600	34	0	0	34	0.02
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.56 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	39	0	0	39	0.02
ST	0.0	0	0	0	0	0	0.00
SR	1.0	1600	49	0	0	49	0.03*
EL	1.0	1600	59	0	0	59	0.04
ET	1.0	1600	615	114	0	729	0.46*
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00*
WT	1.0	1600	483	110	0	593	0.41
WR	0.0	1600	55	0	0	55	0.03
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.59 A

* denotes critical movement

Intersection: Western Ave. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	573	0	0	573	0.36*
NT	2.0	3200	871	6	0	877	0.27
NR	1.0	1600	216	0	0	216	0.14
SL	1.0	1600	37	0	0	37	0.02
ST	2.0	3200	453	10	0	463	0.14*
SR	1.0	1600	165	0	0	165	0.10
EL	1.0	1600	77	0	0	77	0.05
ET	3.0	4800	1159	12	0	1171	0.24*
ER	1.0	1600	211	0	0	211	0.13
WL	1.0	1600	110	0	0	110	0.07*
WT	3.0	4800	579	19	0	598	0.12
WR	1.0	1600	65	0	0	65	0.04
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.91 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	400	0	0	400	0.25
NT	2.0	3200	773	13	0	786	0.25
NR	1.0	1600	148	0	0	148	0.09
SL	1.0	1600	38	0	0	38	0.02
ST	2.0	3200	791	12	0	803	0.25*
SR	1.0	1600	255	0	0	255	0.16
EL	1.0	1600	203	0	0	203	0.13
ET	3.0	4800	700	25	0	725	0.15
ER	1.0	1600	693	0	0	693	0.43*
WL	1.0	1600	314	0	0	314	0.20*
WT	3.0	4800	764	25	0	789	0.16
WR	1.0	1600	33	0	0	33	0.02
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.98 E

* denotes critical movement

Intersection: Western Ave. (NS) / 9th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	127	0	0	127	0.08
NT	2.0	3200	908	12	0	920	0.29*
NR	1.0	1600	85	0	0	85	0.05
SL	1.0	1600	50	0	0	50	0.03*
ST	2.0	3200	468	20	0	488	0.15
SR	1.0	1600	29	0	0	29	0.02
EL	1.0	1600	27	0	0	27	0.02
ET	2.0	3200	125	0	0	125	0.04*
ER	1.0	1600	80	0	0	80	0.05
WL	1.0	1600	78	0	0	78	0.05*
WT	2.0	3200	126	0	0	126	0.04
WR	1.0	1600	77	0	0	77	0.05
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.51 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	97	0	0	97	0.06*
NT	2.0	3200	664	26	0	690	0.22
NR	1.0	1600	62	0	0	62	0.04
SL	1.0	1600	80	0	0	80	0.05
ST	2.0	3200	1005	24	0	1029	0.32*
SR	1.0	1600	74	0	0	74	0.05
EL	1.0	1600	31	0	0	31	0.02
ET	2.0	3200	136	0	0	136	0.04*
ER	1.0	1600	165	0	0	165	0.10
WL	1.0	1600	118	0	0	118	0.07*
WT	2.0	3200	145	0	0	145	0.05
WR	1.0	1600	72	0	0	72	0.05
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.59 A

* denotes critical movement

Intersection: Western Ave. (NS) / 25th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	43	0	0	43	0.03
NT	2.0	3200	165	0	0	165	0.05*
NR	1.0	1600	33	0	0	33	0.02
SL	1.0	1600	80	0	0	80	0.05*
ST	2.0	3200	108	0	0	108	0.03
SR >	1.0	1600	327	20	0	347	0.22
EL	1.0	1600	434	12	0	446	0.28*
ET	2.0	3200	242	41	0	283	0.09
ER	1.0	1600	57	0	0	57	0.04
WL	1.0	1600	20	0	0	20	0.01
WT	2.0	3200	241	68	0	309	0.16*
WR	0.0	1600	193	0	0	193	0.12
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.64 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	83	0	0	83	0.05
NT	2.0	3200	154	0	0	154	0.05*
NR	1.0	1600	55	0	0	55	0.03
SL	1.0	1600	268	0	0	268	0.17*
ST	2.0	3200	213	0	0	213	0.07
SR >	1.0	1600	481	24	0	505	0.32
EL	1.0	1600	402	26	0	428	0.27*
ET	2.0	3200	399	88	0	487	0.15
ER	1.0	1600	55	0	0	55	0.03
WL	1.0	1600	110	0	0	110	0.07
WT	2.0	3200	305	86	0	391	0.18*
WR	0.0	1600	172	0	0	172	0.11
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.77 C

* denotes critical movement
> denotes protected right turn

Intersection: Gaffey St. (NS) / 9th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	55	0	0	55	0.03
NT	2.0	3200	1163	41	0	1204	0.38*
NR	1.0	1600	31	0	0	31	0.02
SL	1.0	1600	41	0	0	41	0.03*
ST	2.0	3200	703	68	0	771	0.24
SR	1.0	1600	58	0	0	58	0.04
EL	1.0	1600	306	0	0	306	0.19*
ET	1.0	1600	245	0	0	245	0.15
ER	1.0	1600	29	0	0	29	0.02
WL	1.0	1600	61	0	0	61	0.04
WT	1.0	1600	148	0	0	148	0.12*
WR	0.0	1600	42	0	0	42	0.03
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.82 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	50	0	0	50	0.03*
NT	2.0	3200	1100	88	0	1188	0.37
NR	1.0	1600	12	0	0	12	0.01
SL	1.0	1600	66	0	0	66	0.04
ST	2.0	3200	1421	86	0	1507	0.47*
SR	1.0	1600	101	0	0	101	0.06
EL	1.0	1600	97	0	0	97	0.06*
ET	1.0	1600	155	0	0	155	0.10
ER	1.0	1600	39	0	0	39	0.02
WL	1.0	1600	52	0	0	52	0.03
WT	1.0	1600	234	0	0	234	0.19*
WR	0.0	1600	64	0	0	64	0.04
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.85 D

* denotes critical movement

APPENDIX H

EXISTING PLUS AMBIENT GROWTH PLUS OTHER DEVELOPMENT
CALCULATION WORKSHEETS

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	1079	0	18	1097	0.69*
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	226	0	0	226	0.14*
ST	1.0	1600	598	0	12	610	0.38
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00*
WT	0.0	0	0	0	0	0	0.00
WR >>	1.0	1600	386	0	0	386	0.24
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.93 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	728	0	20	748	0.47*
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	402	0	0	402	0.25*
ST	1.0	1600	1028	0	26	1054	0.66
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00*
WT	0.0	0	0	0	0	0	0.00
WR >>	1.0	1600	360	0	0	360	0.23
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.82 D

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - South (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	1079	0	18	1097	0.69*
NR >>	1.0	1600	198	0	0	198	0.12
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1600	598	0	12	610	0.38
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1600	170	0	0	170	0.11*
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00

Clearance Interval Percentage = 0.10
Sum of Critical Movements = 0.90 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1600	728	0	20	748	0.47
NR >>	1.0	1600	249	0	0	249	0.16
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1600	1028	0	26	1054	0.66*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1600	205	0	0	205	0.13*
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00

Clearance Interval Percentage = 0.10
Sum of Critical Movements = 0.89 D

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - East (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	198	0	0	198	0.12*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1600	170	0	0	170	0.11
SR	1.0	1600	386	0	0	386	0.24
EL	1.0	1600	226	0	0	226	0.14*
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.36 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	249	0	0	249	0.16*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1600	205	0	0	205	0.13
SR	1.0	1600	360	0	0	360	0.23
EL	1.0	1600	402	0	0	402	0.25*
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.51 A

* denotes critical movement

Intersection: Palos Verdes Dr. West (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	0	0	9	9	0.01
NT	2.0	3200	303	0	12	315	0.10*
NR	1.0	1600	305	0	26	331	0.21
SL	1.0	1600	226	0	7	233	0.15*
ST	2.0	3200	223	0	10	233	0.07
SR	0.0	0	0	0	1	1	0.00
EL	1.0	1600	0	0	4	4	0.01*
ET	1.0	1600	0	0	15	15	0.02
ER	0.0	0	0	0	24	24	0.00
WL	1.0	1600	147	0	15	162	0.10
WT	1.0	1600	0	0	5	5	0.20*
WR	0.0	1600	308	0	2	310	0.19
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.56 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	0	0	29	29	0.02
NT	2.0	3200	253	0	17	270	0.08*
NR	1.0	1600	267	0	22	289	0.18
SL	1.0	1600	181	0	10	191	0.12*
ST	2.0	3200	235	0	19	254	0.08
SR	0.0	0	0	0	5	5	0.00
EL	1.0	1600	0	0	3	3	0.01
ET	1.0	1600	0	0	9	9	0.02*
ER	0.0	0	0	0	15	15	0.00
WL	1.0	1600	286	0	31	317	0.20*
WT	1.0	1600	0	0	19	19	0.11
WR	0.0	1600	144	0	9	153	0.10
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.52 A

* denotes critical movement

Intersection: Granvia Altamira (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	26	0	0	26	0.02
NT	1.0	1600	54	0	0	54	0.05*
NR	1.0	1600	37	0	0	37	0.02
SL	1.5	2400	413	0	0	413	0.17*
ST	0.5	800	51	0	0	51	0.06
SR	1.0	1600	44	0	1	45	0.03
EL	1.0	1600	96	0	0	96	0.06
ET	2.0	3200	863	0	13	876	0.27*
ER	1.0	1600	27	0	0	27	0.02
WL	1.0	1600	25	0	0	25	0.02*
WT	2.0	3200	492	0	8	500	0.16
WR	1.0	1600	174	0	0	174	0.11
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.61 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	23	0	0	23	0.01
NT	1.0	1600	42	0	0	42	0.04*
NR	1.0	1600	33	0	0	33	0.02
SL	1.5	2400	231	0	0	231	0.10*
ST	0.5	800	57	0	0	57	0.07
SR	1.0	1600	78	0	2	80	0.05
EL	1.0	1600	105	0	2	107	0.07*
ET	2.0	3200	578	0	15	593	0.19
ER	1.0	1600	24	0	0	24	0.02
WL	1.0	1600	74	0	0	74	0.05
WT	2.0	3200	938	0	21	959	0.30*
WR	1.0	1600	301	0	0	301	0.19
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.61 B

* denotes critical movement

Intersection: Highridge Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	32	0	0	32	0.02
NT	1.0	1600	27	0	0	27	0.02
NR >	1.0	1600	422	0	2	424	0.27*
SL	0.0	1600	179	0	0	179	0.11*
ST	1.0	1600	9	0	0	9	0.13
SR	0.0	1600	13	0	0	13	0.01
EL	1.0	1600	6	0	0	6	0.01
ET	2.0	3200	1207	0	13	1220	0.38*
ER	1.0	1600	10	0	0	10	0.01
WL	1.0	1600	161	0	1	162	0.10
WT	2.0	3200	573	0	8	581	0.18
WR	1.0	1600	63	0	0	63	0.04
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.86 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	26	0	0	26	0.02*
NT	1.0	1600	18	0	0	18	0.01
NR >	1.0	1600	222	0	1	223	0.14
SL	0.0	1600	82	0	0	82	0.05
ST	1.0	1600	21	0	0	21	0.08*
SR	0.0	1600	19	0	0	19	0.01
EL	1.0	1600	20	0	0	20	0.01
ET	2.0	3200	681	0	15	696	0.22*
ER	1.0	1600	25	0	0	25	0.02
WL	1.0	1600	454	0	2	456	0.29*
WT	2.0	3200	1304	0	21	1325	0.41
WR	1.0	1600	172	0	0	172	0.11
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.71 C

* denotes critical movement
> denotes protected right turn

Intersection: Highridge Rd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	9	0	5	14	0.01
NT	1.0	1600	4	0	2	6	0.06*
NR	0.0	1600	40	0	31	71	0.04
SL	1.0	1600	15	0	0	15	0.01*
ST	1.0	1600	8	0	1	9	0.02
SR	0.0	1600	25	0	1	26	0.02
EL	1.0	1600	31	0	0	31	0.02
ET	2.0	3200	423	0	31	454	0.14*
ER	0.0	1600	6	0	2	8	0.01
WL	1.0	1600	14	0	12	26	0.02*
WT	2.0	3200	227	0	14	241	0.09
WR	0.0	1600	36	0	0	36	0.02
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.33 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	3	0	4	7	0.01*
NT	1.0	1600	13	0	1	14	0.03
NR	0.0	1600	10	0	19	29	0.02
SL	1.0	1600	19	0	1	20	0.01
ST	1.0	1600	4	0	2	6	0.03*
SR	0.0	1600	33	0	2	35	0.02
EL	1.0	1600	27	0	2	29	0.02*
ET	2.0	3200	228	0	27	255	0.08
ER	0.0	1600	9	0	6	15	0.01
WL	1.0	1600	13	0	34	47	0.03
WT	2.0	3200	366	0	40	406	0.14*
WR	0.0	1600	41	0	0	41	0.03
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.30 A

* denotes critical movement

Intersection: Indian Peak Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	136	0	0	136	0.05*
NT	0.0	0	0	0	0	0	0.00
NR >	1.0	1600	47	0	2	49	0.03
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	2.0	3200	1514	0	15	1529	0.48*
ER >	1.0	1600	291	0	0	291	0.18
WL	1.0	1600	113	0	1	114	0.07*
WT	2.0	3200	730	0	9	739	0.23
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.70 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	529	0	0	529	0.18*
NT	0.0	0	0	0	0	0	0.00
NR >	1.0	1600	89	0	2	91	0.06
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00*
ET	2.0	3200	950	0	16	966	0.30
ER >	1.0	1600	195	0	0	195	0.12
WL	1.0	1600	109	0	3	112	0.07
WT	2.0	3200	1401	0	23	1424	0.45*
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.73 C

* denotes critical movement
> denotes protected right turn

Intersection: Indian Peak Rd. (NS) / Crenshaw Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	210	0	0	210	0.13*
ST	0.0	0	0	0	0	0	0.00
SR >	1.0	1600	71	0	2	73	0.05
EL	1.0	1600	69	0	4	73	0.05
ET	2.0	3200	1192	0	58	1250	0.39*
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00*
WT	2.0	3200	513	0	25	538	0.17
WR	1.0	1600	83	0	0	83	0.05
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.62 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	120	0	0	120	0.08
ST	0.0	0	0	0	0	0	0.00
SR >	1.0	1600	187	0	5	192	0.12*
EL	1.0	1600	110	0	3	113	0.07*
ET	2.0	3200	625	0	45	670	0.21
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	2.0	3200	929	0	77	1006	0.31*
WR	1.0	1600	224	0	0	224	0.14
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.60 A

* denotes critical movement
> denotes protected right turn

Intersection: Silver Spur Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	259	0	0	259	0.16*
NT	2.0	3200	186	0	0	186	0.06
NR >	1.0	1600	116	0	0	116	0.07
SL	1.0	1600	113	0	0	113	0.07
ST	2.0	3200	240	0	0	240	0.11*
SR	0.0	1600	108	0	1	109	0.07
EL	1.0	1600	164	0	0	164	0.10
ET	2.0	3200	1387	0	17	1404	0.44*
ER	1.0	1600	317	0	0	317	0.20
WL	1.0	1600	183	0	0	183	0.11*
WT	2.0	3200	558	0	9	567	0.18
WR	1.0	1600	47	0	0	47	0.03
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.92 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	381	0	0	381	0.24*
NT	2.0	3200	319	0	0	319	0.10
NR >	1.0	1600	189	0	0	189	0.12
SL	1.0	1600	66	0	0	66	0.04
ST	2.0	3200	425	0	0	425	0.19*
SR	0.0	1600	191	0	2	193	0.12
EL	1.0	1600	284	0	2	286	0.18*
ET	2.0	3200	761	0	16	777	0.24
ER	1.0	1600	210	0	0	210	0.13
WL	1.0	1600	190	0	0	190	0.12
WT	2.0	3200	1005	0	24	1029	0.32*
WR	1.0	1600	91	0	0	91	0.06
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		1.03 F

* denotes critical movement
> denotes protected right turn

Intersection: Silver Spur Rd. (NS) / Crenshaw Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	1	0	0	1	0.01*
NT	1.0	1600	1	0	0	1	0.01
NR	0.0	1600	1	0	0	1	0.01
SL	1.5	2400	509	0	0	509	0.21*
ST	0.5	800	1	0	0	1	0.01
SR >	1.0	1600	80	0	2	82	0.05
EL	1.0	1600	198	0	4	202	0.13
ET	2.0	3200	1222	0	54	1276	0.40*
ER	0.0	1600	1	0	0	1	0.01
WL	1.0	1600	1	0	0	1	0.01*
WT	2.0	3200	475	0	23	498	0.16
WR	1.0	1600	462	0	0	462	0.29
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.73 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	1	0	0	1	0.01*
NT	1.0	1600	1	0	0	1	0.01
NR	0.0	1600	1	0	0	1	0.01
SL	1.5	2400	585	0	0	585	0.24
ST	0.5	800	1	0	0	1	0.01
SR >	1.0	1600	410	0	6	416	0.26*
EL	1.0	1600	188	0	2	190	0.12*
ET	2.0	3200	554	0	43	597	0.19
ER	0.0	1600	1	0	0	1	0.01
WL	1.0	1600	1	0	0	1	0.01
WT	2.0	3200	778	0	71	849	0.27*
WR	1.0	1600	597	0	0	597	0.37
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.76 C

* denotes critical movement
> denotes protected right turn

Intersection: Hawthorne Blvd. (NS) / Sepulveda Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	102	0	0	102	0.04
NT	4.0	6400	2266	0	18	2284	0.36*
NR >>	1.0	1600	331	0	0	331	0.21
SL	2.0	2880	183	0	0	183	0.06*
ST	4.0	6400	1658	0	10	1668	0.26
SR >>	1.0	1600	154	0	0	154	0.10
EL	2.0	2880	392	0	0	392	0.14
ET	3.0	4800	1136	0	0	1136	0.26*
ER	0.0	1600	111	0	0	111	0.07
WL	2.0	2880	458	0	0	458	0.16*
WT	3.0	4800	822	0	0	822	0.24
WR	0.0	1600	351	0	0	351	0.22
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.94 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	297	0	0	297	0.10
NT	4.0	6400	2331	0	19	2350	0.37*
NR >>	1.0	1600	760	0	0	760	0.48
SL	2.0	2880	412	0	0	412	0.14*
ST	4.0	6400	2299	0	26	2325	0.36
SR >>	1.0	1600	166	0	0	166	0.10
EL	2.0	2880	345	0	0	345	0.12
ET	3.0	4800	881	0	0	881	0.22*
ER	0.0	1600	156	0	0	156	0.10
WL	2.0	2880	866	0	0	866	0.30*
WT	3.0	4800	1374	0	0	1374	0.35
WR	0.0	1600	299	0	0	299	0.19
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		1.13 F

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Pacific Coast Hwy. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	287	0	0	287	0.10
NT	3.0	4800	1642	0	18	1660	0.36*
NR	0.0	1600	48	0	0	48	0.03
SL	2.0	2880	199	0	0	199	0.07*
ST	3.0	4800	772	0	10	782	0.16
SR >>	1.0	1600	207	0	0	207	0.13
EL	1.0	1600	323	0	0	323	0.20*
ET	3.0	4800	929	0	1	930	0.23
ER	0.0	1600	180	0	0	180	0.11
WL	1.0	1600	201	0	0	201	0.13
WT	3.0	4800	902	0	2	904	0.23*
WR	0.0	1600	199	0	0	199	0.12
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.96 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	304	0	0	304	0.11
NT	3.0	4800	2270	0	19	2289	0.62*
NR	0.0	1600	662	0	0	662	0.41
SL	2.0	2880	379	0	0	379	0.13*
ST	3.0	4800	2343	0	26	2369	0.49
SR >>	1.0	1600	201	0	0	201	0.13
EL	1.0	1600	328	0	0	328	0.21
ET	3.0	4800	833	0	2	835	0.21*
ER	0.0	1600	162	0	0	162	0.10
WL	1.0	1600	755	0	0	755	0.47*
WT	3.0	4800	1168	0	1	1169	0.31
WR	0.0	1600	312	0	0	312	0.20
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	1.53 F

