3.0 SETTING

This chapter presents the existing environmental setting for the proposed project. This information provides the baseline against which the project's impacts have been evaluated. This EIR focuses only on the environmental issue areas identified in the Initial Study (see EIR Appendix A) that could be significantly adversely affected by the proposed project. The Initial Study discusses the environmental issue areas not considered in the EIR, and the rationale for inclusion or exclusion of each issue area. These excluded issue areas are aesthetics, agricultural resources, biological resources, mineral resources, noise, population and housing, and recreation.

3.1 Air Quality

This section describes the current air quality settings at the Mobil Torrance Refinery (including the Torrance Loading Rack, located on the refinery property), SWT, Vernon Terminal, Atwood Terminal, and their surrounding areas.

3.1.1 Regional Climate

All of California is divided into air basins, which are served either by county air pollution control districts or multi-county air quality management districts. All of Mobil's proposed project facilities are located within the SCAQMD's jurisdiction (referred to hereafter as the district). The district's jurisdiction consists of the South Coast Air Basin, which is made up of portions of Los Angeles, Riverside, San Bernardino Counties, and all of Orange County. Within Riverside County, the district also has jurisdiction over the Salton Sea Air Basin, and a portion of the Mojave Desert Air Basin. Figure 3.1-1 shows the southern California air basins. The South Coast Air Basin is bounded by the Pacific Ocean to the west, the counties of San Diego and Imperial to the south, and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east.

The vicinity of the Torrance and SWT sites is dominated by a semi-permanent, subtropical, Pacific high-pressure system. Generally mild, the climate is tempered by cool sea breezes, but may be infrequently interrupted by periods of extremely hot weather, passing winter storms, or Santa Ana winds. The Vernon and Atwood Terminals are located somewhat farther inland where the temperature is generally higher and the relative humidity lower than along the coast.

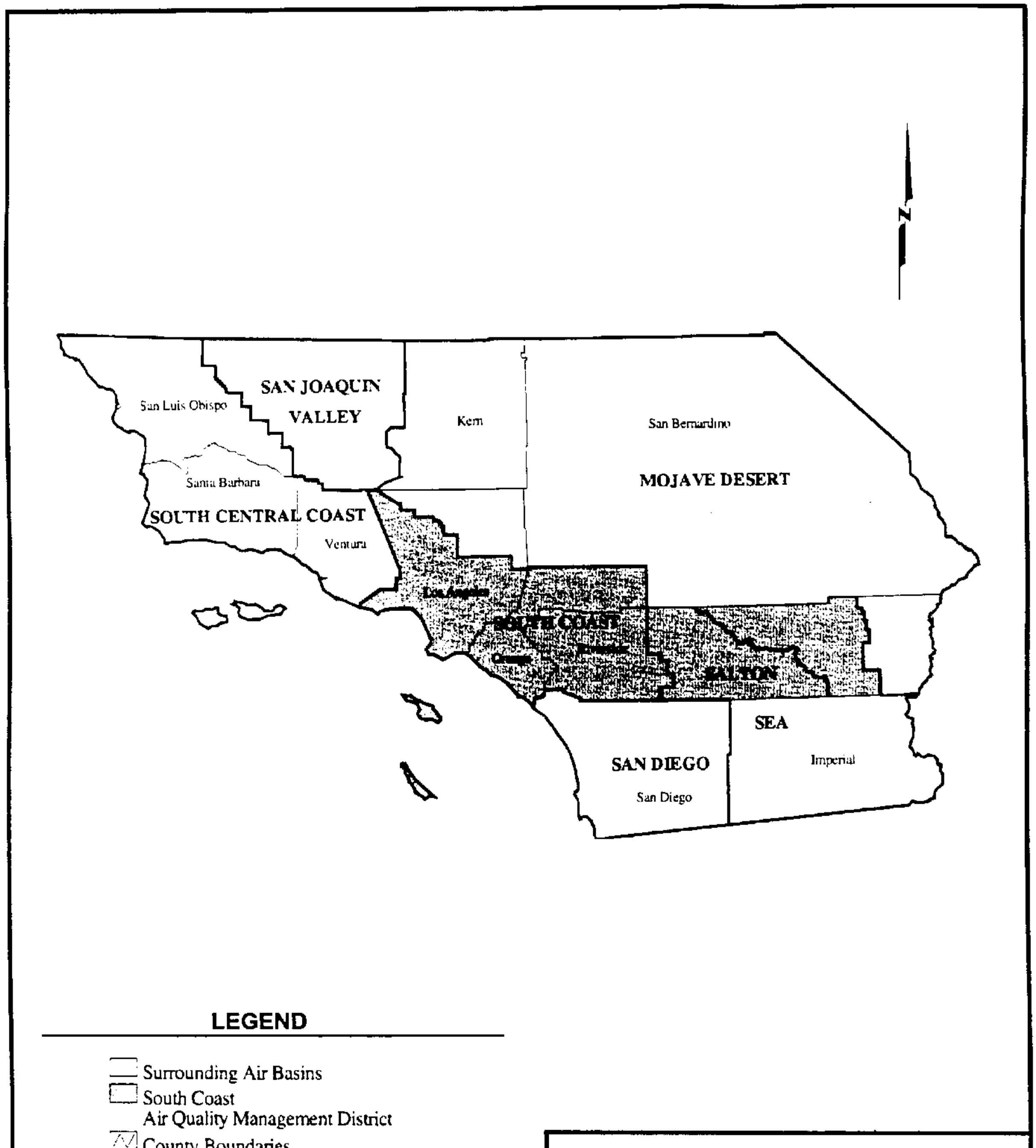


FIGURE 3.1-1
SOUTHERN CALIFORNIA AIR BASINS
Mobil CARB Phase 3 Reformulated Gasoline Project

3.1.2 Meteorology of the Project Vicinity

The Torrance Refinery, Torrance Loading Rack, and SWT are located on or near the coast in areas where the topography is relatively flat. Because of the close proximity of the ocean, winters are seldom cold, frost is rare, and minimum temperatures average around 45°F. Spring days may be cloudy because of the presence of high fog. Rainfall averages about 10 inches a year, falling almost entirely from late October to early April. As shown in Table 3.1-1, historical temperature (mean, maximum, and minimum) and precipitation data from the Los Angeles International Airport illustrate the historical meteorological profile of the area of Mobil's Torrance facilities. Table 3.1-2 presents the temperature and precipitation data for Long Beach, which illustrates the meteorology of the SWT vicinity.

Table 3.1-1
Monthly Temperatures and Precipitation for LA International Airport, CA, 1939-1978

Month	Los Angeles International Airport		
	Mean Monthly Temperatures		Total Precipitation (inches)
	Maximum (°F)	Minimum (°F)	
January	64	46	2.44
February	65	48	2.71
March	65	49	1.84
April	67	52	0.90
May	69	55	0.12
June	72	59	0.03
July	75	62	0.01
August	76	63	0.07
September	76	61	0.21
October	74	58	0.36
November	70	51	1.41
December	66	47	2.12
Absolute extreme temperatures	110	23	NA
Annual Total	NA	NA	12.22

Reference: Weather of U.S. Cities (Gale 1981)
NA – Not Applicable

Table 3.1-2
Average Monthly Temperatures and Precipitation for Long Beach, CA, 1941-1978

Month	Long Beach		
	Mean Monthly Temperatures		Total Precipitation (inches)
	Maximum (°F)	Minimum (°F)	
January	65	44	2.14
February	66	46	2.18
March	67	48	1.53
April	70	51	0.76
May	73	55	0.14
June	76	58	0.04
July	81	62	Trace
August	82	63	0.09
September	81	61	0.16
October	77	56	0.15
November	72	50	1.43
December	67	43	1.65
Absolute extreme temperatures	111	21	NA
Annual Total	NA	NA	10.27
Reference: Weather of U.S. Cities (Gale 1981) NA – Not Applicable			

The Vernon and Atwood Terminals are located farther inland than Mobil's Torrance and Port of Los Angeles facilities. Historical data for the Los Angeles Civic Center provide the most appropriate available background meteorological data for Vernon and Atwood. Average daily temperature fluctuation ranges at the Los Angeles Civic Center are about 30 degrees in the summer and 25 degrees in the winter. Minimum temperatures average around 47 degrees and peak temperatures average near 84 degrees. Rainfall averages about 15 inches a year, falling almost entirely between November and March. These data are detailed in Table 3.1-3.