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	22	0	0	22	0.01
NT	2.0	3200	1220	0	17	1237	0.39*
NR >>	1.0	1600	465	0	0	465	0.29
SL	1.0	1600	100	0	1	101	0.06*
ST	2.0	3200	557	0	9	566	0.18
SR	1.0	1600	92	0	0	92	0.06
EL	1.5	2400	466	0	0	466	0.19
ET	1.5	2400	534	0	1	535	0.23*
ER	0.0	1600	12	0	0	12	0.01
WL	1.0	1600	192	0	0	192	0.12
WT	1.0	1600	309	0	2	311	0.19*
WR	1.0	1600	199	0	1	200	0.13
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.97 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	25	0	0	25	0.02*
NT	2.0	3200	739	0	16	755	0.24
NR >>	1.0	1600	207	0	0	207	0.13
SL	1.0	1600	133	0	2	135	0.08
ST	2.0	3200	1109	0	24	1133	0.35*
SR	1.0	1600	361	0	0	361	0.23
EL	1.5	2400	169	0	0	169	0.07
ET	1.5	2400	409	0	3	412	0.18*
ER	0.0	1600	22	0	0	22	0.01
WL	1.0	1600	235	0	0	235	0.15
WT	1.0	1600	386	0	1	387	0.24*
WR	1.0	1600	81	0	3	84	0.05
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.89 D

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	14	0	0	14	0.01
NT	2.0	3200	536	0	13	549	0.17*
NR	1.0	1600	294	0	33	327	0.20
SL	1.0	1600	71	0	0	71	0.04*
ST	2.0	3200	363	0	10	373	0.12
SR	1.0	1600	119	0	0	119	0.07
EL	1.0	1600	148	0	0	148	0.09
ET	1.0	1600	87	0	0	87	0.06*
ER	0.0	1600	12	0	1	13	0.01
WL	1.0	1600	144	0	20	164	0.10*
WT	1.0	1600	33	0	0	33	0.02
WR	1.0	1600	69	0	0	69	0.04

Clearance Interval Percentage = 0.10
Sum of Critical Movements = 0.47 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	18	0	2	20	0.01*
NT	2.0	3200	382	0	19	401	0.13
NR	1.0	1600	136	0	34	170	0.11
SL	1.0	1600	38	0	1	39	0.02
ST	2.0	3200	432	0	25	457	0.14*
SR	1.0	1600	104	0	0	104	0.07
EL	1.0	1600	185	0	0	185	0.12
ET	1.0	1600	64	0	0	64	0.05*
ER	0.0	1600	10	0	2	12	0.01
WL	1.0	1600	254	0	46	300	0.19*
WT	1.0	1600	58	0	0	58	0.04
WR	1.0	1600	64	0	0	64	0.04

Clearance Interval Percentage = 0.10
Sum of Critical Movements = 0.49 A

* denotes critical movement

Intersection: Crenshaw Blvd. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	38	0	2	40	0.03
NT	2.0	3200	1049	0	34	1083	0.34*
NR	1.0	1600	633	0	18	651	0.41
SL	1.0	1600	77	0	0	77	0.05*
ST	2.0	3200	483	0	15	498	0.16
SR	1.0	1600	114	0	0	114	0.07
EL	2.0	2880	395	0	0	395	0.14
ET	2.0	3200	523	0	1	524	0.18*
ER	0.0	1600	37	0	1	38	0.02
WL	2.0	2880	502	0	7	509	0.18*
WT	2.0	3200	470	0	1	471	0.19
WR	0.0	1600	142	0	0	142	0.09
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.85 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	34	0	1	35	0.02*
NT	2.0	3200	624	0	29	653	0.20
NR	1.0	1600	503	0	13	516	0.32
SL	1.0	1600	104	0	0	104	0.07
ST	2.0	3200	774	0	44	818	0.26*
SR	1.0	1600	168	0	0	168	0.11
EL	2.0	2880	209	0	0	209	0.07
ET	2.0	3200	502	0	2	504	0.17*
ER	0.0	1600	42	0	3	45	0.03
WL	2.0	2880	478	0	24	502	0.17*
WT	2.0	3200	418	0	3	421	0.15
WR	0.0	1600	66	0	0	66	0.04
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.72 C

* denotes critical movement

Intersection: Crenshaw Blvd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	34	0	1	35	0.02
NT	1.0	1600	126	0	0	126	0.08*
NR	1.0	1600	11	0	0	11	0.01
SL	1.0	1600	69	0	0	69	0.04*
ST	1.5	2400	91	0	0	91	0.04
SR	1.5	2400	213	0	25	238	0.10
EL	1.5	2400	566	0	62	628	0.26*
ET	0.5	800	21	0	0	21	0.03
ER >>	1.0	1600	30	0	0	30	0.02
WL	0.0	1600	15	0	0	15	0.01
WT	1.0	1600	25	0	0	25	0.03
WR	1.0	1600	81	0	0	81	0.05*
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.53 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	32	0	2	34	0.02
NT	1.0	1600	76	0	1	77	0.05*
NR	1.0	1600	5	0	0	5	0.01
SL	1.0	1600	115	0	0	115	0.07*
ST	1.5	2400	132	0	0	132	0.06
SR	1.5	2400	451	0	72	523	0.22
EL	1.5	2400	284	0	45	329	0.14*
ET	0.5	800	28	0	0	28	0.04
ER >>	1.0	1600	47	0	2	49	0.03
WL	0.0	1600	3	0	0	3	0.01
WT	1.0	1600	39	0	0	39	0.03
WR	1.0	1600	78	0	0	78	0.05*
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.41 A

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Dr. East (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	307	0	0	307	0.19*
NT	2.0	3200	288	0	0	288	0.09
NR	1.0	1600	168	0	0	168	0.11
SL	1.0	1600	99	0	0	99	0.06
ST	2.0	3200	95	0	0	95	0.03*
SR	1.0	1600	51	0	1	52	0.03
EL	1.0	1600	52	0	2	54	0.03
ET	2.0	3200	1206	0	17	1223	0.38*
ER	1.0	1600	193	0	0	193	0.12
WL	1.0	1600	119	0	0	119	0.07*
WT	2.0	3200	972	0	7	979	0.31
WR >>	1.0	1600	250	0	0	250	0.16
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.77 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	178	0	0	178	0.11*
NT	2.0	3200	114	0	0	114	0.04
NR	1.0	1600	98	0	0	98	0.06
SL	1.0	1600	220	0	0	220	0.14
ST	2.0	3200	228	0	0	228	0.07*
SR	1.0	1600	89	0	3	92	0.06
EL	1.0	1600	75	0	1	76	0.05
ET	2.0	3200	1196	0	14	1210	0.38*
ER	1.0	1600	308	0	0	308	0.19
WL	1.0	1600	119	0	0	119	0.07*
WT	2.0	3200	1107	0	24	1131	0.35
WR >>	1.0	1600	105	0	0	105	0.07
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.73 C

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Dr. East (NS) / Palos Verdes Dr. South (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	29	0	0	29	0.02
ST	0.0	0	0	0	0	0	0.00
SR	1.0	1600	75	0	1	76	0.05*
EL	1.0	1600	76	0	0	76	0.05*
ET	1.0	1600	445	0	100	545	0.34
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	1.0	1600	445	0	61	506	0.34*
WR	0.0	1600	34	0	0	34	0.02
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.54 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	39	0	0	39	0.02
ST	0.0	0	0	0	0	0	0.00
SR	1.0	1600	49	0	2	51	0.03*
EL	1.0	1600	59	0	2	61	0.04*
ET	1.0	1600	615	0	90	705	0.44
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	1.0	1600	483	0	132	615	0.42*
WR	0.0	1600	55	0	0	55	0.03
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.59 A

* denotes critical movement

Intersection: Western Ave. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	573	0	1	574	0.36*
NT	2.0	3200	871	0	1	872	0.27
NR	1.0	1600	216	0	4	220	0.14
SL	1.0	1600	37	0	0	37	0.02
ST	2.0	3200	453	0	1	454	0.14*
SR	1.0	1600	165	0	0	165	0.10
EL	1.0	1600	77	0	0	77	0.05
ET	3.0	4800	1159	0	16	1175	0.24*
ER	1.0	1600	211	0	1	212	0.13
WL	1.0	1600	110	0	3	113	0.07*
WT	3.0	4800	579	0	6	585	0.12
WR	1.0	1600	65	0	0	65	0.04
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.91 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	400	0	3	403	0.25
NT	2.0	3200	773	0	3	776	0.24
NR	1.0	1600	148	0	6	154	0.10
SL	1.0	1600	38	0	0	38	0.02
ST	2.0	3200	791	0	2	793	0.25*
SR	1.0	1600	255	0	0	255	0.16
EL	1.0	1600	203	0	0	203	0.13
ET	3.0	4800	700	0	12	712	0.15
ER	1.0	1600	693	0	2	695	0.43*
WL	1.0	1600	314	0	6	320	0.20*
WT	3.0	4800	764	0	21	785	0.16
WR	1.0	1600	33	0	0	33	0.02
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.98 E

* denotes critical movement

Intersection: Western Ave. (NS) / 9th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	127	0	0	127	0.08
NT	2.0	3200	908	0	16	924	0.29*
NR	1.0	1600	85	0	0	85	0.05
SL	1.0	1600	50	0	2	52	0.03*
ST	2.0	3200	468	0	10	478	0.15
SR	1.0	1600	29	0	2	31	0.02
EL	1.0	1600	27	0	4	31	0.02
ET	2.0	3200	125	0	0	125	0.04*
ER	1.0	1600	80	0	0	80	0.05
WL	1.0	1600	78	0	0	78	0.05*
WT	2.0	3200	126	0	0	126	0.04
WR	1.0	1600	77	0	3	80	0.05
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.51 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	97	0	0	97	0.06*
NT	2.0	3200	664	0	20	684	0.21
NR	1.0	1600	62	0	0	62	0.04
SL	1.0	1600	80	0	8	88	0.06
ST	2.0	3200	1005	0	28	1033	0.32*
SR	1.0	1600	74	0	10	84	0.05
EL	1.0	1600	31	0	10	41	0.03
ET	2.0	3200	136	0	0	136	0.04*
ER	1.0	1600	165	0	0	165	0.10
WL	1.0	1600	118	0	0	118	0.07*
WT	2.0	3200	145	0	0	145	0.05
WR	1.0	1600	72	0	7	79	0.05
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.59 A

* denotes critical movement

Intersection: Western Ave. (NS) / 25th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	43	0	0	43	0.03
NT	2.0	3200	165	0	0	165	0.05*
NR	1.0	1600	33	0	0	33	0.02
SL	1.0	1600	80	0	1	81	0.05*
ST	2.0	3200	108	0	0	108	0.03
SR >	1.0	1600	327	0	8	335	0.21
EL	1.0	1600	434	0	13	447	0.28*
ET	2.0	3200	242	0	88	330	0.10
ER	1.0	1600	57	0	0	57	0.04
WL	1.0	1600	20	0	0	20	0.01
WT	2.0	3200	241	0	53	294	0.15*
WR	0.0	1600	193	0	2	195	0.12
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.63 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	83	0	0	83	0.05
NT	2.0	3200	154	0	0	154	0.05*
NR	1.0	1600	55	0	0	55	0.03
SL	1.0	1600	268	0	5	273	0.17*
ST	2.0	3200	213	0	0	213	0.07
SR >	1.0	1600	481	0	20	501	0.31
EL	1.0	1600	402	0	13	415	0.26*
ET	2.0	3200	399	0	77	476	0.15
ER	1.0	1600	55	0	0	55	0.03
WL	1.0	1600	110	0	0	110	0.07
WT	2.0	3200	305	0	113	418	0.19*
WR	0.0	1600	172	0	5	177	0.11
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.77 C

* denotes critical movement
> denotes protected right turn

Intersection: Gaffey St. (NS) / 9th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	55	0	0	55	0.03
NT	2.0	3200	1163	0	75	1238	0.39*
NR	1.0	1600	31	0	10	41	0.03
SL	1.0	1600	41	0	0	41	0.03*
ST	2.0	3200	703	0	46	749	0.23
SR	1.0	1600	58	0	0	58	0.04
EL	1.0	1600	306	0	0	306	0.19*
ET	1.0	1600	245	0	1	246	0.15
ER	1.0	1600	29	0	0	29	0.02
WL	1.0	1600	61	0	5	66	0.04
WT	1.0	1600	148	0	1	149	0.12*
WR	0.0	1600	42	0	0	42	0.03
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.83 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	50	0	0	50	0.03*
NT	2.0	3200	1100	0	67	1167	0.36
NR	1.0	1600	12	0	7	19	0.01
SL	1.0	1600	66	0	0	66	0.04
ST	2.0	3200	1421	0	97	1518	0.47*
SR	1.0	1600	101	0	0	101	0.06
EL	1.0	1600	97	0	0	97	0.06*
ET	1.0	1600	155	0	3	158	0.10
ER	1.0	1600	39	0	0	39	0.02
WL	1.0	1600	52	0	12	64	0.04
WT	1.0	1600	234	0	2	236	0.19*
WR	0.0	1600	64	0	0	64	0.04
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.85 D

* denotes critical movement

APPENDIX I

EXISTING PLUS AMBIENT GROWTH PLUS PROPOSED PROJECT
PLUS OTHER DEVELOPMENT CALCULATION WORKSHEETS

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	1079	12	18	1109	0.69*
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	226	0	0	226	0.14*
ST	1.0	1600	598	19	12	629	0.39
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00*
WT	0.0	0	0	0	0	0	0.00
WR >>	1.0	1600	386	0	0	386	0.24
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.93 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	728	25	20	773	0.48*
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	402	0	0	402	0.25*
ST	1.0	1600	1028	25	26	1079	0.67
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00*
WT	0.0	0	0	0	0	0	0.00
WR >>	1.0	1600	360	0	0	360	0.23
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.83 D

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - South (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	1079	12	18	1109	0.69*
NR >>	1.0	1600	198	0	0	198	0.12
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1600	598	19	12	629	0.39
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1600	170	0	0	170	0.11*
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.90 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00*
NT	1.0	1600	728	25	20	773	0.48
NR >>	1.0	1600	249	0	0	249	0.16
SL	0.0	0	0	0	0	0	0.00
ST	1.0	1600	1028	25	26	1079	0.67*
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	1.0	1600	205	0	0	205	0.13*
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.90 D

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - East (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	198	0	0	198	0.12*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1600	170	0	0	170	0.11
SR	1.0	1600	386	0	0	386	0.24
EL	1.0	1600	226	0	0	226	0.14*
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.36 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	1.0	1600	249	0	0	249	0.16*
NR	0.0	0	0	0	0	0	0.00
SL	0.0	0	0	0	0	0	0.00*
ST	1.0	1600	205	0	0	205	0.13
SR	1.0	1600	360	0	0	360	0.23
EL	1.0	1600	402	0	0	402	0.25*
ET	0.0	0	0	0	0	0	0.00
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	0.0	0	0	0	0	0	0.00
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.51 A

* denotes critical movement

Intersection: Palos Verdes Dr. West (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	0	0	9	9	0.01
NT	2.0	3200	303	12	12	327	0.10*
NR	1.0	1600	305	54	26	385	0.24
SL	1.0	1600	226	0	7	233	0.15*
ST	2.0	3200	223	19	10	252	0.08
SR	0.0	0	0	0	1	1	0.00
EL	1.0	1600	0	0	4	4	0.01*
ET	1.0	1600	0	0	15	15	0.02
ER	0.0	0	0	0	24	24	0.00
WL	1.0	1600	147	87	15	249	0.16
WT	1.0	1600	0	0	5	5	0.20*
WR	0.0	1600	308	0	2	310	0.19
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.56 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	0	0	29	29	0.02
NT	2.0	3200	253	25	17	295	0.09*
NR	1.0	1600	267	114	22	403	0.25
SL	1.0	1600	181	0	10	191	0.12*
ST	2.0	3200	235	25	19	279	0.09
SR	0.0	0	0	0	5	5	0.00
EL	1.0	1600	0	0	3	3	0.01
ET	1.0	1600	0	0	9	9	0.02*
ER	0.0	0	0	0	15	15	0.00
WL	1.0	1600	286	111	31	428	0.27*
WT	1.0	1600	0	0	19	19	0.11
WR	0.0	1600	144	0	9	153	0.10
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.60 A

* denotes critical movement

Intersection: Granvia Altamira (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	26	0	0	26	0.02
NT	1.0	1600	54	0	0	54	0.05*
NR	1.0	1600	37	0	0	37	0.02
SL	1.5	2400	413	0	0	413	0.17*
ST	0.5	800	51	0	0	51	0.06
SR	1.0	1600	44	0	1	45	0.03
EL	1.0	1600	96	0	0	96	0.06
ET	2.0	3200	863	30	13	906	0.28*
ER	1.0	1600	27	0	0	27	0.02
WL	1.0	1600	25	0	0	25	0.02*
WT	2.0	3200	492	49	8	549	0.17
WR	1.0	1600	174	0	0	174	0.11
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.62 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	23	0	0	23	0.01
NT	1.0	1600	42	0	0	42	0.04*
NR	1.0	1600	33	0	0	33	0.02
SL	1.5	2400	231	0	0	231	0.10*
ST	0.5	800	57	0	0	57	0.07
SR	1.0	1600	78	0	2	80	0.05
EL	1.0	1600	105	0	2	107	0.07*
ET	2.0	3200	578	64	15	657	0.21
ER	1.0	1600	24	0	0	24	0.02
WL	1.0	1600	74	0	0	74	0.05
WT	2.0	3200	938	61	21	1020	0.32*
WR	1.0	1600	301	0	0	301	0.19
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.63 B

* denotes critical movement

Intersection: Highridge Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	32	0	0	32	0.02
NT	1.0	1600	27	0	0	27	0.02
NR >	1.0	1600	422	0	2	424	0.27*
SL	0.0	1600	179	0	0	179	0.11*
ST	1.0	1600	9	0	0	9	0.13
SR	0.0	1600	13	0	0	13	0.01
EL	1.0	1600	6	0	0	6	0.01
ET	2.0	3200	1207	30	13	1250	0.39*
ER	1.0	1600	10	0	0	10	0.01
WL	1.0	1600	161	0	1	162	0.10
WT	2.0	3200	573	49	8	630	0.20
WR	1.0	1600	63	0	0	63	0.04
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.87 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	26	0	0	26	0.02*
NT	1.0	1600	18	0	0	18	0.01
NR >	1.0	1600	222	0	1	223	0.14
SL	0.0	1600	82	0	0	82	0.05
ST	1.0	1600	21	0	0	21	0.08*
SR	0.0	1600	19	0	0	19	0.01
EL	1.0	1600	20	0	0	20	0.01
ET	2.0	3200	681	64	15	760	0.24*
ER	1.0	1600	25	0	0	25	0.02
WL	1.0	1600	454	0	2	456	0.29*
WT	2.0	3200	1304	61	21	1386	0.43
WR	1.0	1600	172	0	0	172	0.11
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.73 C

* denotes critical movement
> denotes protected right turn

Intersection: Highridge Rd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	9	0	5	14	0.01
NT	1.0	1600	4	0	2	6	0.06*
NR	0.0	1600	40	0	31	71	0.04
SL	1.0	1600	15	0	0	15	0.01*
ST	1.0	1600	8	0	1	9	0.02
SR	0.0	1600	25	0	1	26	0.02
EL	1.0	1600	31	0	0	31	0.02
ET	2.0	3200	423	24	31	478	0.15*
ER	0.0	1600	6	0	2	8	0.01
WL	1.0	1600	14	0	12	26	0.02*
WT	2.0	3200	227	38	14	279	0.10
WR	0.0	1600	36	0	0	36	0.02
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.34 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	3	0	4	7	0.01*
NT	1.0	1600	13	0	1	14	0.03
NR	0.0	1600	10	0	19	29	0.02
SL	1.0	1600	19	0	1	20	0.01
ST	1.0	1600	4	0	2	6	0.03*
SR	0.0	1600	33	0	2	35	0.02
EL	1.0	1600	27	0	2	29	0.02*
ET	2.0	3200	228	50	27	305	0.10
ER	0.0	1600	9	0	6	15	0.01
WL	1.0	1600	13	0	34	47	0.03
WT	2.0	3200	366	50	40	456	0.16*
WR	0.0	1600	41	0	0	41	0.03
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.32 A

* denotes critical movement

Intersection: Indian Peak Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	136	0	0	136	0.05*
NT	0.0	0	0	0	0	0	0.00
NR >	1.0	1600	47	0	2	49	0.03
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	2.0	3200	1514	30	15	1559	0.49*
ER >	1.0	1600	291	0	0	291	0.18
WL	1.0	1600	113	0	1	114	0.07*
WT	2.0	3200	730	49	9	788	0.25
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.71 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	529	0	0	529	0.18*
NT	0.0	0	0	0	0	0	0.00
NR >	1.0	1600	89	0	2	91	0.06
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00*
ET	2.0	3200	950	64	16	1030	0.32
ER >	1.0	1600	195	0	0	195	0.12
WL	1.0	1600	109	0	3	112	0.07
WT	2.0	3200	1401	61	23	1485	0.46*
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.74 C