Table 3.1-3
Average Monthly Temperatures and Precipitation for Los Angeles Civic Center, CA (1941-1970)

Month	Los Angeles Civic Center		
	Mean Monthly Temperatures		Total Precipitation (inches)
	Maximum (°F)	Minimum (°F)	
January	67	47	3.00
February	68	49	2.77
March	69	50	2.19
April	71	53	1.27
May	73	56	0.13
June	77	60	0.03
July	83	64	0.00
August	84	64	0.04
September	83	63	0.17
October	78	59	0.27
November	73	52	2.02
December	68	48	2.18
Absolute extreme temperatures	110	28	14.05
Annual Total	NA	NA	NA

Reference: Weather of U.S. Cities (Gale 1981)
NA – Not Applicable

Figure 3.1-2 shows the locations of the three meteorological monitoring stations (Los Angeles International Airport, Long Beach, and the Los Angeles Civic Center) relative to the project sites.

Seasonal and diurnal wind regimes affect the horizontal transport of air in the vicinity of the coastal project locations. Diurnal sea breeze-drainage flow typically dominates the local wind pattern, with the onshore winds split by the Palos Verdes hills unless the marine layer is very deep. Figure 3.1-3 shows typical winter and summer season wind patterns for morning and afternoon for the Basin. Figure 3.1-4 shows an annual wind rose for King Harbor, which is representative of the Torrance Refinery and the Torrance Loading Rack (a wind rose graphically depicts the frequency of the annual average wind speeds by direction). Figure 3.1-5 shows an annual wind rose for Long Beach, which is representative of the SWT, while Figure 3.1-6 shows an annual wind rose for Vernon (Vernon Terminal), and Figure 3.1-7 shows an annual wind rose for La Habra (representing the Atwood Terminal vicinity).