* denotes critical movement
> denotes protected right turn

Intersection: Indian Peak Rd. (NS) / Crenshaw Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	210	0	0	210	0.13*
ST	0.0	0	0	0	0	0	0.00
SR >	1.0	1600	71	0	2	73	0.05
EL	1.0	1600	69	0	4	73	0.05
ET	2.0	3200	1192	24	58	1274	0.40*
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00*
WT	2.0	3200	513	38	25	576	0.18
WR	1.0	1600	83	0	0	83	0.05
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.63 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	120	0	0	120	0.08
ST	0.0	0	0	0	0	0	0.00
SR >	1.0	1600	187	0	5	192	0.12*
EL	1.0	1600	110	0	3	113	0.07*
ET	2.0	3200	625	50	45	720	0.23
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	2.0	3200	929	50	77	1056	0.33*
WR	1.0	1600	224	0	0	224	0.14
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.62 B

* denotes critical movement
> denotes protected right turn

Intersection: Silver Spur Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	259	10	0	269	0.17*
NT	2.0	3200	186	0	0	186	0.06
NR >	1.0	1600	116	0	0	116	0.07
SL	1.0	1600	113	0	0	113	0.07
ST	2.0	3200	240	0	0	240	0.11*
SR	0.0	1600	108	0	1	109	0.07
EL	1.0	1600	164	0	0	164	0.10
ET	2.0	3200	1387	24	17	1428	0.45*
ER	1.0	1600	317	6	0	323	0.20
WL	1.0	1600	183	0	0	183	0.11*
WT	2.0	3200	558	39	9	606	0.19
WR	1.0	1600	47	0	0	47	0.03
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.94 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	381	12	0	393	0.25*
NT	2.0	3200	319	0	0	319	0.10
NR >	1.0	1600	189	0	0	189	0.12
SL	1.0	1600	66	0	0	66	0.04
ST	2.0	3200	425	0	0	425	0.19*
SR	0.0	1600	191	0	2	193	0.12
EL	1.0	1600	284	0	2	286	0.18*
ET	2.0	3200	761	51	16	828	0.26
ER	1.0	1600	210	13	0	223	0.14
WL	1.0	1600	190	0	0	190	0.12
WT	2.0	3200	1005	49	24	1078	0.34*
WR	1.0	1600	91	0	0	91	0.06
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		1.06 F

* denotes critical movement
> denotes protected right turn

Intersection: Silver Spur Rd. (NS) / Crenshaw Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	1	0	0	1	0.01*
NT	1.0	1600	1	0	0	1	0.01
NR	0.0	1600	1	0	0	1	0.01
SL	1.5	2400	509	0	0	509	0.21*
ST	0.5	800	1	0	0	1	0.01
SR >	1.0	1600	80	0	2	82	0.05
EL	1.0	1600	198	0	4	202	0.13
ET	2.0	3200	1222	24	54	1300	0.41*
ER	0.0	1600	1	0	0	1	0.01
WL	1.0	1600	1	0	0	1	0.01*
WT	2.0	3200	475	38	23	536	0.17
WR	1.0	1600	462	0	0	462	0.29
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.74 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	1	0	0	1	0.01*
NT	1.0	1600	1	0	0	1	0.01
NR	0.0	1600	1	0	0	1	0.01
SL	1.5	2400	585	0	0	585	0.24
ST	0.5	800	1	0	0	1	0.01
SR >	1.0	1600	410	0	6	416	0.26*
EL	1.0	1600	188	0	2	190	0.12*
ET	2.0	3200	554	50	43	647	0.20
ER	0.0	1600	1	0	0	1	0.01
WL	1.0	1600	1	0	0	1	0.01
WT	2.0	3200	778	50	71	899	0.28*
WR	1.0	1600	597	0	0	597	0.37
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.77 C

* denotes critical movement
> denotes protected right turn

Intersection: Hawthorne Blvd. (NS) / Sepulveda Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	102	0	0	102	0.04
NT	4.0	6400	2266	12	18	2296	0.36*
NR >>	1.0	1600	331	6	0	337	0.21
SL	2.0	2880	183	0	0	183	0.06*
ST	4.0	6400	1658	19	10	1687	0.26
SR >>	1.0	1600	154	0	0	154	0.10
EL	2.0	2880	392	0	0	392	0.14
ET	3.0	4800	1136	0	0	1136	0.26*
ER	0.0	1600	111	0	0	111	0.07
WL	2.0	2880	458	10	0	468	0.16*
WT	3.0	4800	822	0	0	822	0.24
WR	0.0	1600	351	0	0	351	0.22
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.94 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	297	0	0	297	0.10
NT	4.0	6400	2331	25	19	2375	0.37*
NR >>	1.0	1600	760	13	0	773	0.48
SL	2.0	2880	412	0	0	412	0.14*
ST	4.0	6400	2299	25	26	2350	0.37
SR >>	1.0	1600	166	0	0	166	0.10
EL	2.0	2880	345	0	0	345	0.12
ET	3.0	4800	881	0	0	881	0.22*
ER	0.0	1600	156	0	0	156	0.10
WL	2.0	2880	866	12	0	878	0.30*
WT	3.0	4800	1374	0	0	1374	0.35
WR	0.0	1600	299	0	0	299	0.19
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	1.13 F

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Pacific Coast Hwy. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	287	6	0	293	0.10
NT	3.0	4800	1642	18	18	1678	0.36*
NR	0.0	1600	48	0	0	48	0.03
SL	2.0	2880	199	0	0	199	0.07*
ST	3.0	4800	772	29	10	811	0.17
SR >>	1.0	1600	207	0	0	207	0.13
EL	1.0	1600	323	0	0	323	0.20*
ET	3.0	4800	929	0	1	930	0.23
ER	0.0	1600	180	10	0	190	0.12
WL	1.0	1600	201	0	0	201	0.13
WT	3.0	4800	902	0	2	904	0.23*
WR	0.0	1600	199	0	0	199	0.12
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.96 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	304	13	0	317	0.11
NT	3.0	4800	2270	38	19	2327	0.62*
NR	0.0	1600	662	0	0	662	0.41
SL	2.0	2880	379	0	0	379	0.13*
ST	3.0	4800	2343	37	26	2406	0.50
SR >>	1.0	1600	201	0	0	201	0.13
EL	1.0	1600	328	0	0	328	0.21
ET	3.0	4800	833	0	2	835	0.21*
ER	0.0	1600	162	12	0	174	0.11
WL	1.0	1600	755	0	0	755	0.47*
WT	3.0	4800	1168	0	1	1169	0.31
WR	0.0	1600	312	0	0	312	0.20
							=======
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	1.53 F

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	22	0	0	22	0.01
NT	2.0	3200	1220	24	17	1261	0.39*
NR >>	1.0	1600	465	0	0	465	0.29
SL	1.0	1600	100	0	1	101	0.06*
ST	2.0	3200	557	39	9	605	0.19
SR	1.0	1600	92	0	0	92	0.06
EL	1.5	2400	466	0	0	466	0.19
ET	1.5	2400	534	0	1	535	0.23*
ER	0.0	1600	12	0	0	12	0.01
WL	1.0	1600	192	0	0	192	0.12
WT	1.0	1600	309	0	2	311	0.19*
WR	1.0	1600	199	0	1	200	0.13
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.97 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	25	0	0	25	0.02*
NT	2.0	3200	739	51	16	806	0.25
NR >>	1.0	1600	207	0	0	207	0.13
SL	1.0	1600	133	0	2	135	0.08
ST	2.0	3200	1109	49	24	1182	0.37*
SR	1.0	1600	361	0	0	361	0.23
EL	1.5	2400	169	0	0	169	0.07
ET	1.5	2400	409	0	3	412	0.18*
ER	0.0	1600	22	0	0	22	0.01
WL	1.0	1600	235	0	0	235	0.15
WT	1.0	1600	386	0	1	387	0.24*
WR	1.0	1600	81	0	3	84	0.05
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.91 E

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	14	0	0	14	0.01
NT	2.0	3200	536	30	13	579	0.18*
NR	1.0	1600	294	24	33	351	0.22
SL	1.0	1600	71	0	0	71	0.04*
ST	2.0	3200	363	49	10	422	0.13
SR	1.0	1600	119	0	0	119	0.07
EL	1.0	1600	148	0	0	148	0.09
ET	1.0	1600	87	0	0	87	0.06*
ER	0.0	1600	12	0	1	13	0.01
WL	1.0	1600	144	38	20	202	0.13*
WT	1.0	1600	33	0	0	33	0.02
WR	1.0	1600	69	0	0	69	0.04
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.51 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	18	0	2	20	0.01*
NT	2.0	3200	382	64	19	465	0.15
NR	1.0	1600	136	50	34	220	0.14
SL	1.0	1600	38	0	1	39	0.02
ST	2.0	3200	432	61	25	518	0.16*
SR	1.0	1600	104	0	0	104	0.07
EL	1.0	1600	185	0	0	185	0.12
ET	1.0	1600	64	0	0	64	0.05*
ER	0.0	1600	10	0	2	12	0.01
WL	1.0	1600	254	50	46	350	0.22*
WT	1.0	1600	58	0	0	58	0.04
WR	1.0	1600	64	0	0	64	0.04
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.54 A

* denotes critical movement

Intersection: Project Entrance (NS) / Palos Verdes Dr. South (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	0	66	0	66	0.04*
NT	0.0	0	0	0	0	0	0.00
NR	1.0	1600	0	53	0	53	0.03
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	2.0	3200	370	0	46	416	0.16*
ER	0.0	0	0	106	0	106	0.00
WL	1.0	1600	0	88	0	88	0.06*
WT	2.0	3200	608	0	52	660	0.21
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.36 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	0	139	0	139	0.09*
NT	0.0	0	0	0	0	0	0.00
NR	1.0	1600	0	114	0	114	0.07
SL	0.0	0	0	0	0	0	0.00
ST	0.0	0	0	0	0	0	0.00
SR	0.0	0	0	0	0	0	0.00
EL	0.0	0	0	0	0	0	0.00
ET	2.0	3200	521	0	72	593	0.23*
ER	0.0	0	0	136	0	136	0.00
WL	1.0	1600	0	110	0	110	0.07*
WT	2.0	3200	520	0	72	592	0.19
WR	0.0	0	0	0	0	0	0.00
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.49 A

* denotes critical movement

Intersection: Crenshaw Blvd. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	38	0	2	40	0.03
NT	2.0	3200	1049	12	34	1095	0.34*
NR	1.0	1600	633	12	18	663	0.41
SL	1.0	1600	77	0	0	77	0.05*
ST	2.0	3200	483	19	15	517	0.16
SR	1.0	1600	114	0	0	114	0.07
EL	2.0	2880	395	0	0	395	0.14
ET	2.0	3200	523	0	1	524	0.18*
ER	0.0	1600	37	0	1	38	0.02
WL	2.0	2880	502	19	7	528	0.18*
WT	2.0	3200	470	0	1	471	0.19
WR	0.0	1600	142	0	0	142	0.09
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.85 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	34	0	1	35	0.02*
NT	2.0	3200	624	25	29	678	0.21
NR	1.0	1600	503	25	13	541	0.34
SL	1.0	1600	104	0	0	104	0.07
ST	2.0	3200	774	25	44	843	0.26*
SR	1.0	1600	168	0	0	168	0.11
EL	2.0	2880	209	0	0	209	0.07
ET	2.0	3200	502	0	2	504	0.17*
ER	0.0	1600	42	0	3	45	0.03
WL	2.0	2880	478	25	24	527	0.18*
WT	2.0	3200	418	0	3	421	0.15
WR	0.0	1600	66	0	0	66	0.04
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.73 C

* denotes critical movement

Intersection: Crenshaw Blvd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	34	0	1	35	0.02
NT	1.0	1600	126	0	0	126	0.08*
NR	1.0	1600	11	0	0	11	0.01
SL	1.0	1600	69	0	0	69	0.04*
ST	1.5	2400	91	0	0	91	0.04
SR	1.5	2400	213	38	25	276	0.12
EL	1.5	2400	566	24	62	652	0.27*
ET	0.5	800	21	0	0	21	0.03
ER >>	1.0	1600	30	0	0	30	0.02
WL	0.0	1600	15	0	0	15	0.01
WT	1.0	1600	25	0	0	25	0.03
WR	1.0	1600	81	0	0	81	0.05*
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.54 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	32	0	2	34	0.02
NT	1.0	1600	76	0	1	77	0.05*
NR	1.0	1600	5	0	0	5	0.01
SL	1.0	1600	115	0	0	115	0.07*
ST	1.5	2400	132	0	0	132	0.06
SR	1.5	2400	451	50	72	573	0.24
EL	1.5	2400	284	50	45	379	0.16*
ET	0.5	800	28	0	0	28	0.04
ER >>	1.0	1600	47	0	2	49	0.03
WL	0.0	1600	3	0	0	3	0.01
WT	1.0	1600	39	0	0	39	0.03
WR	1.0	1600	78	0	0	78	0.05*
						Clearance Interval Percentage =	0.10
						Sum of Critical Movements =	0.43 A

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Dr. East (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	307	0	0	307	0.19*
NT	2.0	3200	288	0	0	288	0.09
NR	1.0	1600	168	0	0	168	0.11
SL	1.0	1600	99	0	0	99	0.06
ST	2.0	3200	95	0	0	95	0.03*
SR	1.0	1600	51	0	1	52	0.03
EL	1.0	1600	52	0	2	54	0.03
ET	2.0	3200	1206	12	17	1235	0.39*
ER	1.0	1600	193	0	0	193	0.12
WL	1.0	1600	119	0	0	119	0.07*
WT	2.0	3200	972	19	7	998	0.31
WR >>	1.0	1600	250	0	0	250	0.16
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.78 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	178	0	0	178	0.11*
NT	2.0	3200	114	0	0	114	0.04
NR	1.0	1600	98	0	0	98	0.06
SL	1.0	1600	220	0	0	220	0.14
ST	2.0	3200	228	0	0	228	0.07*
SR	1.0	1600	89	0	3	92	0.06
EL	1.0	1600	75	0	1	76	0.05
ET	2.0	3200	1196	25	14	1235	0.39*
ER	1.0	1600	308	0	0	308	0.19
WL	1.0	1600	119	0	0	119	0.07*
WT	2.0	3200	1107	25	24	1156	0.36
WR >>	1.0	1600	105	0	0	105	0.07
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.74 C

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Dr. East (NS) / Palos Verdes Dr. South (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	29	0	0	29	0.02
ST	0.0	0	0	0	0	0	0.00
SR	1.0	1600	75	0	1	76	0.05*
EL	1.0	1600	76	0	0	76	0.05*
ET	1.0	1600	445	53	100	598	0.37
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	1.0	1600	445	88	61	594	0.39*
WR	0.0	1600	34	0	0	34	0.02
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.59 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.00
NT	0.0	0	0	0	0	0	0.00
NR	0.0	0	0	0	0	0	0.00
SL	1.0	1600	39	0	0	39	0.02
ST	0.0	0	0	0	0	0	0.00
SR	1.0	1600	49	0	2	51	0.03*
EL	1.0	1600	59	0	2	61	0.04*
ET	1.0	1600	615	114	90	819	0.51
ER	0.0	0	0	0	0	0	0.00
WL	0.0	0	0	0	0	0	0.00
WT	1.0	1600	483	110	132	725	0.49*
WR	0.0	1600	55	0	0	55	0.03
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.66 B

* denotes critical movement

Intersection: Western Ave. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	573	0	1	574	0.36*
NT	2.0	3200	871	6	1	878	0.27
NR	1.0	1600	216	0	4	220	0.14
SL	1.0	1600	37	0	0	37	0.02
ST	2.0	3200	453	10	1	464	0.15*
SR	1.0	1600	165	0	0	165	0.10
EL	1.0	1600	77	0	0	77	0.05
ET	3.0	4800	1159	12	16	1187	0.25*
ER	1.0	1600	211	0	1	212	0.13
WL	1.0	1600	110	0	3	113	0.07*
WT	3.0	4800	579	19	6	604	0.13
WR	1.0	1600	65	0	0	65	0.04
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.93 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	400	0	3	403	0.25
NT	2.0	3200	773	13	3	789	0.25
NR	1.0	1600	148	0	6	154	0.10
SL	1.0	1600	38	0	0	38	0.02
ST	2.0	3200	791	12	2	805	0.25*
SR	1.0	1600	255	0	0	255	0.16
EL	1.0	1600	203	0	0	203	0.13
ET	3.0	4800	700	25	12	737	0.15
ER	1.0	1600	693	0	2	695	0.43*
WL	1.0	1600	314	0	6	320	0.20*
WT	3.0	4800	764	25	21	810	0.17
WR	1.0	1600	33	0	0	33	0.02
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.98 E

* denotes critical movement

Intersection: Western Ave. (NS) / 9th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	127	0	0	127	0.08
NT	2.0	3200	908	12	16	936	0.29*
NR	1.0	1600	85	0	0	85	0.05
SL	1.0	1600	50	0	2	52	0.03*
ST	2.0	3200	468	20	10	498	0.16
SR	1.0	1600	29	0	2	31	0.02
EL	1.0	1600	27	0	4	31	0.02
ET	2.0	3200	125	0	0	125	0.04*
ER	1.0	1600	80	0	0	80	0.05
WL	1.0	1600	78	0	0	78	0.05*
WT	2.0	3200	126	0	0	126	0.04
WR	1.0	1600	77	0	3	80	0.05
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.51 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	97	0	0	97	0.06*
NT	2.0	3200	664	26	20	710	0.22
NR	1.0	1600	62	0	0	62	0.04
SL	1.0	1600	80	0	8	88	0.06
ST	2.0	3200	1005	24	28	1057	0.33*
SR	1.0	1600	74	0	10	84	0.05
EL	1.0	1600	31	0	10	41	0.03
ET	2.0	3200	136	0	0	136	0.04*
ER	1.0	1600	165	0	0	165	0.10
WL	1.0	1600	118	0	0	118	0.07*
WT	2.0	3200	145	0	0	145	0.05
WR	1.0	1600	72	0	7	79	0.05
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.60 A

* denotes critical movement

Intersection: Western Ave. (NS) / 25th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	43	0	0	43	0.03
NT	2.0	3200	165	0	0	165	0.05*
NR	1.0	1600	33	0	0	33	0.02
SL	1.0	1600	80	0	1	81	0.05*
ST	2.0	3200	108	0	0	108	0.03
SR >	1.0	1600	327	20	8	355	0.22
EL	1.0	1600	434	12	13	459	0.29*
ET	2.0	3200	242	41	88	371	0.12
ER	1.0	1600	57	0	0	57	0.04
WL	1.0	1600	20	0	0	20	0.01
WT	2.0	3200	241	68	53	362	0.17*
WR	0.0	1600	193	0	2	195	0.12
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.66 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	83	0	0	83	0.05
NT	2.0	3200	154	0	0	154	0.05*
NR	1.0	1600	55	0	0	55	0.03
SL	1.0	1600	268	0	5	273	0.17*
ST	2.0	3200	213	0	0	213	0.07
SR >	1.0	1600	481	24	20	525	0.33
EL	1.0	1600	402	26	13	441	0.28*
ET	2.0	3200	399	88	77	564	0.18
ER	1.0	1600	55	0	0	55	0.03
WL	1.0	1600	110	0	0	110	0.07
WT	2.0	3200	305	86	113	504	0.21*
WR	0.0	1600	172	0	5	177	0.11
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.81 D

* denotes critical movement
> denotes protected right turn

Intersection: Gaffey St. (NS) / 9th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	55	0	0	55	0.03
NT	2.0	3200	1163	41	75	1279	0.40*
NR	1.0	1600	31	0	10	41	0.03
SL	1.0	1600	41	0	0	41	0.03*
ST	2.0	3200	703	68	46	817	0.26
SR	1.0	1600	58	0	0	58	0.04
EL	1.0	1600	306	0	0	306	0.19*
ET	1.0	1600	245	0	1	246	0.15
ER	1.0	1600	29	0	0	29	0.02
WL	1.0	1600	61	0	5	66	0.04
WT	1.0	1600	148	0	1	149	0.12*
WR	0.0	1600	42	0	0	42	0.03
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.84 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	50	0	0	50	0.03*
NT	2.0	3200	1100	88	67	1255	0.39
NR	1.0	1600	12	0	7	19	0.01
SL	1.0	1600	66	0	0	66	0.04
ST	2.0	3200	1421	86	97	1604	0.50*
SR	1.0	1600	101	0	0	101	0.06
EL	1.0	1600	97	0	0	97	0.06*
ET	1.0	1600	155	0	3	158	0.10
ER	1.0	1600	39	0	0	39	0.02
WL	1.0	1600	52	0	12	64	0.04
WT	1.0	1600	234	0	2	236	0.19*
WR	0.0	1600	64	0	0	64	0.04
							=======
					Clearance Interval Percentage =		0.10
					Sum of Critical Movements =		0.88 D

* denotes critical movement

APPENDIX J

SIGNIFICANT TRANSPORTATION IMPACT
CALCULATION WORKSHEETS

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.000
NT	1.0	1600	1079	0	18	1097	0.686*
NR	0.0	0	0	0	0	0	0.000
SL	1.0	1600	226	0	0	226	0.142*
ST	1.0	1600	598	0	12	610	0.382
SR	0.0	0	0	0	0	0	0.000
EL	0.0	0	0	0	0	0	0.000
ET	0.0	0	0	0	0	0	0.000
ER	0.0	0	0	0	0	0	0.000
WL	0.0	0	0	0	0	0	0.000*
WT	0.0	0	0	0	0	0	0.000
WR >>	1.0	1600	386	0	0	386	0.242
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.928 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.000
NT	1.0	1600	728	0	20	748	0.468*
NR	0.0	0	0	0	0	0	0.000
SL	1.0	1600	402	0	0	402	0.252*
ST	1.0	1600	1028	0	26	1054	0.659
SR	0.0	0	0	0	0	0	0.000
EL	0.0	0	0	0	0	0	0.000
ET	0.0	0	0	0	0	0	0.000
ER	0.0	0	0	0	0	0	0.000
WL	0.0	0	0	0	0	0	0.000*
WT	0.0	0	0	0	0	0	0.000
WR >>	1.0	1600	360	0	0	360	0.225
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.820 D

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - South (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.000
NT	1.0	1600	1079	0	18	1097	0.686*
NR >>	1.0	1600	198	0	0	198	0.124
SL	0.0	0	0	0	0	0	0.000*
ST	1.0	1600	598	0	12	610	0.382
SR	0.0	0	0	0	0	0	0.000
EL	0.0	0	0	0	0	0	0.000
ET	0.0	0	0	0	0	0	0.000
ER	0.0	0	0	0	0	0	0.000
WL	1.0	1600	170	0	0	170	0.107*
WT	0.0	0	0	0	0	0	0.000
WR	0.0	0	0	0	0	0	0.000
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.893 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.000*
NT	1.0	1600	728	0	20	748	0.468
NR >>	1.0	1600	249	0	0	249	0.156
SL	0.0	0	0	0	0	0	0.000
ST	1.0	1600	1028	0	26	1054	0.659*
SR	0.0	0	0	0	0	0	0.000
EL	0.0	0	0	0	0	0	0.000
ET	0.0	0	0	0	0	0	0.000
ER	0.0	0	0	0	0	0	0.000
WL	1.0	1600	205	0	0	205	0.129*
WT	0.0	0	0	0	0	0	0.000
WR	0.0	0	0	0	0	0	0.000
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.888 D

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - East (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.000
NT	1.0	1600	198	0	0	198	0.124*
NR	0.0	0	0	0	0	0	0.000
SL	0.0	0	0	0	0	0	0.000*
ST	1.0	1600	170	0	0	170	0.107
SR	1.0	1600	386	0	0	386	0.242
EL	1.0	1600	226	0	0	226	0.142*
ET	0.0	0	0	0	0	0	0.000
ER	0.0	0	0	0	0	0	0.000
WL	0.0	0	0	0	0	0	0.000
WT	0.0	0	0	0	0	0	0.000
WR	0.0	0	0	0	0	0	0.000
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.366 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.000
NT	1.0	1600	249	0	0	249	0.156*
NR	0.0	0	0	0	0	0	0.000
SL	0.0	0	0	0	0	0	0.000*
ST	1.0	1600	205	0	0	205	0.129
SR	1.0	1600	360	0	0	360	0.225
EL	1.0	1600	402	0	0	402	0.252*
ET	0.0	0	0	0	0	0	0.000
ER	0.0	0	0	0	0	0	0.000
WL	0.0	0	0	0	0	0	0.000
WT	0.0	0	0	0	0	0	0.000
WR	0.0	0	0	0	0	0	0.000
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.508 A

* denotes critical movement

Intersection: Palos Verdes Dr. West (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	0	0	9	9	0.006
NT	2.0	3200	303	0	12	315	0.098*
NR	1.0	1600	305	0	26	331	0.207
SL	1.0	1600	226	0	7	233	0.146*
ST	2.0	3200	223	0	10	233	0.073
SR	0.0	0	0	0	1	1	0.000
EL	1.0	1600	0	0	4	4	0.003*
ET	1.0	1600	0	0	15	15	0.024
ER	0.0	0	0	0	24	24	0.000
WL	1.0	1600	147	0	15	162	0.101
WT	1.0	1600	0	0	5	5	0.197*
WR	0.0	1600	308	0	2	310	0.194
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.544 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	0	0	29	29	0.018
NT	2.0	3200	253	0	17	270	0.084*
NR	1.0	1600	267	0	22	289	0.181
SL	1.0	1600	181	0	10	191	0.120*
ST	2.0	3200	235	0	19	254	0.081
SR	0.0	0	0	0	5	5	0.000
EL	1.0	1600	0	0	3	3	0.002
ET	1.0	1600	0	0	9	9	0.015*
ER	0.0	0	0	0	15	15	0.000
WL	1.0	1600	286	0	31	317	0.198*
WT	1.0	1600	0	0	19	19	0.108
WR	0.0	1600	144	0	9	153	0.096
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.517 A

* denotes critical movement

Intersection: Granvia Altamira (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	26	0	0	26	0.017
NT	1.0	1600	54	0	0	54	0.050*
NR	1.0	1600	37	0	0	37	0.023
SL	1.5	2400	413	0	0	413	0.172*
ST	0.5	800	51	0	0	51	0.065
SR	1.0	1600	44	0	1	45	0.028
EL	1.0	1600	96	0	0	96	0.060
ET	2.0	3200	863	0	13	876	0.274*
ER	1.0	1600	27	0	0	27	0.017
WL	1.0	1600	25	0	0	25	0.016*
WT	2.0	3200	492	0	8	500	0.157
WR	1.0	1600	174	0	0	174	0.109
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.612 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	23	0	0	23	0.015
NT	1.0	1600	42	0	0	42	0.041*
NR	1.0	1600	33	0	0	33	0.021
SL	1.5	2400	231	0	0	231	0.096*
ST	0.5	800	57	0	0	57	0.072
SR	1.0	1600	78	0	2	80	0.050
EL	1.0	1600	105	0	2	107	0.068*
ET	2.0	3200	578	0	15	593	0.186
ER	1.0	1600	24	0	0	24	0.015
WL	1.0	1600	74	0	0	74	0.046
WT	2.0	3200	938	0	21	959	0.300*
WR	1.0	1600	301	0	0	301	0.188
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.605 B

* denotes critical movement

Intersection: Highridge Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	32	0	0	32	0.021
NT	1.0	1600	27	0	0	27	0.017
NR >	1.0	1600	422	0	2	424	0.266*
SL	0.0	1600	179	0	0	179	0.112*
ST	1.0	1600	9	0	0	9	0.127
SR	0.0	1600	13	0	0	13	0.009
EL	1.0	1600	6	0	0	6	0.004
ET	2.0	3200	1207	0	13	1220	0.381*
ER	1.0	1600	10	0	0	10	0.007
WL	1.0	1600	161	0	1	162	0.101
WT	2.0	3200	573	0	8	581	0.182
WR	1.0	1600	63	0	0	63	0.040
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.859 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	26	0	0	26	0.017*
NT	1.0	1600	18	0	0	18	0.011
NR >	1.0	1600	222	0	1	223	0.140
SL	0.0	1600	82	0	0	82	0.052
ST	1.0	1600	21	0	0	21	0.077*
SR	0.0	1600	19	0	0	19	0.012
EL	1.0	1600	20	0	0	20	0.013
ET	2.0	3200	681	0	15	696	0.218*
ER	1.0	1600	25	0	0	25	0.016
WL	1.0	1600	454	0	2	456	0.285*
WT	2.0	3200	1304	0	21	1325	0.414
WR	1.0	1600	172	0	0	172	0.108
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.697 B

* denotes critical movement
> denotes protected right turn

Intersection: Highridge Rd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	9	0	5	14	0.009
NT	1.0	1600	4	0	2	6	0.058*
NR	0.0	1600	40	0	31	71	0.045
SL	1.0	1600	15	0	0	15	0.010*
ST	1.0	1600	8	0	1	9	0.022
SR	0.0	1600	25	0	1	26	0.017
EL	1.0	1600	31	0	0	31	0.020
ET	2.0	3200	423	0	31	454	0.145*
ER	0.0	1600	6	0	2	8	0.005
WL	1.0	1600	14	0	12	26	0.017*
WT	2.0	3200	227	0	14	241	0.087
WR	0.0	1600	36	0	0	36	0.023
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.330 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	3	0	4	7	0.004
NT	1.0	1600	13	0	1	14	0.032*
NR	0.0	1600	10	0	19	29	0.019
SL	1.0	1600	19	0	1	20	0.013*
ST	1.0	1600	4	0	2	6	0.026
SR	0.0	1600	33	0	2	35	0.022
EL	1.0	1600	27	0	2	29	0.018*
ET	2.0	3200	228	0	27	255	0.085
ER	0.0	1600	9	0	6	15	0.010
WL	1.0	1600	13	0	34	47	0.030
WT	2.0	3200	366	0	40	406	0.140*
WR	0.0	1600	41	0	0	41	0.026
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.303 A

* denotes critical movement

Intersection: Indian Peak Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	136	0	0	136	0.047*
NT	0.0	0	0	0	0	0	0.000
NR >	1.0	1600	47	0	2	49	0.031
SL	0.0	0	0	0	0	0	0.000
ST	0.0	0	0	0	0	0	0.000
SR	0.0	0	0	0	0	0	0.000
EL	0.0	0	0	0	0	0	0.000
ET	2.0	3200	1514	0	15	1529	0.478*
ER >	1.0	1600	291	0	0	291	0.182
WL	1.0	1600	113	0	1	114	0.072*
WT	2.0	3200	730	0	9	739	0.231
WR	0.0	0	0	0	0	0	0.000
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.697 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	529	0	0	529	0.184*
NT	0.0	0	0	0	0	0	0.000
NR >	1.0	1600	89	0	2	91	0.057
SL	0.0	0	0	0	0	0	0.000
ST	0.0	0	0	0	0	0	0.000
SR	0.0	0	0	0	0	0	0.000
EL	0.0	0	0	0	0	0	0.000*
ET	2.0	3200	950	0	16	966	0.302
ER >	1.0	1600	195	0	0	195	0.122
WL	1.0	1600	109	0	3	112	0.070
WT	2.0	3200	1401	0	23	1424	0.445*
WR	0.0	0	0	0	0	0	0.000
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.729 C

* denotes critical movement
> denotes protected right turn

Intersection: Indian Peak Rd. (NS) / Crenshaw Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.000
NT	0.0	0	0	0	0	0	0.000
NR	0.0	0	0	0	0	0	0.000
SL	1.0	1600	210	0	0	210	0.132*
ST	0.0	0	0	0	0	0	0.000
SR >	1.0	1600	71	0	2	73	0.046
EL	1.0	1600	69	0	4	73	0.046
ET	2.0	3200	1192	0	58	1250	0.391*
ER	0.0	0	0	0	0	0	0.000
WL	0.0	0	0	0	0	0	0.000*
WT	2.0	3200	513	0	25	538	0.168
WR	1.0	1600	83	0	0	83	0.052
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.623 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.000
NT	0.0	0	0	0	0	0	0.000
NR	0.0	0	0	0	0	0	0.000
SL	1.0	1600	120	0	0	120	0.076
ST	0.0	0	0	0	0	0	0.000
SR >	1.0	1600	187	0	5	192	0.120*
EL	1.0	1600	110	0	3	113	0.071*
ET	2.0	3200	625	0	45	670	0.210
ER	0.0	0	0	0	0	0	0.000
WL	0.0	0	0	0	0	0	0.000
WT	2.0	3200	929	0	77	1006	0.315*
WR	1.0	1600	224	0	0	224	0.140
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.606 B

* denotes critical movement
> denotes protected right turn

Intersection: Silver Spur Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	259	0	0	259	0.162*
NT	2.0	3200	186	0	0	186	0.058
NR >	1.0	1600	116	0	0	116	0.073
SL	1.0	1600	113	0	0	113	0.071
ST	2.0	3200	240	0	0	240	0.109*
SR	0.0	1600	108	0	1	109	0.068
EL	1.0	1600	164	0	0	164	0.103
ET	2.0	3200	1387	0	17	1404	0.439*
ER	1.0	1600	317	0	0	317	0.199
WL	1.0	1600	183	0	0	183	0.115*
WT	2.0	3200	558	0	9	567	0.177
WR	1.0	1600	47	0	0	47	0.030
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.925 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	381	0	0	381	0.239*
NT	2.0	3200	319	0	0	319	0.100
NR >	1.0	1600	189	0	0	189	0.119
SL	1.0	1600	66	0	0	66	0.042
ST	2.0	3200	425	0	0	425	0.193*
SR	0.0	1600	191	0	2	193	0.121
EL	1.0	1600	284	0	2	286	0.179*
ET	2.0	3200	761	0	16	777	0.243
ER	1.0	1600	210	0	0	210	0.132
WL	1.0	1600	190	0	0	190	0.119
WT	2.0	3200	1005	0	24	1029	0.322*
WR	1.0	1600	91	0	0	91	0.057
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		1.033 F

* denotes critical movement
> denotes protected right turn

Intersection: Silver Spur Rd. (NS) / Crenshaw Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	1	0	0	1	0.001
NT	1.0	1600	1	0	0	1	0.002*
NR	0.0	1600	1	0	0	1	0.001
SL	1.5	2400	509	0	0	509	0.212*
ST	0.5	800	1	0	0	1	0.001
SR >	1.0	1600	80	0	2	82	0.052
EL	1.0	1600	198	0	4	202	0.126
ET	2.0	3200	1222	0	54	1276	0.399*
ER	0.0	1600	1	0	0	1	0.001
WL	1.0	1600	1	0	0	1	0.001*
WT	2.0	3200	475	0	23	498	0.156
WR	1.0	1600	462	0	0	462	0.289
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.714 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	1	0	0	1	0.001
NT	1.0	1600	1	0	0	1	0.002*
NR	0.0	1600	1	0	0	1	0.001
SL	1.5	2400	585	0	0	585	0.244
ST	0.5	800	1	0	0	1	0.001
SR >	1.0	1600	410	0	6	416	0.260*
EL	1.0	1600	188	0	2	190	0.119*
ET	2.0	3200	554	0	43	597	0.187
ER	0.0	1600	1	0	0	1	0.001
WL	1.0	1600	1	0	0	1	0.001
WT	2.0	3200	778	0	71	849	0.265*
WR	1.0	1600	597	0	0	597	0.374
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.746 C

* denotes critical movement
> denotes protected right turn

Intersection: Hawthorne Blvd. (NS) / Sepulveda Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	102	0	0	102	0.036
NT	4.0	6400	2266	0	18	2284	0.357*
NR >>	1.0	1600	331	0	0	331	0.207
SL	2.0	2880	183	0	0	183	0.064*
ST	4.0	6400	1658	0	10	1668	0.261
SR >>	1.0	1600	154	0	0	154	0.097
EL	2.0	2880	392	0	0	392	0.136
ET	3.0	4800	1136	0	0	1136	0.260*
ER	0.0	1600	111	0	0	111	0.070
WL	2.0	2880	458	0	0	458	0.159*
WT	3.0	4800	822	0	0	822	0.245
WR	0.0	1600	351	0	0	351	0.220
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.940 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	297	0	0	297	0.103
NT	4.0	6400	2331	0	19	2350	0.367*
NR >>	1.0	1600	760	0	0	760	0.475
SL	2.0	2880	412	0	0	412	0.143*
ST	4.0	6400	2299	0	26	2325	0.363
SR >>	1.0	1600	166	0	0	166	0.104
EL	2.0	2880	345	0	0	345	0.120
ET	3.0	4800	881	0	0	881	0.216*
ER	0.0	1600	156	0	0	156	0.098
WL	2.0	2880	866	0	0	866	0.301*
WT	3.0	4800	1374	0	0	1374	0.349
WR	0.0	1600	299	0	0	299	0.187
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		1.127 F

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Pacific Coast Hwy. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	287	0	0	287	0.100
NT	3.0	4800	1642	0	18	1660	0.356*
NR	0.0	1600	48	0	0	48	0.030
SL	2.0	2880	199	0	0	199	0.069*
ST	3.0	4800	772	0	10	782	0.163
SR >>	1.0	1600	207	0	0	207	0.130
EL	1.0	1600	323	0	0	323	0.202*
ET	3.0	4800	929	0	1	930	0.231
ER	0.0	1600	180	0	0	180	0.113
WL	1.0	1600	201	0	0	201	0.126
WT	3.0	4800	902	0	2	904	0.230*
WR	0.0	1600	199	0	0	199	0.125
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.957 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	304	0	0	304	0.106
NT	3.0	4800	2270	0	19	2289	0.615*
NR	0.0	1600	662	0	0	662	0.414
SL	2.0	2880	379	0	0	379	0.132*
ST	3.0	4800	2343	0	26	2369	0.494
SR >>	1.0	1600	201	0	0	201	0.126
EL	1.0	1600	328	0	0	328	0.205
ET	3.0	4800	833	0	2	835	0.208*
ER	0.0	1600	162	0	0	162	0.101
WL	1.0	1600	755	0	0	755	0.472*
WT	3.0	4800	1168	0	1	1169	0.309
WR	0.0	1600	312	0	0	312	0.195
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		1.527 F

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	22	0	0	22	0.014
NT	2.0	3200	1220	0	17	1237	0.387*
NR >>	1.0	1600	465	0	0	465	0.291
SL	1.0	1600	100	0	1	101	0.064*
ST	2.0	3200	557	0	9	566	0.177
SR	1.0	1600	92	0	0	92	0.058
EL	1.5	2400	466	0	0	466	0.194
ET	1.5	2400	534	0	1	535	0.228*
ER	0.0	1600	12	0	0	12	0.008
WL	1.0	1600	192	0	0	192	0.121
WT	1.0	1600	309	0	2	311	0.195*
WR	1.0	1600	199	0	1	200	0.125
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.974 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	25	0	0	25	0.016*
NT	2.0	3200	739	0	16	755	0.236
NR >>	1.0	1600	207	0	0	207	0.130
SL	1.0	1600	133	0	2	135	0.085
ST	2.0	3200	1109	0	24	1133	0.354*
SR	1.0	1600	361	0	0	361	0.226
EL	1.5	2400	169	0	0	169	0.071
ET	1.5	2400	409	0	3	412	0.181*
ER	0.0	1600	22	0	0	22	0.014
WL	1.0	1600	235	0	0	235	0.147
WT	1.0	1600	386	0	1	387	0.242*
WR	1.0	1600	81	0	3	84	0.053
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.893 D

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	14	0	0	14	0.009
NT	2.0	3200	536	0	13	549	0.172*
NR	1.0	1600	294	0	33	327	0.205
SL	1.0	1600	71	0	0	71	0.044*
ST	2.0	3200	363	0	10	373	0.117
SR	1.0	1600	119	0	0	119	0.075
EL	1.0	1600	148	0	0	148	0.093
ET	1.0	1600	87	0	0	87	0.064*
ER	0.0	1600	12	0	1	13	0.009
WL	1.0	1600	144	0	20	164	0.103*
WT	1.0	1600	33	0	0	33	0.021
WR	1.0	1600	69	0	0	69	0.044
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.483 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	18	0	2	20	0.013*
NT	2.0	3200	382	0	19	401	0.126
NR	1.0	1600	136	0	34	170	0.107
SL	1.0	1600	38	0	1	39	0.024
ST	2.0	3200	432	0	25	457	0.143*
SR	1.0	1600	104	0	0	104	0.066
EL	1.0	1600	185	0	0	185	0.116
ET	1.0	1600	64	0	0	64	0.048*
ER	0.0	1600	10	0	2	12	0.008
WL	1.0	1600	254	0	46	300	0.188*
WT	1.0	1600	58	0	0	58	0.036
WR	1.0	1600	64	0	0	64	0.040
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.492 A

* denotes critical movement

Intersection: Crenshaw Blvd. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	38	0	2	40	0.025
NT	2.0	3200	1049	0	34	1083	0.339*
NR	1.0	1600	633	0	18	651	0.407
SL	1.0	1600	77	0	0	77	0.048*
ST	2.0	3200	483	0	15	498	0.156
SR	1.0	1600	114	0	0	114	0.072
EL	2.0	2880	395	0	0	395	0.137
ET	2.0	3200	523	0	1	524	0.176*
ER	0.0	1600	37	0	1	38	0.024
WL	2.0	2880	502	0	7	509	0.177*
WT	2.0	3200	470	0	1	471	0.192
WR	0.0	1600	142	0	0	142	0.089
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.840 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	34	0	1	35	0.022*
NT	2.0	3200	624	0	29	653	0.204
NR	1.0	1600	503	0	13	516	0.323
SL	1.0	1600	104	0	0	104	0.066
ST	2.0	3200	774	0	44	818	0.256*
SR	1.0	1600	168	0	0	168	0.105
EL	2.0	2880	209	0	0	209	0.073
ET	2.0	3200	502	0	2	504	0.172*
ER	0.0	1600	42	0	3	45	0.028
WL	2.0	2880	478	0	24	502	0.174*
WT	2.0	3200	418	0	3	421	0.153
WR	0.0	1600	66	0	0	66	0.042
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.724 C