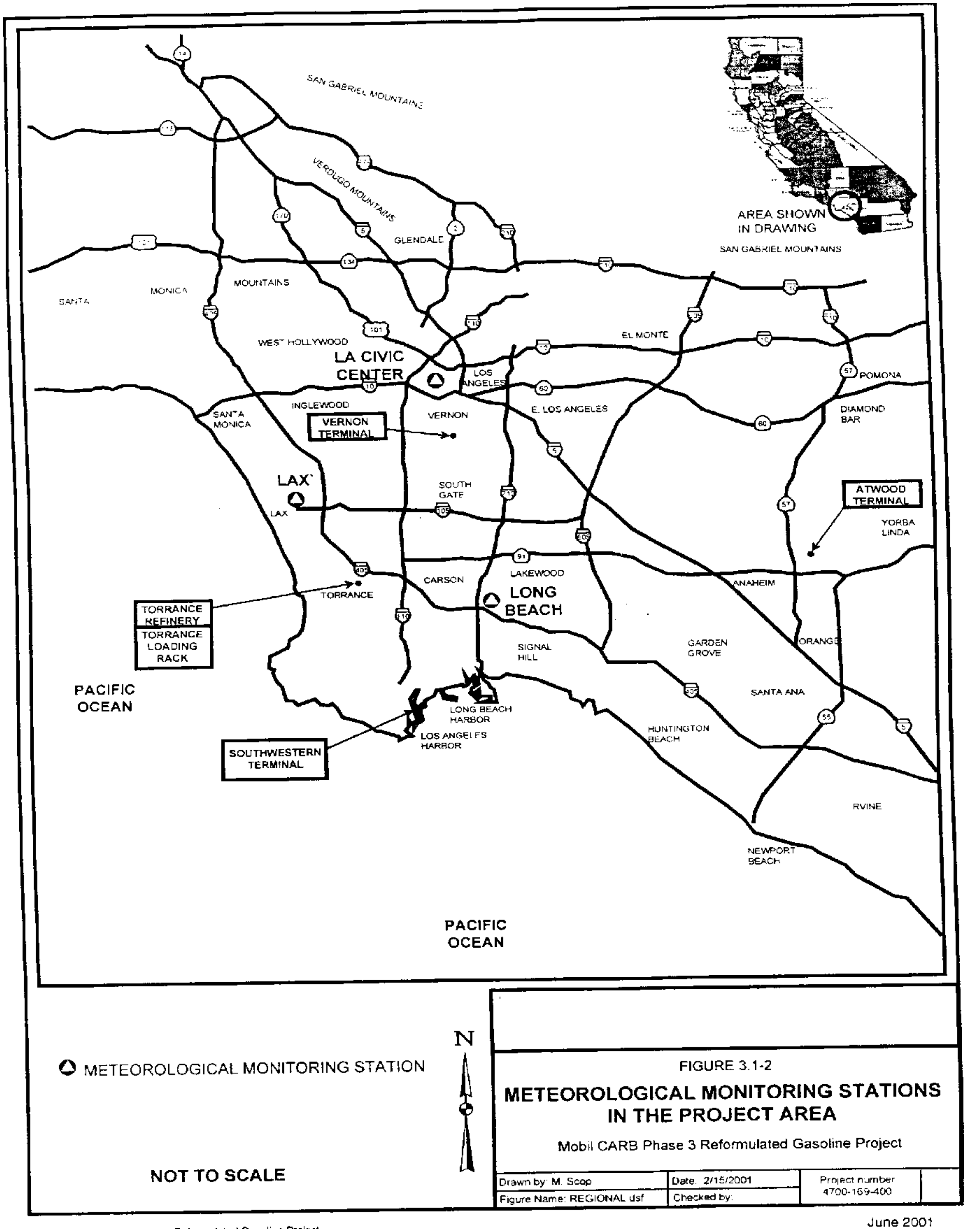
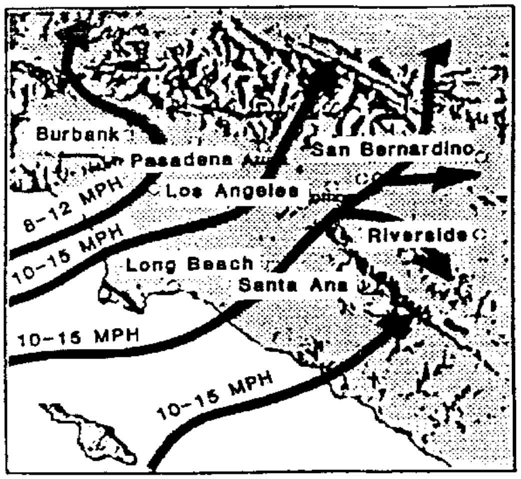
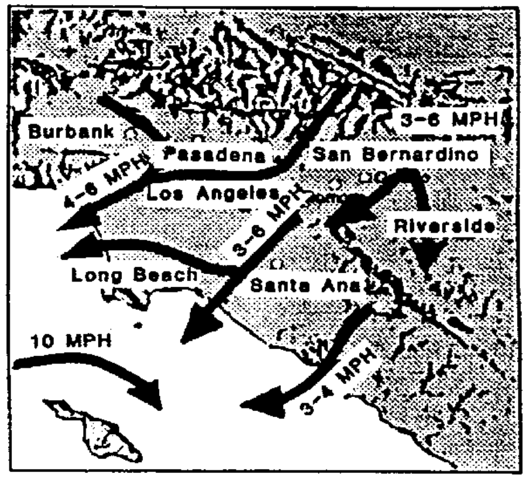