* denotes critical movement

Intersection: Crenshaw Blvd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	34	0	1	35	0.022
NT	1.0	1600	126	0	0	126	0.079*
NR	1.0	1600	11	0	0	11	0.007
SL	1.0	1600	69	0	0	69	0.044*
ST	1.5	2400	91	0	0	91	0.038
SR	1.5	2400	213	0	25	238	0.099
EL	1.5	2400	566	0	62	628	0.262*
ET	0.5	800	21	0	0	21	0.027
ER >>	1.0	1600	30	0	0	30	0.019
WL	0.0	1600	15	0	0	15	0.010
WT	1.0	1600	25	0	0	25	0.026
WR	1.0	1600	81	0	0	81	0.051*
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.536 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	32	0	2	34	0.022
NT	1.0	1600	76	0	1	77	0.048*
NR	1.0	1600	5	0	0	5	0.003
SL	1.0	1600	115	0	0	115	0.072*
ST	1.5	2400	132	0	0	132	0.055
SR	1.5	2400	451	0	72	523	0.218
EL	1.5	2400	284	0	45	329	0.137*
ET	0.5	800	28	0	0	28	0.036
ER >>	1.0	1600	47	0	2	49	0.031
WL	0.0	1600	3	0	0	3	0.002
WT	1.0	1600	39	0	0	39	0.027
WR	1.0	1600	78	0	0	78	0.049*
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.406 A

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Dr. East (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	307	0	0	307	0.192*
NT	2.0	3200	288	0	0	288	0.090
NR	1.0	1600	168	0	0	168	0.105
SL	1.0	1600	99	0	0	99	0.062
ST	2.0	3200	95	0	0	95	0.030*
SR	1.0	1600	51	0	1	52	0.033
EL	1.0	1600	52	0	2	54	0.034
ET	2.0	3200	1206	0	17	1223	0.382*
ER	1.0	1600	193	0	0	193	0.121
WL	1.0	1600	119	0	0	119	0.075*
WT	2.0	3200	972	0	7	979	0.306
WR >>	1.0	1600	250	0	0	250	0.156
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.779 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	178	0	0	178	0.111*
NT	2.0	3200	114	0	0	114	0.036
NR	1.0	1600	98	0	0	98	0.062
SL	1.0	1600	220	0	0	220	0.138
ST	2.0	3200	228	0	0	228	0.072*
SR	1.0	1600	89	0	3	92	0.058
EL	1.0	1600	75	0	1	76	0.048
ET	2.0	3200	1196	0	14	1210	0.378*
ER	1.0	1600	308	0	0	308	0.193
WL	1.0	1600	119	0	0	119	0.075*
WT	2.0	3200	1107	0	24	1131	0.354
WR >>	1.0	1600	105	0	0	105	0.066
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.736 C

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Dr. East (NS) / Palos Verdes Dr. South (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.000
NT	0.0	0	0	0	0	0	0.000
NR	0.0	0	0	0	0	0	0.000
SL	1.0	1600	29	0	0	29	0.019
ST	0.0	0	0	0	0	0	0.000
SR	1.0	1600	75	0	1	76	0.048*
EL	1.0	1600	76	0	0	76	0.048*
ET	1.0	1600	445	0	100	545	0.341
ER	0.0	0	0	0	0	0	0.000
WL	0.0	0	0	0	0	0	0.000
WT	1.0	1600	445	0	61	506	0.338*
WR	0.0	1600	34	0	0	34	0.022
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.534 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.000
NT	0.0	0	0	0	0	0	0.000
NR	0.0	0	0	0	0	0	0.000
SL	1.0	1600	39	0	0	39	0.025
ST	0.0	0	0	0	0	0	0.000
SR	1.0	1600	49	0	2	51	0.032*
EL	1.0	1600	59	0	2	61	0.038*
ET	1.0	1600	615	0	90	705	0.441
ER	0.0	0	0	0	0	0	0.000
WL	0.0	0	0	0	0	0	0.000
WT	1.0	1600	483	0	132	615	0.419*
WR	0.0	1600	55	0	0	55	0.034
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.589 A

* denotes critical movement

Intersection: Western Ave. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	573	0	1	574	0.359*
NT	2.0	3200	871	0	1	872	0.273
NR	1.0	1600	216	0	4	220	0.138
SL	1.0	1600	37	0	0	37	0.023
ST	2.0	3200	453	0	1	454	0.142*
SR	1.0	1600	165	0	0	165	0.103
EL	1.0	1600	77	0	0	77	0.048
ET	3.0	4800	1159	0	16	1175	0.245*
ER	1.0	1600	211	0	1	212	0.133
WL	1.0	1600	110	0	3	113	0.071*
WT	3.0	4800	579	0	6	585	0.122
WR	1.0	1600	65	0	0	65	0.041
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.917 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	400	0	3	403	0.252
NT	2.0	3200	773	0	3	776	0.243
NR	1.0	1600	148	0	6	154	0.097
SL	1.0	1600	38	0	0	38	0.024
ST	2.0	3200	791	0	2	793	0.248*
SR	1.0	1600	255	0	0	255	0.160
EL	1.0	1600	203	0	0	203	0.127
ET	3.0	4800	700	0	12	712	0.148
ER	1.0	1600	693	0	2	695	0.435*
WL	1.0	1600	314	0	6	320	0.201*
WT	3.0	4800	764	0	21	785	0.164
WR	1.0	1600	33	0	0	33	0.021
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.984 E

* denotes critical movement

Intersection: Western Ave. (NS) / 9th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	127	0	0	127	0.080
NT	2.0	3200	908	0	16	924	0.289*
NR	1.0	1600	85	0	0	85	0.054
SL	1.0	1600	50	0	2	52	0.033*
ST	2.0	3200	468	0	10	478	0.150
SR	1.0	1600	29	0	2	31	0.020
EL	1.0	1600	27	0	4	31	0.020
ET	2.0	3200	125	0	0	125	0.039*
ER	1.0	1600	80	0	0	80	0.050
WL	1.0	1600	78	0	0	78	0.049*
WT	2.0	3200	126	0	0	126	0.039
WR	1.0	1600	77	0	3	80	0.050
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.510 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	97	0	0	97	0.061*
NT	2.0	3200	664	0	20	684	0.214
NR	1.0	1600	62	0	0	62	0.039
SL	1.0	1600	80	0	8	88	0.055
ST	2.0	3200	1005	0	28	1033	0.323*
SR	1.0	1600	74	0	10	84	0.053
EL	1.0	1600	31	0	10	41	0.026
ET	2.0	3200	136	0	0	136	0.043*
ER	1.0	1600	165	0	0	165	0.103
WL	1.0	1600	118	0	0	118	0.074*
WT	2.0	3200	145	0	0	145	0.045
WR	1.0	1600	72	0	7	79	0.049
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.601 B

* denotes critical movement

Intersection: Western Ave. (NS) / 25th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	43	0	0	43	0.027
NT	2.0	3200	165	0	0	165	0.052*
NR	1.0	1600	33	0	0	33	0.021
SL	1.0	1600	80	0	1	81	0.051*
ST	2.0	3200	108	0	0	108	0.034
SR >	1.0	1600	327	0	8	335	0.210
EL	1.0	1600	434	0	13	447	0.280*
ET	2.0	3200	242	0	88	330	0.103
ER	1.0	1600	57	0	0	57	0.036
WL	1.0	1600	20	0	0	20	0.013
WT	2.0	3200	241	0	53	294	0.153*
WR	0.0	1600	193	0	2	195	0.122
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.636 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	83	0	0	83	0.052
NT	2.0	3200	154	0	0	154	0.048*
NR	1.0	1600	55	0	0	55	0.034
SL	1.0	1600	268	0	5	273	0.171*
ST	2.0	3200	213	0	0	213	0.067
SR >	1.0	1600	481	0	20	501	0.313
EL	1.0	1600	402	0	13	415	0.260*
ET	2.0	3200	399	0	77	476	0.149
ER	1.0	1600	55	0	0	55	0.034
WL	1.0	1600	110	0	0	110	0.069
WT	2.0	3200	305	0	113	418	0.186*
WR	0.0	1600	172	0	5	177	0.111
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.765 C

* denotes critical movement
> denotes protected right turn

Intersection: Gaffey St. (NS) / 9th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	55	0	0	55	0.034
NT	2.0	3200	1163	0	75	1238	0.387*
NR	1.0	1600	31	0	10	41	0.026
SL	1.0	1600	41	0	0	41	0.026*
ST	2.0	3200	703	0	46	749	0.234
SR	1.0	1600	58	0	0	58	0.036
EL	1.0	1600	306	0	0	306	0.191*
ET	1.0	1600	245	0	1	246	0.154
ER	1.0	1600	29	0	0	29	0.019
WL	1.0	1600	61	0	5	66	0.042
WT	1.0	1600	148	0	1	149	0.120*
WR	0.0	1600	42	0	0	42	0.027
						Clearance Interval Percentage =	0.100
						Sum of Critical Movements =	0.824 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	50	0	0	50	0.032*
NT	2.0	3200	1100	0	67	1167	0.365
NR	1.0	1600	12	0	7	19	0.012
SL	1.0	1600	66	0	0	66	0.042
ST	2.0	3200	1421	0	97	1518	0.475*
SR	1.0	1600	101	0	0	101	0.064
EL	1.0	1600	97	0	0	97	0.061*
ET	1.0	1600	155	0	3	158	0.099
ER	1.0	1600	39	0	0	39	0.025
WL	1.0	1600	52	0	12	64	0.041
WT	1.0	1600	234	0	2	236	0.188*
WR	0.0	1600	64	0	0	64	0.040
						Clearance Interval Percentage =	0.100
						Sum of Critical Movements =	0.856 D

* denotes critical movement

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.000
NT	1.0	1600	1079	12	18	1109	0.693*
NR	0.0	0	0	0	0	0	0.000
SL	1.0	1600	226	0	0	226	0.142*
ST	1.0	1600	598	19	12	629	0.394
SR	0.0	0	0	0	0	0	0.000
EL	0.0	0	0	0	0	0	0.000
ET	0.0	0	0	0	0	0	0.000
ER	0.0	0	0	0	0	0	0.000
WL	0.0	0	0	0	0	0	0.000*
WT	0.0	0	0	0	0	0	0.000
WR >>	1.0	1600	386	0	0	386	0.242
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.935 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.000
NT	1.0	1600	728	25	20	773	0.483*
NR	0.0	0	0	0	0	0	0.000
SL	1.0	1600	402	0	0	402	0.252*
ST	1.0	1600	1028	25	26	1079	0.675
SR	0.0	0	0	0	0	0	0.000
EL	0.0	0	0	0	0	0	0.000
ET	0.0	0	0	0	0	0	0.000
ER	0.0	0	0	0	0	0	0.000
WL	0.0	0	0	0	0	0	0.000*
WT	0.0	0	0	0	0	0	0.000
WR >>	1.0	1600	360	0	0	360	0.225
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.835 D

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - South (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.000
NT	1.0	1600	1079	12	18	1109	0.693*
NR >>	1.0	1600	198	0	0	198	0.124
SL	0.0	0	0	0	0	0	0.000*
ST	1.0	1600	598	19	12	629	0.394
SR	0.0	0	0	0	0	0	0.000
EL	0.0	0	0	0	0	0	0.000
ET	0.0	0	0	0	0	0	0.000
ER	0.0	0	0	0	0	0	0.000
WL	1.0	1600	170	0	0	170	0.107*
WT	0.0	0	0	0	0	0	0.000
WR	0.0	0	0	0	0	0	0.000
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.900 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.000*
NT	1.0	1600	728	25	20	773	0.483
NR >>	1.0	1600	249	0	0	249	0.156
SL	0.0	0	0	0	0	0	0.000
ST	1.0	1600	1028	25	26	1079	0.675*
SR	0.0	0	0	0	0	0	0.000
EL	0.0	0	0	0	0	0	0.000
ET	0.0	0	0	0	0	0	0.000
ER	0.0	0	0	0	0	0	0.000
WL	1.0	1600	205	0	0	205	0.129*
WT	0.0	0	0	0	0	0	0.000
WR	0.0	0	0	0	0	0	0.000
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.904 E

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Blvd. (NS) / Palos Verdes Dr. West - East (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.000
NT	1.0	1600	198	0	0	198	0.124*
NR	0.0	0	0	0	0	0	0.000
SL	0.0	0	0	0	0	0	0.000*
ST	1.0	1600	170	0	0	170	0.107
SR	1.0	1600	386	0	0	386	0.242
EL	1.0	1600	226	0	0	226	0.142*
ET	0.0	0	0	0	0	0	0.000
ER	0.0	0	0	0	0	0	0.000
WL	0.0	0	0	0	0	0	0.000
WT	0.0	0	0	0	0	0	0.000
WR	0.0	0	0	0	0	0	0.000
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.366 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.000
NT	1.0	1600	249	0	0	249	0.156*
NR	0.0	0	0	0	0	0	0.000
SL	0.0	0	0	0	0	0	0.000*
ST	1.0	1600	205	0	0	205	0.129
SR	1.0	1600	360	0	0	360	0.225
EL	1.0	1600	402	0	0	402	0.252*
ET	0.0	0	0	0	0	0	0.000
ER	0.0	0	0	0	0	0	0.000
WL	0.0	0	0	0	0	0	0.000
WT	0.0	0	0	0	0	0	0.000
WR	0.0	0	0	0	0	0	0.000
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.508 A

* denotes critical movement

Intersection: Palos Verdes Dr. West (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	0	0	9	9	0.006
NT	2.0	3200	303	12	12	327	0.102*
NR	1.0	1600	305	54	26	385	0.241
SL	1.0	1600	226	0	7	233	0.146*
ST	2.0	3200	223	19	10	252	0.079
SR	0.0	0	0	0	1	1	0.000
EL	1.0	1600	0	0	4	4	0.003*
ET	1.0	1600	0	0	15	15	0.024
ER	0.0	0	0	0	24	24	0.000
WL	1.0	1600	147	87	15	249	0.156
WT	1.0	1600	0	0	5	5	0.197*
WR	0.0	1600	308	0	2	310	0.194
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.548 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	0	0	29	29	0.018
NT	2.0	3200	253	25	17	295	0.092*
NR	1.0	1600	267	114	22	403	0.252
SL	1.0	1600	181	0	10	191	0.120*
ST	2.0	3200	235	25	19	279	0.089
SR	0.0	0	0	0	5	5	0.000
EL	1.0	1600	0	0	3	3	0.002
ET	1.0	1600	0	0	9	9	0.015*
ER	0.0	0	0	0	15	15	0.000
WL	1.0	1600	286	111	31	428	0.268*
WT	1.0	1600	0	0	19	19	0.108
WR	0.0	1600	144	0	9	153	0.096
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.595 A

* denotes critical movement

Intersection: Granvia Altamira (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	26	0	0	26	0.017
NT	1.0	1600	54	0	0	54	0.050*
NR	1.0	1600	37	0	0	37	0.023
SL	1.5	2400	413	0	0	413	0.172*
ST	0.5	800	51	0	0	51	0.065
SR	1.0	1600	44	0	1	45	0.028
EL	1.0	1600	96	0	0	96	0.060
ET	2.0	3200	863	30	13	906	0.283*
ER	1.0	1600	27	0	0	27	0.017
WL	1.0	1600	25	0	0	25	0.016*
WT	2.0	3200	492	49	8	549	0.172
WR	1.0	1600	174	0	0	174	0.109
							=======
						Clearance Interval Percentage =	0.100
						Sum of Critical Movements =	0.621 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	23	0	0	23	0.015
NT	1.0	1600	42	0	0	42	0.041*
NR	1.0	1600	33	0	0	33	0.021
SL	1.5	2400	231	0	0	231	0.096*
ST	0.5	800	57	0	0	57	0.072
SR	1.0	1600	78	0	2	80	0.050
EL	1.0	1600	105	0	2	107	0.068*
ET	2.0	3200	578	64	15	657	0.206
ER	1.0	1600	24	0	0	24	0.015
WL	1.0	1600	74	0	0	74	0.046
WT	2.0	3200	938	61	21	1020	0.319*
WR	1.0	1600	301	0	0	301	0.188
							=======
						Clearance Interval Percentage =	0.100
						Sum of Critical Movements =	0.624 B

* denotes critical movement

Intersection: Highridge Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	32	0	0	32	0.021
NT	1.0	1600	27	0	0	27	0.017
NR >	1.0	1600	422	0	2	424	0.266*
SL	0.0	1600	179	0	0	179	0.112*
ST	1.0	1600	9	0	0	9	0.127
SR	0.0	1600	13	0	0	13	0.009
EL	1.0	1600	6	0	0	6	0.004
ET	2.0	3200	1207	30	13	1250	0.391*
ER	1.0	1600	10	0	0	10	0.007
WL	1.0	1600	161	0	1	162	0.101
WT	2.0	3200	573	49	8	630	0.197
WR	1.0	1600	63	0	0	63	0.040
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.869 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	26	0	0	26	0.017*
NT	1.0	1600	18	0	0	18	0.011
NR >	1.0	1600	222	0	1	223	0.140
SL	0.0	1600	82	0	0	82	0.052
ST	1.0	1600	21	0	0	21	0.077*
SR	0.0	1600	19	0	0	19	0.012
EL	1.0	1600	20	0	0	20	0.013
ET	2.0	3200	681	64	15	760	0.238*
ER	1.0	1600	25	0	0	25	0.016
WL	1.0	1600	454	0	2	456	0.285*
WT	2.0	3200	1304	61	21	1386	0.433
WR	1.0	1600	172	0	0	172	0.108
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.717 C

* denotes critical movement
> denotes protected right turn

Intersection: Highridge Rd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	9	0	5	14	0.009
NT	1.0	1600	4	0	2	6	0.058*
NR	0.0	1600	40	0	31	71	0.045
SL	1.0	1600	15	0	0	15	0.010*
ST	1.0	1600	8	0	1	9	0.022
SR	0.0	1600	25	0	1	26	0.017
EL	1.0	1600	31	0	0	31	0.020
ET	2.0	3200	423	24	31	478	0.152*
ER	0.0	1600	6	0	2	8	0.005
WL	1.0	1600	14	0	12	26	0.017*
WT	2.0	3200	227	38	14	279	0.099
WR	0.0	1600	36	0	0	36	0.023
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.337 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	3	0	4	7	0.004
NT	1.0	1600	13	0	1	14	0.032*
NR	0.0	1600	10	0	19	29	0.019
SL	1.0	1600	19	0	1	20	0.013*
ST	1.0	1600	4	0	2	6	0.026
SR	0.0	1600	33	0	2	35	0.022
EL	1.0	1600	27	0	2	29	0.018*
ET	2.0	3200	228	50	27	305	0.100
ER	0.0	1600	9	0	6	15	0.010
WL	1.0	1600	13	0	34	47	0.030
WT	2.0	3200	366	50	40	456	0.156*
WR	0.0	1600	41	0	0	41	0.026
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.319 A

* denotes critical movement

Intersection: Indian Peak Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	136	0	0	136	0.047*
NT	0.0	0	0	0	0	0	0.000
NR >	1.0	1600	47	0	2	49	0.031
SL	0.0	0	0	0	0	0	0.000
ST	0.0	0	0	0	0	0	0.000
SR	0.0	0	0	0	0	0	0.000
EL	0.0	0	0	0	0	0	0.000
ET	2.0	3200	1514	30	15	1559	0.487*
ER >	1.0	1600	291	0	0	291	0.182
WL	1.0	1600	113	0	1	114	0.072*
WT	2.0	3200	730	49	9	788	0.246
WR	0.0	0	0	0	0	0	0.000
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.706 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	529	0	0	529	0.184*
NT	0.0	0	0	0	0	0	0.000
NR >	1.0	1600	89	0	2	91	0.057
SL	0.0	0	0	0	0	0	0.000
ST	0.0	0	0	0	0	0	0.000
SR	0.0	0	0	0	0	0	0.000
EL	0.0	0	0	0	0	0	0.000*
ET	2.0	3200	950	64	16	1030	0.322
ER >	1.0	1600	195	0	0	195	0.122
WL	1.0	1600	109	0	3	112	0.070
WT	2.0	3200	1401	61	23	1485	0.464*
WR	0.0	0	0	0	0	0	0.000
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.748 C