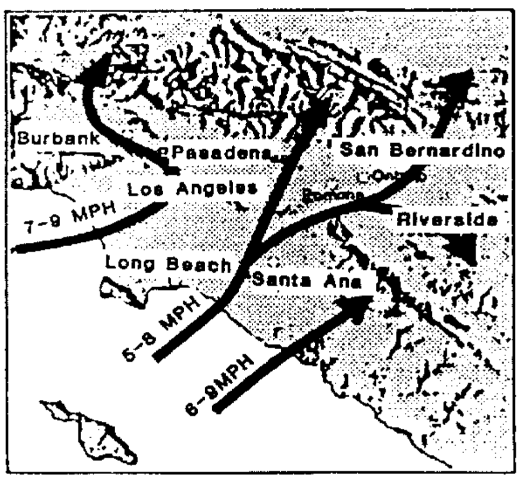
FIGURE 3.1-2
METEOROLOGICAL MONITORING STATIONS IN THE PROJECT AREA



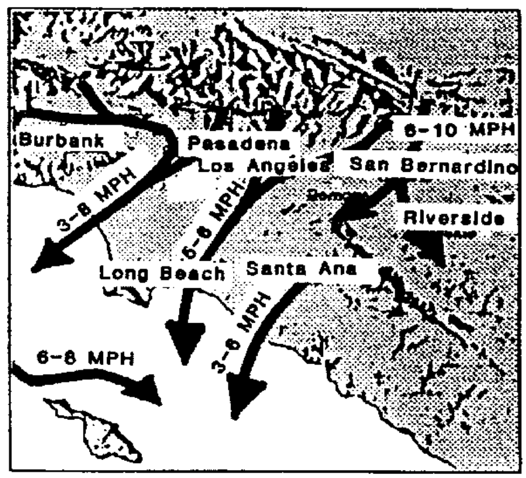
Typical Summer Daytime Ocean Winds
(noon to 7:00 pm)



Typical Summer Night Drainage Winds
(midnight to 5:00 am)



Typical Winter Daytime Ocean Winds
(noon to 7:00 pm)



Typical Winter Night Drainage Winds
(midnight to 5:00 am)