* denotes critical movement
> denotes protected right turn

Intersection: Indian Peak Rd. (NS) / Crenshaw Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.000
NT	0.0	0	0	0	0	0	0.000
NR	0.0	0	0	0	0	0	0.000
SL	1.0	1600	210	0	0	210	0.132*
ST	0.0	0	0	0	0	0	0.000
SR >	1.0	1600	71	0	2	73	0.046
EL	1.0	1600	69	0	4	73	0.046
ET	2.0	3200	1192	24	58	1274	0.398*
ER	0.0	0	0	0	0	0	0.000
WL	0.0	0	0	0	0	0	0.000*
WT	2.0	3200	513	38	25	576	0.180
WR	1.0	1600	83	0	0	83	0.052
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.630 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.000
NT	0.0	0	0	0	0	0	0.000
NR	0.0	0	0	0	0	0	0.000
SL	1.0	1600	120	0	0	120	0.076
ST	0.0	0	0	0	0	0	0.000
SR >	1.0	1600	187	0	5	192	0.120*
EL	1.0	1600	110	0	3	113	0.071*
ET	2.0	3200	625	50	45	720	0.225
ER	0.0	0	0	0	0	0	0.000
WL	0.0	0	0	0	0	0	0.000
WT	2.0	3200	929	50	77	1056	0.330*
WR	1.0	1600	224	0	0	224	0.140
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.621 B

* denotes critical movement
> denotes protected right turn

Intersection: Silver Spur Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	259	10	0	269	0.169*
NT	2.0	3200	186	0	0	186	0.058
NR >	1.0	1600	116	0	0	116	0.073
SL	1.0	1600	113	0	0	113	0.071
ST	2.0	3200	240	0	0	240	0.109*
SR	0.0	1600	108	0	1	109	0.068
EL	1.0	1600	164	0	0	164	0.103
ET	2.0	3200	1387	24	17	1428	0.446*
ER	1.0	1600	317	6	0	323	0.203
WL	1.0	1600	183	0	0	183	0.115*
WT	2.0	3200	558	39	9	606	0.190
WR	1.0	1600	47	0	0	47	0.030
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.939 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	381	12	0	393	0.246*
NT	2.0	3200	319	0	0	319	0.100
NR >	1.0	1600	189	0	0	189	0.119
SL	1.0	1600	66	0	0	66	0.042
ST	2.0	3200	425	0	0	425	0.193*
SR	0.0	1600	191	0	2	193	0.121
EL	1.0	1600	284	0	2	286	0.179*
ET	2.0	3200	761	51	16	828	0.259
ER	1.0	1600	210	13	0	223	0.140
WL	1.0	1600	190	0	0	190	0.119
WT	2.0	3200	1005	49	24	1078	0.337*
WR	1.0	1600	91	0	0	91	0.057
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		1.055 F

* denotes critical movement
> denotes protected right turn

Intersection: Silver Spur Rd. (NS) / Hawthorne Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	3200	259	10	0	269	0.084
NT	1.0	1600	186	0	0	186	0.117*
NR >	1.0	1600	116	0	0	116	0.073
SL	1.0	1600	113	0	0	113	0.071*
ST	2.0	3200	240	0	0	240	0.075
SR	1.0	1600	108	0	1	109	0.068
EL	1.0	1600	164	0	0	164	0.103
ET	2.0	3200	1387	24	17	1428	0.446*
ER	1.0	1600	317	6	0	323	0.203
WL	1.0	1600	183	0	0	183	0.115*
WT	2.0	3200	558	39	9	606	0.190
WR	1.0	1600	47	0	0	47	0.030
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.849 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	3200	381	12	0	393	0.123*
NT	1.0	1600	319	0	0	319	0.199
NR >	1.0	1600	189	0	0	189	0.119
SL	1.0	1600	66	0	0	66	0.042
ST	2.0	3200	425	0	0	425	0.133*
SR	1.0	1600	191	0	2	193	0.121
EL	1.0	1600	284	0	2	286	0.179*
ET	2.0	3200	761	51	16	828	0.259
ER	1.0	1600	210	13	0	223	0.140
WL	1.0	1600	190	0	0	190	0.119
WT	2.0	3200	1005	49	24	1078	0.337*
WR	1.0	1600	91	0	0	91	0.057
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.872 D

* denotes critical movement
> denotes protected right turn

Intersection: Silver Spur Rd. (NS) / Crenshaw Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	1	0	0	1	0.001
NT	1.0	1600	1	0	0	1	0.002*
NR	0.0	1600	1	0	0	1	0.001
SL	1.5	2400	509	0	0	509	0.212*
ST	0.5	800	1	0	0	1	0.001
SR >	1.0	1600	80	0	2	82	0.052
EL	1.0	1600	198	0	4	202	0.126
ET	2.0	3200	1222	24	54	1300	0.407*
ER	0.0	1600	1	0	0	1	0.001
WL	1.0	1600	1	0	0	1	0.001*
WT	2.0	3200	475	38	23	536	0.168
WR	1.0	1600	462	0	0	462	0.289
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.722 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	1600	1	0	0	1	0.001
NT	1.0	1600	1	0	0	1	0.002*
NR	0.0	1600	1	0	0	1	0.001
SL	1.5	2400	585	0	0	585	0.244
ST	0.5	800	1	0	0	1	0.001
SR >	1.0	1600	410	0	6	416	0.260*
EL	1.0	1600	188	0	2	190	0.119*
ET	2.0	3200	554	50	43	647	0.203
ER	0.0	1600	1	0	0	1	0.001
WL	1.0	1600	1	0	0	1	0.001
WT	2.0	3200	778	50	71	899	0.281*
WR	1.0	1600	597	0	0	597	0.374
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.762 C

* denotes critical movement
> denotes protected right turn

Intersection: Hawthorne Blvd. (NS) / Sepulveda Blvd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	102	0	0	102	0.036
NT	4.0	6400	2266	12	18	2296	0.359*
NR >>	1.0	1600	331	6	0	337	0.211
SL	2.0	2880	183	0	0	183	0.064*
ST	4.0	6400	1658	19	10	1687	0.264
SR >>	1.0	1600	154	0	0	154	0.097
EL	2.0	2880	392	0	0	392	0.136
ET	3.0	4800	1136	0	0	1136	0.260*
ER	0.0	1600	111	0	0	111	0.070
WL	2.0	2880	458	10	0	468	0.163*
WT	3.0	4800	822	0	0	822	0.245
WR	0.0	1600	351	0	0	351	0.220
							=======
						Clearance Interval Percentage =	0.100
						Sum of Critical Movements =	0.946 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	297	0	0	297	0.103
NT	4.0	6400	2331	25	19	2375	0.371*
NR >>	1.0	1600	760	13	0	773	0.483
SL	2.0	2880	412	0	0	412	0.143*
ST	4.0	6400	2299	25	26	2350	0.367
SR >>	1.0	1600	166	0	0	166	0.104
EL	2.0	2880	345	0	0	345	0.120
ET	3.0	4800	881	0	0	881	0.216*
ER	0.0	1600	156	0	0	156	0.098
WL	2.0	2880	866	12	0	878	0.305*
WT	3.0	4800	1374	0	0	1374	0.349
WR	0.0	1600	299	0	0	299	0.187
							=======
						Clearance Interval Percentage =	0.100
						Sum of Critical Movements =	1.135 F

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Pacific Coast Hwy. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	287	6	0	293	0.102
NT	3.0	4800	1642	18	18	1678	0.360*
NR	0.0	1600	48	0	0	48	0.030
SL	2.0	2880	199	0	0	199	0.069*
ST	3.0	4800	772	29	10	811	0.169
SR >>	1.0	1600	207	0	0	207	0.130
EL	1.0	1600	323	0	0	323	0.202*
ET	3.0	4800	929	0	1	930	0.234
ER	0.0	1600	180	10	0	190	0.119
WL	1.0	1600	201	0	0	201	0.126
WT	3.0	4800	902	0	2	904	0.230*
WR	0.0	1600	199	0	0	199	0.125
							=======
						Clearance Interval Percentage =	0.100
						Sum of Critical Movements =	0.961 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	2.0	2880	304	13	0	317	0.110
NT	3.0	4800	2270	38	19	2327	0.623*
NR	0.0	1600	662	0	0	662	0.414
SL	2.0	2880	379	0	0	379	0.132*
ST	3.0	4800	2343	37	26	2406	0.501
SR >>	1.0	1600	201	0	0	201	0.126
EL	1.0	1600	328	0	0	328	0.205
ET	3.0	4800	833	0	2	835	0.210*
ER	0.0	1600	162	12	0	174	0.109
WL	1.0	1600	755	0	0	755	0.472*
WT	3.0	4800	1168	0	1	1169	0.309
WR	0.0	1600	312	0	0	312	0.195
							=======
						Clearance Interval Percentage =	0.100
						Sum of Critical Movements =	1.537 F

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	22	0	0	22	0.014
NT	2.0	3200	1220	24	17	1261	0.394*
NR >>	1.0	1600	465	0	0	465	0.291
SL	1.0	1600	100	0	1	101	0.064*
ST	2.0	3200	557	39	9	605	0.189
SR	1.0	1600	92	0	0	92	0.058
EL	1.5	2400	466	0	0	466	0.194
ET	1.5	2400	534	0	1	535	0.228*
ER	0.0	1600	12	0	0	12	0.008
WL	1.0	1600	192	0	0	192	0.121
WT	1.0	1600	309	0	2	311	0.195*
WR	1.0	1600	199	0	1	200	0.125
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.981 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	25	0	0	25	0.016*
NT	2.0	3200	739	51	16	806	0.252
NR >>	1.0	1600	207	0	0	207	0.130
SL	1.0	1600	133	0	2	135	0.085
ST	2.0	3200	1109	49	24	1182	0.370*
SR	1.0	1600	361	0	0	361	0.226
EL	1.5	2400	169	0	0	169	0.071
ET	1.5	2400	409	0	3	412	0.181*
ER	0.0	1600	22	0	0	22	0.014
WL	1.0	1600	235	0	0	235	0.147
WT	1.0	1600	386	0	1	387	0.242*
WR	1.0	1600	81	0	3	84	0.053
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.909 E

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	22	0	0	22	0.014
NT	2.0	3200	1220	24	17	1261	0.394*
NR >>	1.0	1600	465	0	0	465	0.291
SL	1.0	1600	100	0	1	101	0.064*
ST	2.0	3200	557	39	9	605	0.189
SR	1.0	1600	92	0	0	92	0.058
EL	1.5	2400	466	0	0	466	0.194
ET	1.5	2400	534	0	1	535	0.223*
ER	1.0	1600	12	0	0	12	0.008
WL	1.0	1600	192	0	0	192	0.121
WT	1.0	1600	309	0	2	311	0.195*
WR	1.0	1600	199	0	1	200	0.125
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.976 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	25	0	0	25	0.016*
NT	2.0	3200	739	51	16	806	0.252
NR >>	1.0	1600	207	0	0	207	0.130
SL	1.0	1600	133	0	2	135	0.085
ST	2.0	3200	1109	49	24	1182	0.370*
SR	1.0	1600	361	0	0	361	0.226
EL	1.5	2400	169	0	0	169	0.071
ET	1.5	2400	409	0	3	412	0.172*
ER	1.0	1600	22	0	0	22	0.014
WL	1.0	1600	235	0	0	235	0.147
WT	1.0	1600	386	0	1	387	0.242*
WR	1.0	1600	81	0	3	84	0.053
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.900 D

* denotes critical movement
>> denotes free right turn

Intersection: Hawthorne Blvd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	14	0	0	14	0.009
NT	2.0	3200	536	30	13	579	0.181*
NR	1.0	1600	294	24	33	351	0.220
SL	1.0	1600	71	0	0	71	0.044*
ST	2.0	3200	363	49	10	422	0.132
SR	1.0	1600	119	0	0	119	0.075
EL	1.0	1600	148	0	0	148	0.093
ET	1.0	1600	87	0	0	87	0.064*
ER	0.0	1600	12	0	1	13	0.009
WL	1.0	1600	144	38	20	202	0.126*
WT	1.0	1600	33	0	0	33	0.021
WR	1.0	1600	69	0	0	69	0.044
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.515 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	18	0	2	20	0.013*
NT	2.0	3200	382	64	19	465	0.146
NR	1.0	1600	136	50	34	220	0.138
SL	1.0	1600	38	0	1	39	0.024
ST	2.0	3200	432	61	25	518	0.162*
SR	1.0	1600	104	0	0	104	0.066
EL	1.0	1600	185	0	0	185	0.116
ET	1.0	1600	64	0	0	64	0.048*
ER	0.0	1600	10	0	2	12	0.008
WL	1.0	1600	254	50	46	350	0.219*
WT	1.0	1600	58	0	0	58	0.036
WR	1.0	1600	64	0	0	64	0.040
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.542 A

* denotes critical movement

Intersection: Project Entrance (NS) / Palos Verdes Dr. South (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	0	66	0	66	0.041*
NT	0.0	0	0	0	0	0	0.000
NR	1.0	1600	0	53	0	53	0.033
SL	0.0	0	0	0	0	0	0.000
ST	0.0	0	0	0	0	0	0.000
SR	0.0	0	0	0	0	0	0.000
EL	0.0	0	0	0	0	0	0.000
ET	2.0	3200	370	0	46	416	0.163*
ER	0.0	0	0	106	0	106	0.000
WL	1.0	1600	0	88	0	88	0.055*
WT	2.0	3200	608	0	52	660	0.206
WR	0.0	0	0	0	0	0	0.000
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.359 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	0	139	0	139	0.087*
NT	0.0	0	0	0	0	0	0.000
NR	1.0	1600	0	114	0	114	0.071
SL	0.0	0	0	0	0	0	0.000
ST	0.0	0	0	0	0	0	0.000
SR	0.0	0	0	0	0	0	0.000
EL	0.0	0	0	0	0	0	0.000
ET	2.0	3200	521	0	72	593	0.228*
ER	0.0	0	0	136	0	136	0.000
WL	1.0	1600	0	110	0	110	0.069*
WT	2.0	3200	520	0	72	592	0.185
WR	0.0	0	0	0	0	0	0.000
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.484 A

* denotes critical movement

Intersection: Crenshaw Blvd. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	38	0	2	40	0.025
NT	2.0	3200	1049	12	34	1095	0.342*
NR	1.0	1600	633	12	18	663	0.415
SL	1.0	1600	77	0	0	77	0.048*
ST	2.0	3200	483	19	15	517	0.162
SR	1.0	1600	114	0	0	114	0.072
EL	2.0	2880	395	0	0	395	0.137
ET	2.0	3200	523	0	1	524	0.176*
ER	0.0	1600	37	0	1	38	0.024
WL	2.0	2880	502	19	7	528	0.183*
WT	2.0	3200	470	0	1	471	0.192
WR	0.0	1600	142	0	0	142	0.089
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.849 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	34	0	1	35	0.022*
NT	2.0	3200	624	25	29	678	0.212
NR	1.0	1600	503	25	13	541	0.338
SL	1.0	1600	104	0	0	104	0.066
ST	2.0	3200	774	25	44	843	0.264*
SR	1.0	1600	168	0	0	168	0.105
EL	2.0	2880	209	0	0	209	0.073
ET	2.0	3200	502	0	2	504	0.172*
ER	0.0	1600	42	0	3	45	0.028
WL	2.0	2880	478	25	24	527	0.183*
WT	2.0	3200	418	0	3	421	0.153
WR	0.0	1600	66	0	0	66	0.042
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.741 C

* denotes critical movement

Intersection: Crenshaw Blvd. (NS) / Crest Rd. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	34	0	1	35	0.022
NT	1.0	1600	126	0	0	126	0.079*
NR	1.0	1600	11	0	0	11	0.007
SL	1.0	1600	69	0	0	69	0.044*
ST	1.5	2400	91	0	0	91	0.038
SR	1.5	2400	213	38	25	276	0.115
EL	1.5	2400	566	24	62	652	0.272*
ET	0.5	800	21	0	0	21	0.027
ER >>	1.0	1600	30	0	0	30	0.019
WL	0.0	1600	15	0	0	15	0.010
WT	1.0	1600	25	0	0	25	0.026
WR	1.0	1600	81	0	0	81	0.051*
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.546 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	32	0	2	34	0.022
NT	1.0	1600	76	0	1	77	0.048*
NR	1.0	1600	5	0	0	5	0.003
SL	1.0	1600	115	0	0	115	0.072*
ST	1.5	2400	132	0	0	132	0.055
SR	1.5	2400	451	50	72	573	0.239
EL	1.5	2400	284	50	45	379	0.158*
ET	0.5	800	28	0	0	28	0.036
ER >>	1.0	1600	47	0	2	49	0.031
WL	0.0	1600	3	0	0	3	0.002
WT	1.0	1600	39	0	0	39	0.027
WR	1.0	1600	78	0	0	78	0.049*
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.427 A

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Dr. East (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	307	0	0	307	0.192*
NT	2.0	3200	288	0	0	288	0.090
NR	1.0	1600	168	0	0	168	0.105
SL	1.0	1600	99	0	0	99	0.062
ST	2.0	3200	95	0	0	95	0.030*
SR	1.0	1600	51	0	1	52	0.033
EL	1.0	1600	52	0	2	54	0.034
ET	2.0	3200	1206	12	17	1235	0.386*
ER	1.0	1600	193	0	0	193	0.121
WL	1.0	1600	119	0	0	119	0.075*
WT	2.0	3200	972	19	7	998	0.312
WR >>	1.0	1600	250	0	0	250	0.156
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.783 C

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	178	0	0	178	0.111*
NT	2.0	3200	114	0	0	114	0.036
NR	1.0	1600	98	0	0	98	0.062
SL	1.0	1600	220	0	0	220	0.138
ST	2.0	3200	228	0	0	228	0.072*
SR	1.0	1600	89	0	3	92	0.058
EL	1.0	1600	75	0	1	76	0.048
ET	2.0	3200	1196	25	14	1235	0.386*
ER	1.0	1600	308	0	0	308	0.193
WL	1.0	1600	119	0	0	119	0.075*
WT	2.0	3200	1107	25	24	1156	0.361
WR >>	1.0	1600	105	0	0	105	0.066
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.744 C

* denotes critical movement
>> denotes free right turn

Intersection: Palos Verdes Dr. East (NS) / Palos Verdes Dr. South (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.000
NT	0.0	0	0	0	0	0	0.000
NR	0.0	0	0	0	0	0	0.000
SL	1.0	1600	29	0	0	29	0.019
ST	0.0	0	0	0	0	0	0.000
SR	1.0	1600	75	0	1	76	0.048*
EL	1.0	1600	76	0	0	76	0.048*
ET	1.0	1600	445	53	100	598	0.374
ER	0.0	0	0	0	0	0	0.000
WL	0.0	0	0	0	0	0	0.000
WT	1.0	1600	445	88	61	594	0.393*
WR	0.0	1600	34	0	0	34	0.022
							=======
						Clearance Interval Percentage =	0.100
						Sum of Critical Movements =	0.589 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	0.0	0	0	0	0	0	0.000
NT	0.0	0	0	0	0	0	0.000
NR	0.0	0	0	0	0	0	0.000
SL	1.0	1600	39	0	0	39	0.025
ST	0.0	0	0	0	0	0	0.000
SR	1.0	1600	49	0	2	51	0.032*
EL	1.0	1600	59	0	2	61	0.038*
ET	1.0	1600	615	114	90	819	0.512
ER	0.0	0	0	0	0	0	0.000
WL	0.0	0	0	0	0	0	0.000
WT	1.0	1600	483	110	132	725	0.488*
WR	0.0	1600	55	0	0	55	0.034
							=======
						Clearance Interval Percentage =	0.100
						Sum of Critical Movements =	0.658 B

* denotes critical movement

Intersection: Western Ave. (NS) / Palos Verdes Dr. North (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	573	0	1	574	0.359*
NT	2.0	3200	871	6	1	878	0.274
NR	1.0	1600	216	0	4	220	0.138
SL	1.0	1600	37	0	0	37	0.023
ST	2.0	3200	453	10	1	464	0.145*
SR	1.0	1600	165	0	0	165	0.103
EL	1.0	1600	77	0	0	77	0.048
ET	3.0	4800	1159	12	16	1187	0.247*
ER	1.0	1600	211	0	1	212	0.133
WL	1.0	1600	110	0	3	113	0.071*
WT	3.0	4800	579	19	6	604	0.126
WR	1.0	1600	65	0	0	65	0.041
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.922 E

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	400	0	3	403	0.252
NT	2.0	3200	773	13	3	789	0.247
NR	1.0	1600	148	0	6	154	0.097
SL	1.0	1600	38	0	0	38	0.024
ST	2.0	3200	791	12	2	805	0.252*
SR	1.0	1600	255	0	0	255	0.160
EL	1.0	1600	203	0	0	203	0.127
ET	3.0	4800	700	25	12	737	0.154
ER	1.0	1600	693	0	2	695	0.435*
WL	1.0	1600	314	0	6	320	0.201*
WT	3.0	4800	764	25	21	810	0.169
WR	1.0	1600	33	0	0	33	0.021
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.988 E

* denotes critical movement

Intersection: Western Ave. (NS) / 9th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	127	0	0	127	0.080
NT	2.0	3200	908	12	16	936	0.293*
NR	1.0	1600	85	0	0	85	0.054
SL	1.0	1600	50	0	2	52	0.033*
ST	2.0	3200	468	20	10	498	0.156
SR	1.0	1600	29	0	2	31	0.020
EL	1.0	1600	27	0	4	31	0.020
ET	2.0	3200	125	0	0	125	0.039*
ER	1.0	1600	80	0	0	80	0.050
WL	1.0	1600	78	0	0	78	0.049*
WT	2.0	3200	126	0	0	126	0.039
WR	1.0	1600	77	0	3	80	0.050
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.514 A

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	97	0	0	97	0.061*
NT	2.0	3200	664	26	20	710	0.222
NR	1.0	1600	62	0	0	62	0.039
SL	1.0	1600	80	0	8	88	0.055
ST	2.0	3200	1005	24	28	1057	0.331*
SR	1.0	1600	74	0	10	84	0.053
EL	1.0	1600	31	0	10	41	0.026
ET	2.0	3200	136	0	0	136	0.043*
ER	1.0	1600	165	0	0	165	0.103
WL	1.0	1600	118	0	0	118	0.074*
WT	2.0	3200	145	0	0	145	0.045
WR	1.0	1600	72	0	7	79	0.049
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.609 B

* denotes critical movement

Intersection: Western Ave. (NS) / 25th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	43	0	0	43	0.027
NT	2.0	3200	165	0	0	165	0.052*
NR	1.0	1600	33	0	0	33	0.021
SL	1.0	1600	80	0	1	81	0.051*
ST	2.0	3200	108	0	0	108	0.034
SR >	1.0	1600	327	20	8	355	0.222
EL	1.0	1600	434	12	13	459	0.287*
ET	2.0	3200	242	41	88	371	0.116
ER	1.0	1600	57	0	0	57	0.036
WL	1.0	1600	20	0	0	20	0.013
WT	2.0	3200	241	68	53	362	0.175*
WR	0.0	1600	193	0	2	195	0.122
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.665 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	83	0	0	83	0.052
NT	2.0	3200	154	0	0	154	0.048*
NR	1.0	1600	55	0	0	55	0.034
SL	1.0	1600	268	0	5	273	0.171*
ST	2.0	3200	213	0	0	213	0.067
SR >	1.0	1600	481	24	20	525	0.328
EL	1.0	1600	402	26	13	441	0.276*
ET	2.0	3200	399	88	77	564	0.176
ER	1.0	1600	55	0	0	55	0.034
WL	1.0	1600	110	0	0	110	0.069
WT	2.0	3200	305	86	113	504	0.213*
WR	0.0	1600	172	0	5	177	0.111
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.808 D

* denotes critical movement
> denotes protected right turn

Intersection: Western Ave. (NS) / 25th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Alternate

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	43	0	0	43	0.027
NT	2.0	3200	165	0	0	165	0.052*
NR	1.0	1600	33	0	0	33	0.021
SL	1.0	1600	80	0	1	81	0.051*
ST	2.0	3200	108	0	0	108	0.034
SR >	1.0	1600	327	20	8	355	0.222
EL	1.0	1600	434	12	13	459	0.287*
ET	2.0	3200	242	41	88	371	0.116
ER	1.0	1600	57	0	0	57	0.036
WL	1.0	1600	20	0	0	20	0.013
WT	2.0	3200	241	68	53	362	0.113*
WR	1.0	1600	193	0	2	195	0.122
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.603 B

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	83	0	0	83	0.052
NT	2.0	3200	154	0	0	154	0.048*
NR	1.0	1600	55	0	0	55	0.034
SL	1.0	1600	268	0	5	273	0.171*
ST	2.0	3200	213	0	0	213	0.067
SR >	1.0	1600	481	24	20	525	0.328
EL	1.0	1600	402	26	13	441	0.276*
ET	2.0	3200	399	88	77	564	0.176
ER	1.0	1600	55	0	0	55	0.034
WL	1.0	1600	110	0	0	110	0.069
WT	2.0	3200	305	86	113	504	0.158*
WR	1.0	1600	172	0	5	177	0.111
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.753 C

* denotes critical movement
> denotes protected right turn

Intersection: Gaffey St. (NS) / 9th St. (EW)

Project: Long Point Specific Plan

Traffic Condition: Existing + Ambient Growth + Project + Other
Lane Configuration: Initial

AM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	55	0	0	55	0.034
NT	2.0	3200	1163	41	75	1279	0.400*
NR	1.0	1600	31	0	10	41	0.026
SL	1.0	1600	41	0	0	41	0.026*
ST	2.0	3200	703	68	46	817	0.256
SR	1.0	1600	58	0	0	58	0.036
EL	1.0	1600	306	0	0	306	0.191*
ET	1.0	1600	245	0	1	246	0.154
ER	1.0	1600	29	0	0	29	0.019
WL	1.0	1600	61	0	5	66	0.042
WT	1.0	1600	148	0	1	149	0.120*
WR	0.0	1600	42	0	0	42	0.027
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.837 D

PM Intersection Capacity Analysis

Move	Lanes	Capacity	VOLUMES Future BG	Project	Other	Total	V/C Ratio
NL	1.0	1600	50	0	0	50	0.032*
NT	2.0	3200	1100	88	67	1255	0.392
NR	1.0	1600	12	0	7	19	0.012
SL	1.0	1600	66	0	0	66	0.042
ST	2.0	3200	1421	86	97	1604	0.501*
SR	1.0	1600	101	0	0	101	0.064
EL	1.0	1600	97	0	0	97	0.061*
ET	1.0	1600	155	0	3	158	0.099
ER	1.0	1600	39	0	0	39	0.025
WL	1.0	1600	52	0	12	64	0.041
WT	1.0	1600	234	0	2	236	0.188*
WR	0.0	1600	64	0	0	64	0.040
							=======
					Clearance Interval Percentage =		0.100
					Sum of Critical Movements =		0.882 D

* denotes critical movement

APPENDIX K

LSA PARKING DEMAND ANALYSIS

LSA

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May 24, 2000

To: Long Point Resort Project Team

From: Tony Petros, LSA Associates, Inc.

Subject: Revised Project Trip Generation, Internal Circulation Design, and Parking Demand Analysis

This technical memorandum describes the anticipated on-site traffic and parking characteristics for the proposed Long Point Resort project. This memo represents an update to the previous technical study dated July 28, 1999, based on revisions to the site plan and project objectives. A description of the project is followed by a trip generation estimate. The trip generation is used to forecast traffic on the internal streets, and the character of the proposed access location on Palos Verdes Drive. In addition, a parking demand analysis is presented to describe the potential parking characteristics of the proposed project and to identify the potential peak parking demand.

PROJECT DESCRIPTION

The Long Point Resort is composed of approximately 172 acres on the Palos Verdes Peninsula in the City of Rancho Palos Verdes. The project consists of the following proposed land uses on the site:

1) *Destination Resort*
   - 400 hotel rooms/bungalows
   - 50 casitas units (3 keys each)
   - 32 resort villas
   - 45,000 square feet of public meeting rooms with 15,000 square feet of back-of-house and hallways
   - 12,000 square feet of retail facilities
   - 25,000 square foot spa/fitness center
   - 16,000 square feet of restaurants
   - 3 tennis courts
   - 6 swimming pools
   - 100 public parking spaces

2) *Golf Course*
- 9 holes (76.2 Acres)
- 8,000 square foot club house
- 8,000 square foot golf cart storage

TRIP GENERATION AND INTERNAL CIRCULATION DESIGN

Trip Generation

Daily and a.m. and p.m. peak hour trips are generated for the project site based on the application of trip rates to the total square footage of the proposed land uses. The trip rates for this work effort are based on two sources, the Institute of Transportation Engineers (ITE), *Trip Generation*, Sixth Edition (1997) and the *Resort Hotel Traffic Study*, prepared by Austin Foust Associates, Inc. (1986). Resort hotels have special characteristics that distinguish them from the more traditional hotels. Rather than the hotel merely serving as a convenient place for guests to stay while visiting the area, it is a primary attraction in itself because of the attractiveness of the accommodation facility and the on-site amenities that are available. In particular, the amount of traffic entering and exiting the hotel on a daily basis is significantly lower. Guests find most of their daily activities on site rather than off site. Furthermore, many resort hotels are located in more remote areas, thereby creating an isolated, relaxing destination quality. The result is considerably lower trip generation than would be experienced at a more traditional hotel, where daily activities and the surrounding environment require using a vehicle to travel to and from the hotel.

The Resort Hotel Study surveyed destination resort hotels within the Southern California area and determined appropriate trip generation rates for this type of use. All of the hotels included restaurants, retail, and meeting/conference facilities in-house. The amenities at each location included spa, golf course, tennis courts, beaches, and other recreational attractions. Based on the similar characteristics of these sites to the proposed Long Point Resort project, the Austin Foust trip generation rates were used for the hotel and casitas components instead of the ITE rates.

The "resort hotel" trip rates assume some retail and restaurant uses on site. Based on marketing information provided by the project team, however, approximately 40 percent of the Long Point retail/restaurant patronage will come from other than hotel guests. These trips would be patrons living in the immediate area of Rancho Palos Verdes. The size of these uses is also larger than assumed in a "typical" hotel. Therefore, trips associated with restaurant and retail uses that will be produced from outside the resort have been generated separately. While this may seem as if the trips are double counted, we believe this is the appropriate method and, ultimately, presents a conservative estimate of the overall trip generation.

The daily trip rates for the fitness center are not included in the ITE manual. LSA reviewed numerous other sources and selected a daily trip rate for the fitness center from the City of Newport Beach General Plan trip rates. This fitness center trip rate includes swimming pools, tennis courts, and exercise equipment on site.

It is estimated that a percentage of patrons within the hotel will use the other facilities on site (i.e., retail, restaurants, conference center, golf course, and fitness center). The project trip generation has been adjusted to account for only new trips associated with the project. This internal use does not constitute a new project trip, as the patron is already on site. For purposes of this analysis, a 60 percent adjustment in trips was applied to the golf course and a 70 percent adjustment in trips was applied for the fitness center. These internal trip capture percentages are based on marketing information provided by the project team.

Table A (attached) presents the trip generation for the proposed project. The ITE land use codes used for each project component are noted at the bottom of the table. The proposed project is forecast to generate approximately 5,240 daily trips, of which 259 trips occur in the a.m. peak hour (156 inbound and 103 outbound) and 417 trips occur in the p.m. peak hour (200 inbound and 217 outbound).

Trip Distribution and Assignment

Once trips are generated for the proposed project, the direction of travel, or trip distribution, is identified. The project trip distribution used in the previously approved Master Plan EIR included approximately 35 percent of the project trips forecast to travel northbound to Hawthorne Boulevard, 13 percent forecast to travel westbound to Redondo Beach, and 52 percent forecast to travel eastbound to Western Avenue and beyond. The proposed Long Point Resort project, however, will attract vehicle trips primarily from the north, via Hawthorne Boulevard. This revised distribution estimate is based on changes in marketing strategies and employee origins. As a result, approximately 60 percent of the project trips are forecast to travel northbound to Hawthorne Boulevard, 10 percent are forecast to travel westbound to Redondo Beach, and 30 percent are forecast to travel eastbound to Western Avenue and beyond.

Application of the trip distribution percentages to the project trip generation results in a trip assignment, which is illustrated in Figure 2 (attached). The existing traffic volume on Palos Verdes Drive was based on the *Long Point Specific Plan Existing Conditions* report (RKJK, February 26, 1998).

Internal Circulation and Project Entry Geometrics

Using the project trip assignment, LSA has identified recommended lane geometrics for the primary roadway serving the resort and the project entrance onto Palos Verdes Drive.

The forecast volume can be accommodated by a two lane roadway serving all of the uses on site. Any additional lanes could be provided for aesthetics or on-street parking, but would not be required from a capacity standpoint. The northbound access out of the project site should include one left turn lane and one right turn lane based on the forecast traffic volumes. The westbound left turn demand can be accommodated by the existing left turn lane into the site (with more than adequate storage length).

The City of Rancho Palos Verdes does not have roadway design standards for residential and private roadways. According to the American Association of State Highway and Transportation Officials (AASHTO) *Geometric Design of Highways and Streets (page 333)*, the minimum lane width for low volume residential streets is approximately nine feet; however, a width of ten feet is more desirable. This standard does not provide for medians, bicycle lanes or on-street parking width. This design can be accomplished without either impeding traffic flow along the project residential roadway or compromising vehicular safety. The Long Point Resort internal circulation system may apply these guidelines for the design of the residential streets. This design width can also be applied for the "spine" road; however, with a higher volume, it may be beneficial to provide at minimum two 12 foot lanes.

Based on these recommendations, the project engineer (Psomas) has provided a conceptual striping plan for the project entry. Figure 3 (attached) illustrates the main entrance improvements. Based on discussion with the City, the spine road has been designed in excess of the minimum standard. Two 20 foot lanes are planned, separated horizontally by a 10 foot median.

Signal Warrant Analysis

A signal warrant analysis was conducted for the project entrance onto Palos Verdes Drive. The Caltrans Signal Warrant 11, *Peak Hour Volume Warrant*, contained in the current *Traffic Manual*,[1] was used to determine whether traffic signalization is warranted at the project entry. This warrant is applied where the volume of traffic on a major street is so heavy that traffic on a minor intersection suffers excessive delays or hazard upon entering or crossing the major street.

Signal warrants are based on the minimum approach volume requirements for the major street (total of both approaches) and the minor street (one direction only). These volume requirements have been established for two levels of development: urban and rural. According to the Caltrans *Traffic Manual*, "When the 85th percentile speed of major street traffic exceeds 40 miles per hour, *or* the intersection lies within a built-up area of an isolated community having a population less than 10,000, the location is considered rural. All other areas are considered urban." These definitions are general, in order to provide basic guidelines as to whether another signal is located in the proximity of the intersection examined. Such an intersection would affect the overall approach speed and opportunities to enter the major street. Since the prevailing speeds along the study area arterials are in excess of 40 miles per hour, the rural requirements were used for the signal warrant analysis.

As presented in Figure 4 (attached), the intersection of Palos Verdes Drive and the project main entry warrants careful consideration of a traffic signal due to the a.m. and p.m. peak hour traffic volume forecast. The minor street approach volume of 103 vehicles in the a.m. peak hour just exceeds the lower threshold volume for an approach with two or more lanes (i.e., 100 vehicles per hour). The forecast p.m. peak hour volume of 217 vehicles exceeds this threshold also.

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1 *Traffic Manual*, California Department of Transportation (Caltrans), November, 1996.

The Caltrans *Traffic Manual* states that the decision to install a signal should not be based solely upon the warrants. Delay, congestion, approach conditions, driver confusion, future land use, or other evidence of the need for right- of-way assignment beyond what could be provided by a stop sign must be demonstrated.

Level of Service at Project Entry

To determine peak hour intersection operation at signalized intersections, the Intersection Capacity Utilization (ICU) methodology was used. The ICU methodology compares the v/c ratios of conflicting turn movements at an intersection, sums these critical conflicting v/c ratios for each intersection approach, and determines the overall ICU. The resulting ICU is expressed in terms of level of service, where LOS A represents free flow activity and LOS F is overcapacity operations. The upper limit of LOS D, represented by an ICU value of 0.90 or lower, is considered satisfactory operation. An ICU value in excess of 0.90, either LOS E or LOS F, is considered unsatisfactory.

The turn movements at the project entry were based on the project trip assignment and the existing traffic volumes on Palos Verdes Drive. The ICU worksheet for Palos Verdes and the project entry is provided as an attachment. The recommended project entry geometrics are included in this operational analysis. As a result, this intersection operates at level of service (LOS) A in both the a.m. and p.m. peak hours.

Conclusions

The proposed Long Point Resort project is estimated to generate approximately 5,240 average daily trips (259 a.m. peak hour and 417 p.m. peak hour). The trip generation for the hotel and casitas components was based on trip rates developed as part of the Austin Foust Resort Hotel study (1986). The trip generation for all other components was determined based on rates identified in the Institute of Transportation Engineers (ITE), *Trip Generation*, Sixth Edition (1997). The trip generation presents new trips associated with the hotel uses, and discounts any internal use by guests already on site.

The design of the project entry onto Palos Verdes Drive, including geometrics, is based on the project trip generation, distribution, and assignment. The forecast traffic volume can be accommodated by a two lane roadway serving all of the uses on site. The northbound access onto Palos Verdes Drive should include two turn lanes. The westbound left turn demand can be accommodated by the existing left turn lane and storage capacity.

The AASHTO manual recommends a minimum of nine foot travel lanes on low volume residential roadways. The Long Point Resort project has planned 20 foot lanes along the spine road, separated by a 10 foot median.

A signal warrant analysis was conducted for the intersection of the Project Entry and Palos Verdes Drive. Based on the results of the Caltrans peak hour warrant, this intersection warrants signalization.

The level of service at the intersection of Palos Verdes Drive and the Long Point Resort Project entry is LOS A in the a.m. and p.m. peak hours. Therefore, one project entrance can accommodate the forecast project traffic. There does not appear to be a need to provide two separate access driveways onto Palos Verdes Drive.

PARKING DEMAND ANALYSIS

Comparison to Similar Destination Resorts

A research effort was conducted to compare the proposed project to other facilities in the area that function in a similar manner. The purpose of this comparison is to identify parking rates of similar projects that are applicable to the proposed Long Point Resort.

Large-scale hotel facilities contain varying components of meeting space, dining, recreation, and retail facilities and, depending on location and quality level, they service various market segments that may have differing parking demands. As a result, the ratio of the number of parking spaces per guest room can vary widely from property to property, and a simple, reliable comparison to a closely similar property is not often available. Nonetheless, four sources of information that provide perspectives on parking demand generated by similar facilities were identified. The information sources are summarized below:

1. Institute of Transportation Engineers

The ITE *Parking Generation*, August, 1987, manual is a key reference source for identifying parking demand in the transportation engineering profession. Parking rates are determined based on hotel surveys nationwide. This source describes a convention hotel as a place of lodging providing sleeping accommodations, restaurants, lounges, and meeting and banquet rooms capable of handling conventions. These hotels often have retail and service shops within the facility. The average weekend parking rates for convention hotels range between 0.73 and 1.33 spaces per room. For comparative purposes, the parking rates surveyed for non-convention hotels range between 0.29 and 0.68 spaces per room.

2. Resort Hotel Traffic Study

The *Resort Hotel Traffic Study* was prepared by Austin-Foust Associates, Inc. in December, 1986. This study identified parking rates based on actual parking surveys for the following resort hotels:

- Hotel del Coronado - Coronado Island, California
- La Costa - San Diego County, California
- Marriott Hotel - Newport Beach, California
- Hyatt at Hilton Head - South Carolina.

The amenities of these resort hotels are very similar to those of the proposed Long Point Resort. The hotels described above all include conference and meeting facilities, restaurants, gift shops, spas, tennis, and golf on site.

The following table identifies the number of rooms for each hotel and the prevailing parking rate:

Hotel	Number of Rooms	Parking Spaces per Room
Del Coronado	689	0.99
La Costa	376	1.39[1]
Marriott	400	0.81
Hyatt	359	0.80

As this table indicates, the highest parking rate was at the 376 room La Costa hotel. The rate of 1.39 spaces per room was adjusted to account for non-hotel guests. The overall observed parking rate was 1.88 spaces per room.

3. *Hotel Planning and Design*

A key reference material in the hotel planning business is *Hotel Planning and Design*, by Walter A. Rutes and Richard H. Penner. This source describes conceptual planning elements for different types of hotels and/or motels. One crucial element in hotel planning is the provision for sufficient parking. This document provides a summary of parking rates for different types of hotels according to spaces per room. The following table provides this summary:

Type of Hotel	Parking Rate (Spaces/ room)	Description
Downtown	0.4 - 0.8	Assumes limited function space
Suburban	1.2 - 1.4	Heavy local meeting/banquet use
Airport	0.6 - 1.0	Moderate rental car use

[1] La Costa employee parking included non-guest membership users of spa, tennis courts, and golf facilities. Observed parking rate was 1.88 spaces per room.

Type of Hotel	Parking Rate (Spaces/ room)	Description
Highway	1.0 - 1.2	Some local banquet/F&B use
Resort	0.2 - 1.4	Varies by location/proximity to urban centers
Convention	0.8 - 1.4	Regional conv. hotels need higher provision
Conference	1.0 - 1.3	If full house, minimum local use
Residential	1.2 - 2.0	May need two spaces/condominium
All-suite	0.8 - 1.2	Limited public functions
Super-luxury	1.0 - 1.2	Limited public functions
Mega-hotel	1.0 - 1.2	Limited local business; high rental car or shuttle use
Mixed-use	0.6 - 1.2	Highly variable depending on other activities
Casino	0.8 - 2.0	Varies by location; extensive bus parking

4. The Waterfront Hilton Beach Resort Parking Survey

The Waterfront Hilton Beach Resort is a 300 room hotel located in Huntington Beach. As originally constructed, the Waterfront Hilton Beach Resort conformed to the City of Huntington Beach parking code for hotel use (i.e., 1.1 parking spaces per hotel room). Approximately 330 parking spaces were required and constructed for the existing hotel. However, over time the total on-site parking supply available for the Waterfront Hotel has grown to approximately 594 spaces. A parking accumulation study was conducted in February, 1994, to determine the actual parking demand. The peak demand is determined to be 427 spaces, or a parking rate of 1.47 spaces per occupied room. This parking rate inherently includes all of the amenities on site, including the 21,500 square feet of conference and banquet facilities.