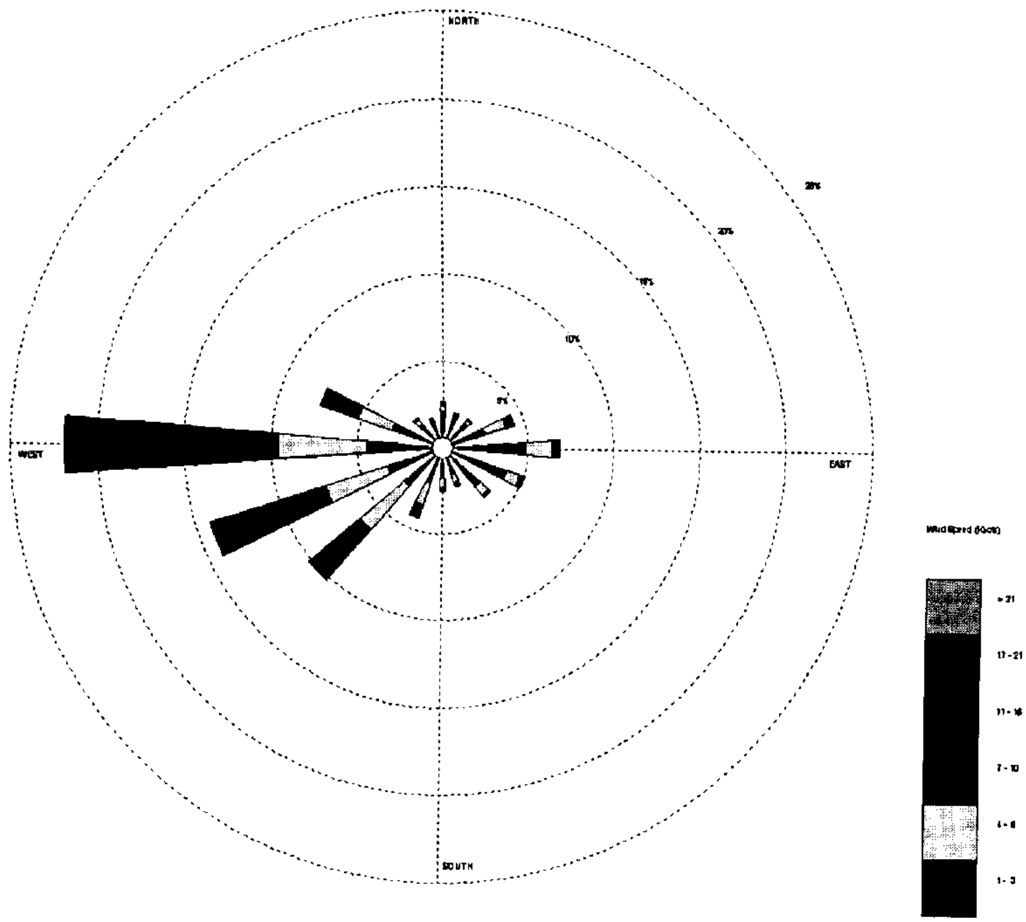
FIGURE 3.1-3

Dominant Wind Patterns in the Basin

Mobil CARB Phase 3 Reformulated Gasoline Project

Reference: AQMD CEQA Air Quality Handbook, November 1993

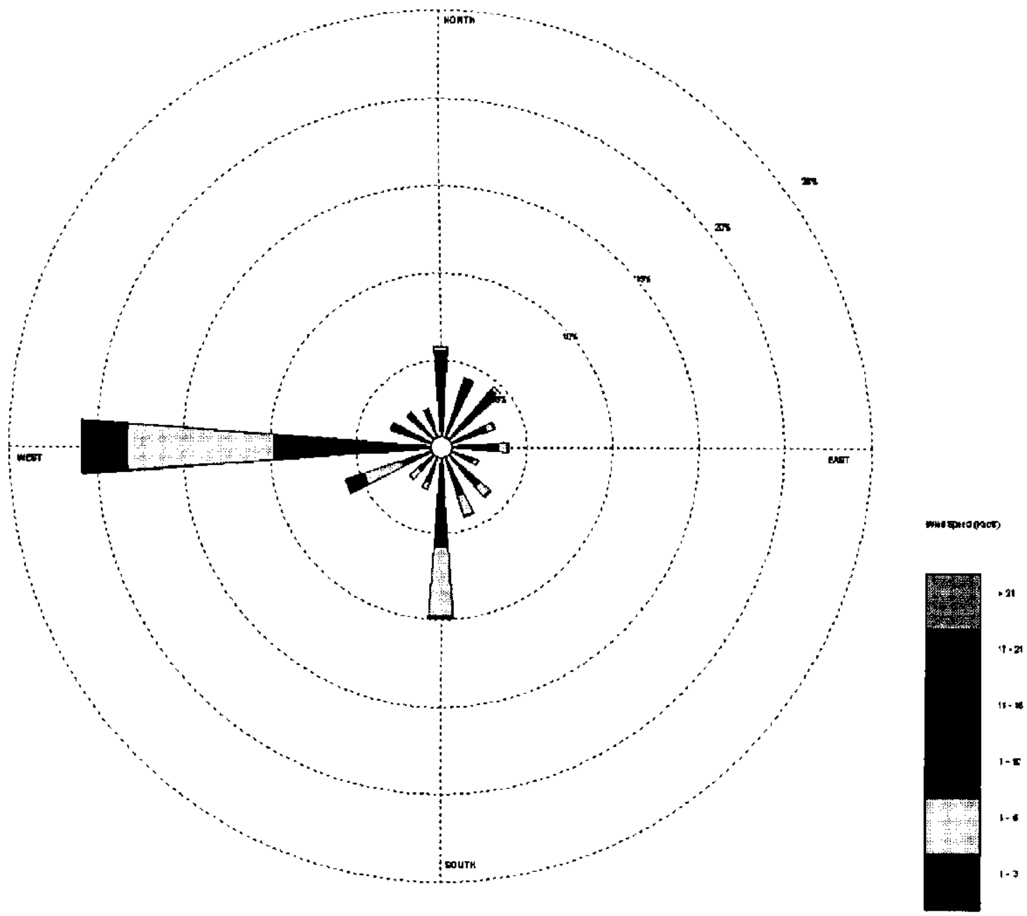
Drawn by: M. Scop	Date: 2/16/2001	Project number 4700-170	REV 0
Figure Name: winds dsf	Checked by:		