It should be noted that the resort hotel and conference components operate in conjunction with each other, not independently. The meeting rooms/exhibit space is not large enough for independent exhibition events associated with typical convention centers (e.g., Long Beach or Anaheim Convention Center). The occupancy of the hotel will directly correspond with the use of the meeting rooms and conference room facilities. Therefore, it should be recognized that the parking demand for the meeting facility is a function of the occupancy of the hotel. The two components are intended to share the parking demand and not be viewed as independent land uses.

Project Parking Characteristics

The current project description includes a parking supply of 925 spaces, including approximately 100 spaces designated for public parking. The total parking supply also includes subterranean valet parking for the hotel guests. Approximately 30 percent of the total parking supply will be valet parking.

Based on this information and the total parking supply provided, the subject development will have a parking ratio of approximately 1.7 spaces per guest room (including the public parking spaces). The project will have a parking ratio of 1.5 spaces per room, not including the public parking spaces. This parking rate for the 550 room hotel, including multiple keys for the casitas and all of the amenities on site, including the public meeting space, will meet the overall parking demand for hotel guests and employees.

Conclusions

As discussed above, the Long Point Resort project is a unique project, that will function as a destination resort and not a site of independent land uses. The occupancy of the hotel is directly related to the demand of the other facilities on site and, therefore, should be parked as a single resort use. Therefore, a methodical approach is required to determine the parking demand for the Long Point Resort.

For resort/convention hotels, the ITE Parking Generation manual cites a range of 0.73 to 1.33 parking spaces per room, the Resort Hotel Traffic Study cites a range of 0.80 to 1.39, the reference book Hotel Planning and Design suggests 0.8 to 1.4 parking spaces per room and the existing Waterfront Hilton Beach Resort has a parking supply of 1.47 spaces per room. The parking rate described from these resources inherently includes the amenities and public meeting facilities within the rate structure. Therefore, as the proposed Long Point Resort project will function in a similar manner as these hotels (including amenities on site), a parking rate commensurate with these definitions is appropriate. Based on our experience with resort/conference hotels, an aggregate parking rate of 1.4 or 1.5 spaces per room would be appropriate for use in the project design.

Assuming a parking rate of 1.5 spaces per room, the proposed project would require 825 parking spaces. The project, however, provides 925 spaces, spaces that will be used for other uses on site. This parking surplus will be used for public parking (i.e., approximately 100 spaces designated for public parking). In addition, this surplus can be used for occasional parking overflow of conferences, golf course, and other amenities on site.

Based on information from the project team, the Long Point Resort will have approximately 400 employees. These employees, however, will work separate shifts, with a maximum of approximately 100 employees on site at one time (with the exception of major conferences, banquets, and/or meetings). Employee parking should be designated in remote locations on the project site, and not adjacent to the primary uses. It is our estimation that approximately 50 percent of the employees will

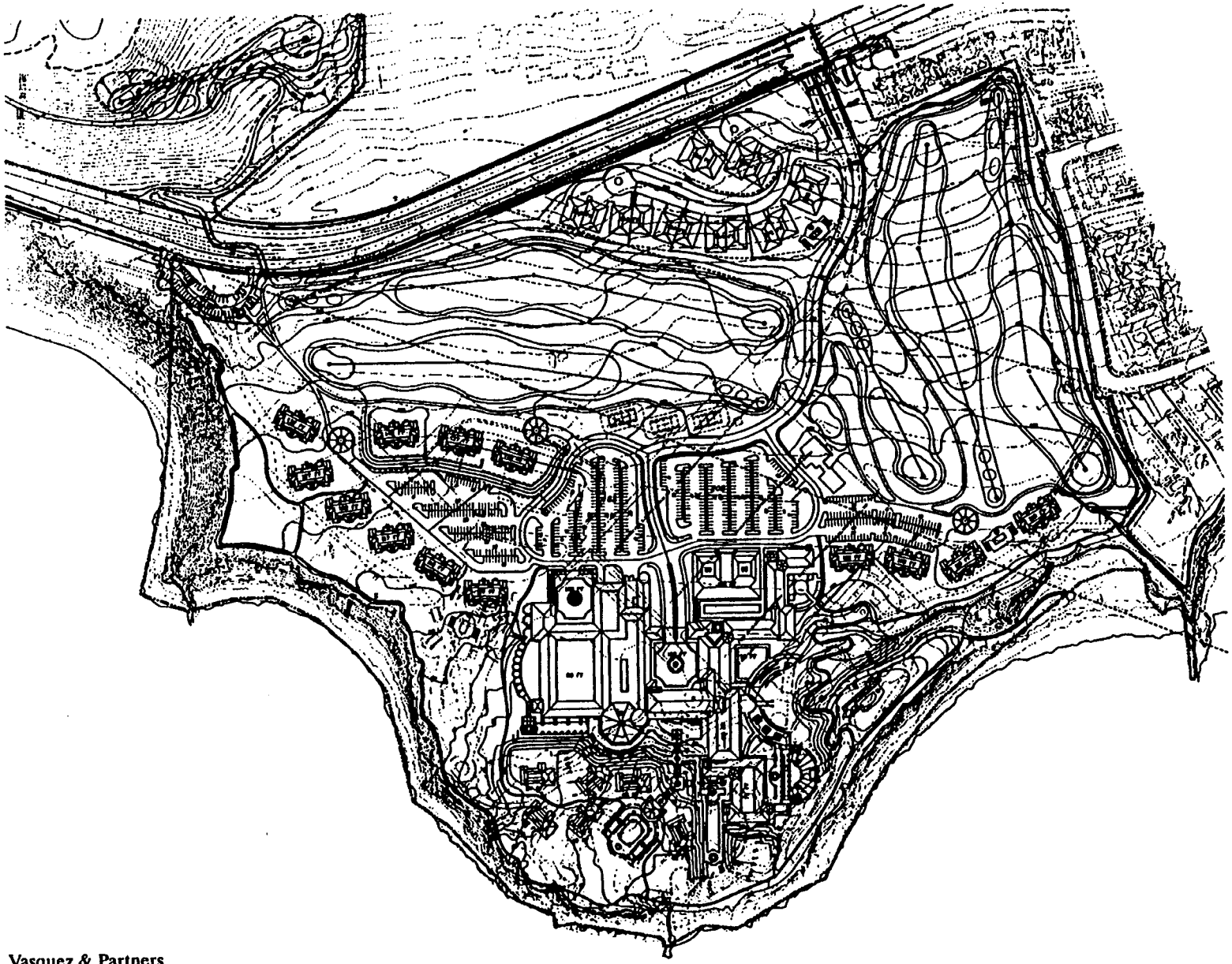
be transit dependent, based on information from similar hotels. The parking buffer of approximately 100 spaces identified above may allow for additional employee parking not anticipated.

The current project description includes a parking supply of 925 spaces. As a result, the subject development will have a parking ratio of approximately 1.7 spaces per guest room (including public parking). Without the public parking supply, the project will include 825 parking spaces, or a parking ratio of 1.5 spaces per guest room. Either parking rate for the 550 room hotel, including multiple keys for the casitas, all of the amenities on site, and public meeting facilities, appears to be adequate to meet the overall parking demand for hotel guests and employees of the Long Point Resort. The parking surplus forecast for this site can be used for occasional parking overflow of conferences, golf course, employee parking, and other amenities on site.

Attachments

Project Team Distribution List:

Robert Lowe, Destination Hotels & Resorts
Michael Mohler, Destination Hotels & Resorts
Paul Edwards, Forma



Source: McLarand, Vasquez & Partners

5/22/99(DHR830)

Figure 1

N

LSA

Scale in Feet

0 200 400

Long Point Resort Site Plan

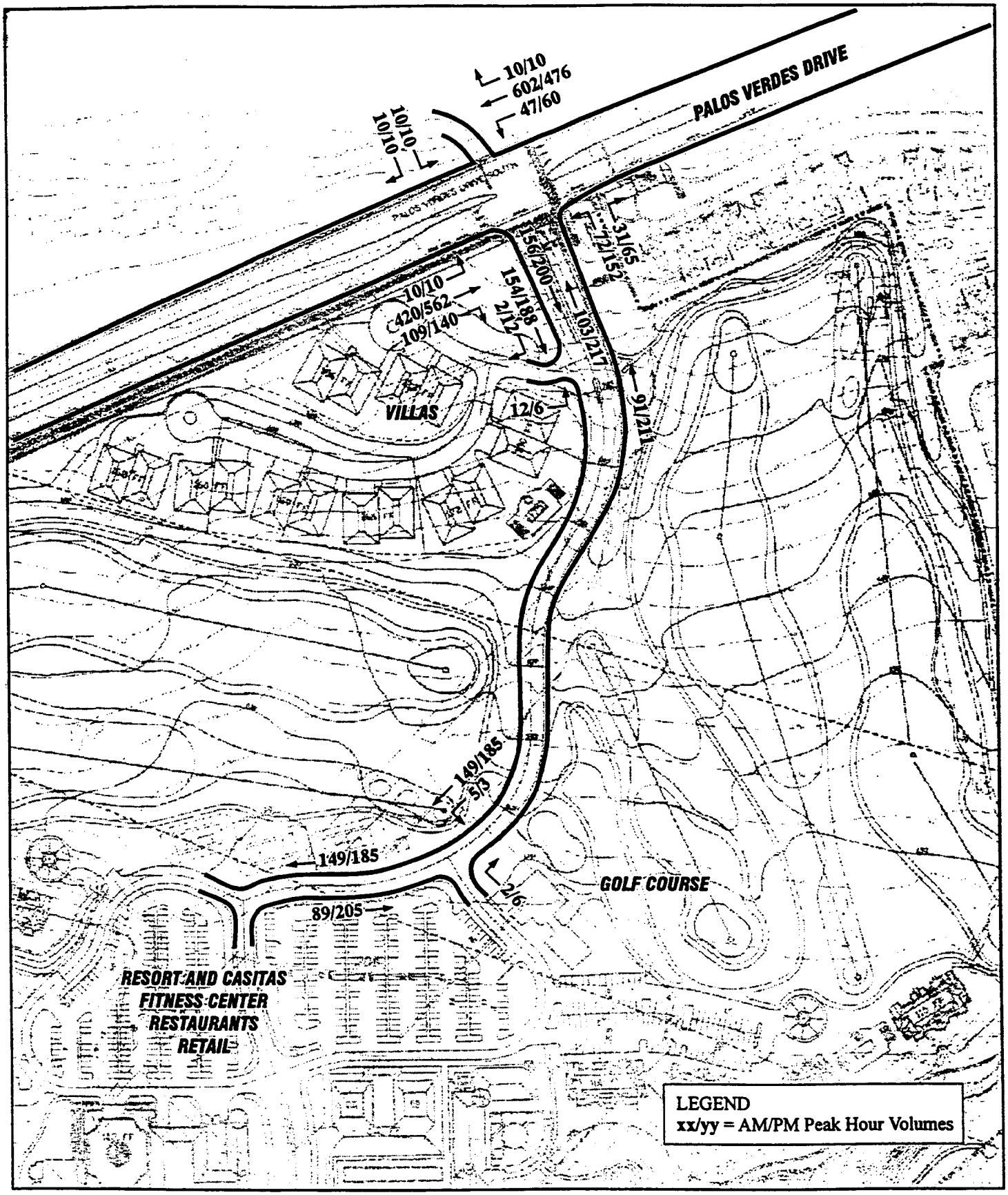


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Figure 2

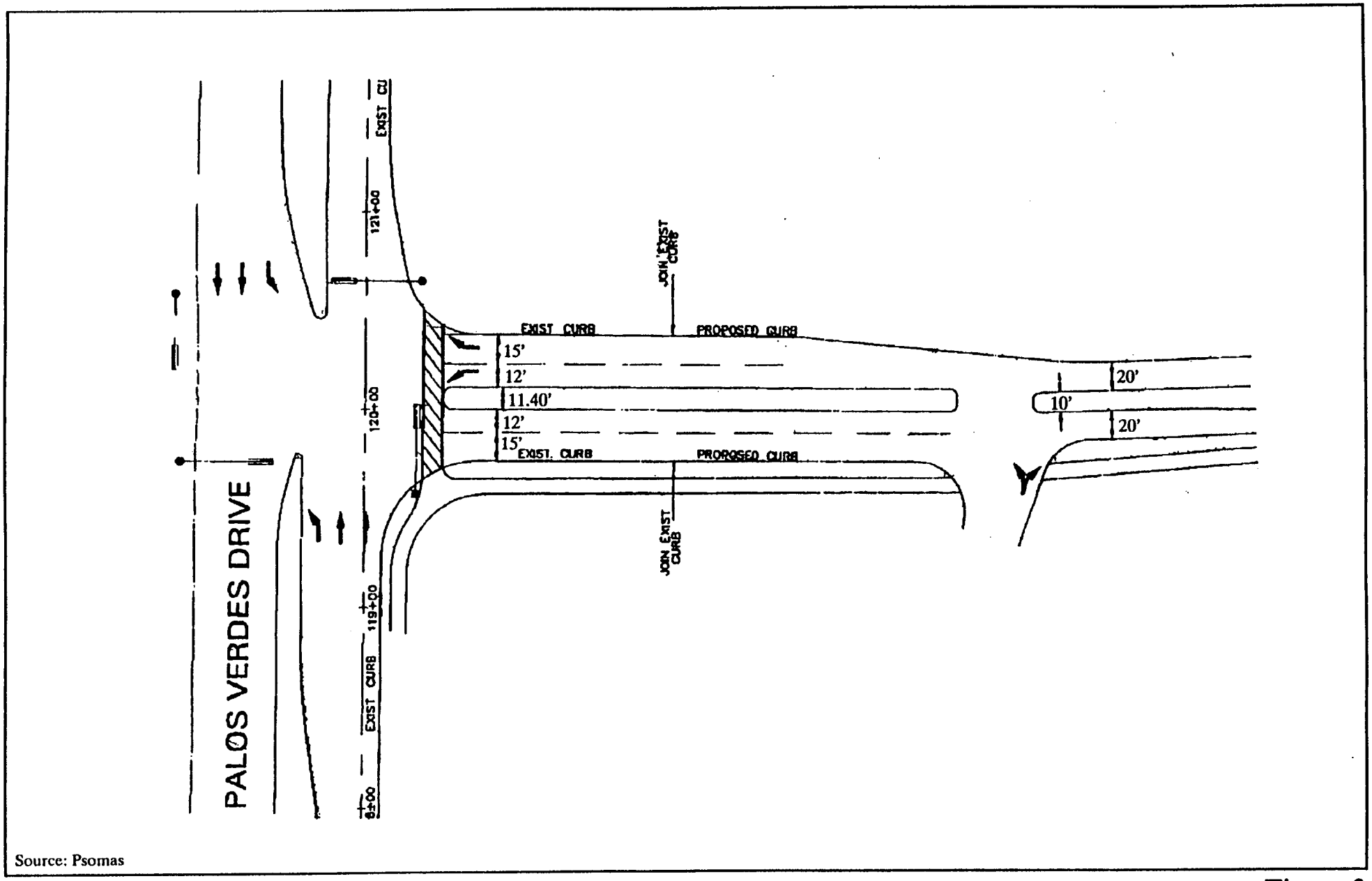
N

LSA

Scale in Feet

0 100 200

Long Point Resort
Trip Assignment



Source: Psomas

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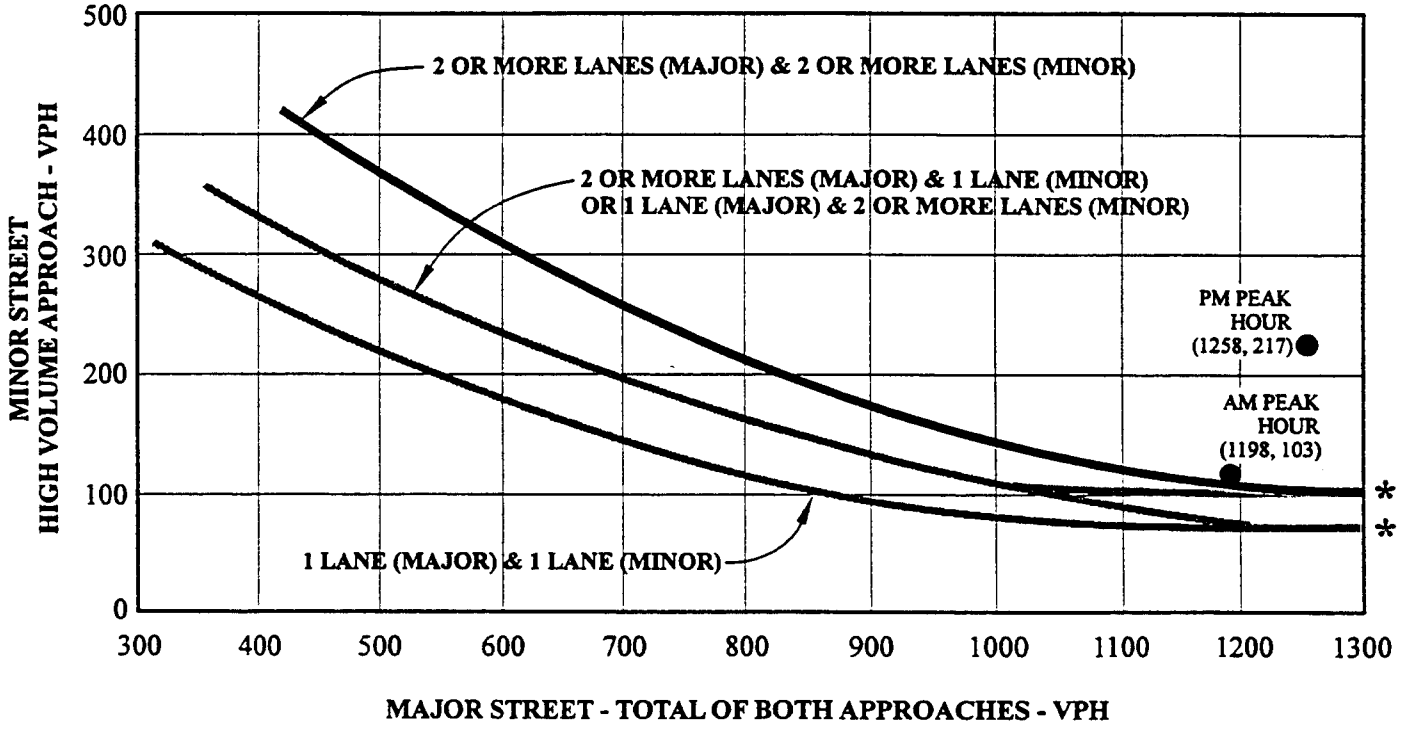
Figure 3

N

LSA

Not to Scale

Long Point Resort Entry
Conceptual Striping Plan



* NOTE:
100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

5/22/00(DHR830)

Figure 4

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NO.: 1
NORTH/SOUTH: Long Point Resort Project Entry
EAST/WEST: Palos Verdes Drive

SCENARIO: Existing + Project Conditions

Move-ment	Existing + Project Conditions					
			Volume		V/C Ratio	
	Lane	Capacity	AM	PM	AM	PM
NBL	1	1,600	72	152	0.05 *	0.10 *
NBT	1	1,600	0	0	0.02	0.04
NBR	0	0	31	65	0.00	0.00
SBL	0	0	10	10	0.00	0.00
SBT	1	1,600	0	0	0.01 *	0.01 *
SBR	0	0	10	10	0.00	0.00
EBL	1	1,600	10	10	0.01 *	0.01
EBT	2	3,200	420	562	0.17	0.22 *
EBR	0	0	109	140	0.00	0.00
WBL	1	1,600	47	60	0.03	0.04 *
WBT	2	3,200	602	476	0.19 *	0.15
WBR	0	0	10	10	0.00	0.00
N/S Critical Movements					0.06	0.11
E/W Critical Movements					0.20	0.26
Right Turn Critical Movement					0.00	0.00
Clearance Interval					0.10	0.10
ICU					0.36	0.47
Level of Service (LOS)					A	A

Notes: ICU - Intersection Capacity Utilization
V/C - Volume to Capacity Ratio
Right Turn Conditions:
P - Protected right turn movement
U - Unprotected right turn movement
N - No right turn on red
F - Free right turn lane