King Harbor, CA   1981

Note: Wind Direction is the Direction the Wind is Blowing From

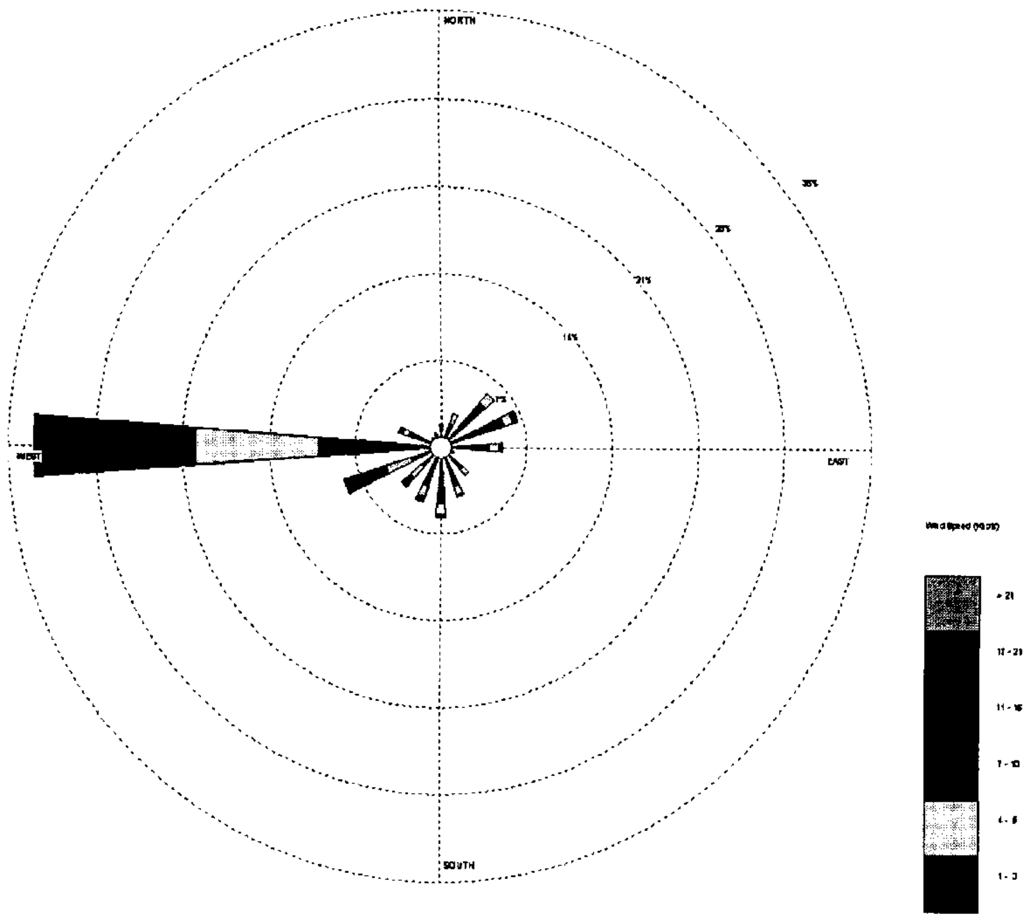
Figure 3.1-4   King Harbor Station



Long Beach, CA 1981

Note: Wind Direction is the Direction the Wind is Blowing From

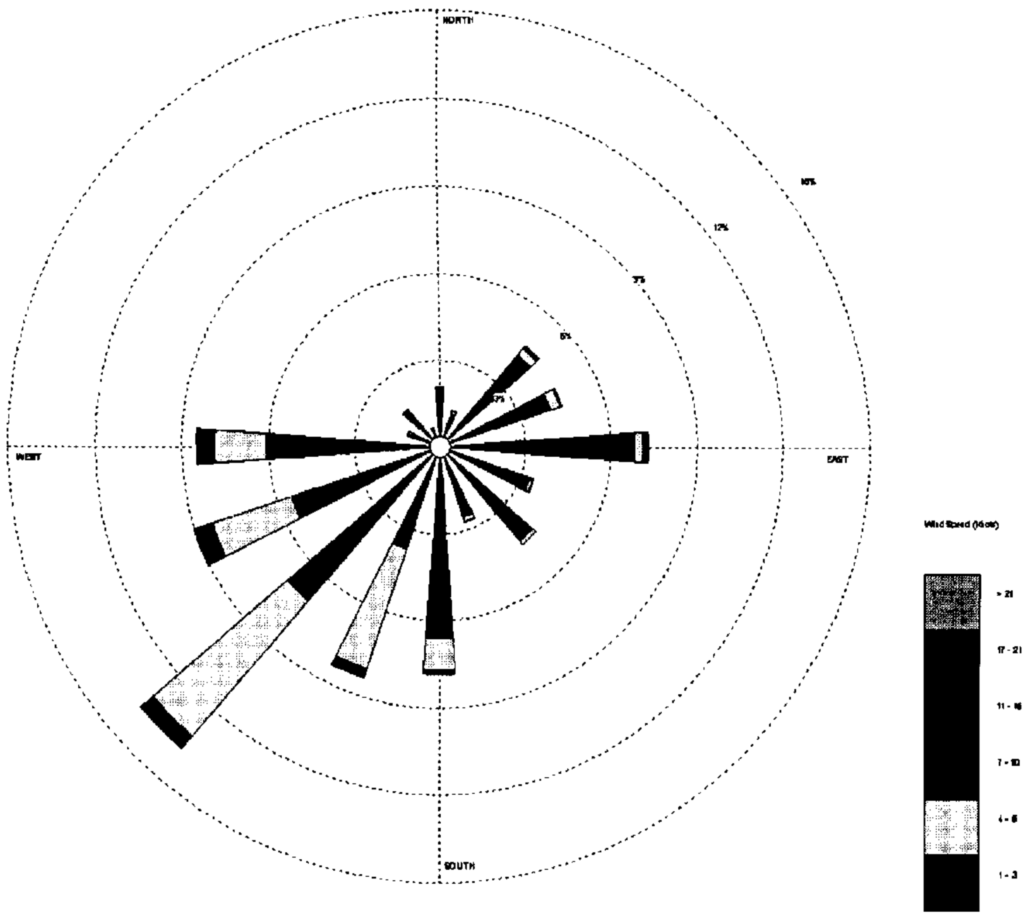
Figure 3.1-5 Long Beach Station



Vernon, CA 1981

Note: Wind Direction is the Direction the Wind is Blowing From

Figure 3.1-6 Vernon Station



La Habra, CA 1981

Note: Wind Direction is the Direction the Wind is Blowing From

Figure 3.1-7 La Habra Station

Normally, the temperature of the atmosphere decreases with altitude. However, when the temperature of the atmosphere increases with altitude, this phenomenon is termed an inversion. This inversion condition can exist at the surface or at any height above the ground. The height of the base of the inversion often corresponds to the mixing height. Usually, the mixing height increases throughout the morning and early afternoon because the sun warms the ground, which in turn warms the adjacent air. As this warm air rises, it erodes and raises the base of the inversion layer. If enough surface heating takes place, the inversion layer will break and the surface air layers can mix upward essentially without limit.

The district is characterized by frequent occurrence of strong elevated inversions. These inversions, created by atmospheric subsidence, severely limit vertical mixing, especially in the late morning and early afternoon.

3.1.3 Existing Air Quality and Regulatory Setting

Air quality is determined primarily by the type and amount of contaminants emitted into the atmosphere, the size and topography of the air basin, and the meteorological conditions. The District has low mixing heights and light winds, which are conducive to the accumulation of air pollutants. Pollutants that impact air quality are generally divided into two categories: criteria pollutants (those for which health-based ambient standards have been set) and toxic air contaminants (those that cause cancer or have adverse human health effects other than cancer). The following subsections address existing air quality conditions and the applicable regulatory context for both criteria pollutants and toxic air contaminants.

3.1.3.1 Criteria Pollutants

Whether a region's air quality is healthful or unhealthful is determined by comparing contaminant levels in ambient air samples to national and state standards. These standards are set by the EPA and CARB at levels to protect public heath and welfare with an adequate margin of safety. National Ambient Air Quality Standards (NAAQS) were first authorized by the federal Clean Air Act of 1970. California Ambient Air Quality Standards (CAAQS) were authorized by the state legislature in 1967. Air quality of a region is considered to be in attainment of the standards (or healthful) if the measured ambient air pollutant levels are continuously equal to or less than the CAAQS and NAAQS.

Both the State of California and the federal government have established health-based air quality standards for the following criteria air pollutants: ozone (O_3), CO, nitrogen dioxide (NO_2), PM_{10}, sulfur dioxide (SO_2), and lead. These standards were established to protect sensitive receptors with a margin of safety from adverse health impacts due to exposure to air pollution. CAAQS generally are more stringent than the federal standards, and for PM_{10} and SO_2, they are much more stringent. California has also established standards for sulfate, visibility, hydrogen sulfide, and vinyl chloride. However, hydrogen sulfide and vinyl chloride are currently not monitored in the

District because these contaminants are not seen as a significant air quality problem. Table 3.1-4 summarizes the CAAQS and NAAQS for each of these pollutants and their effects on health.

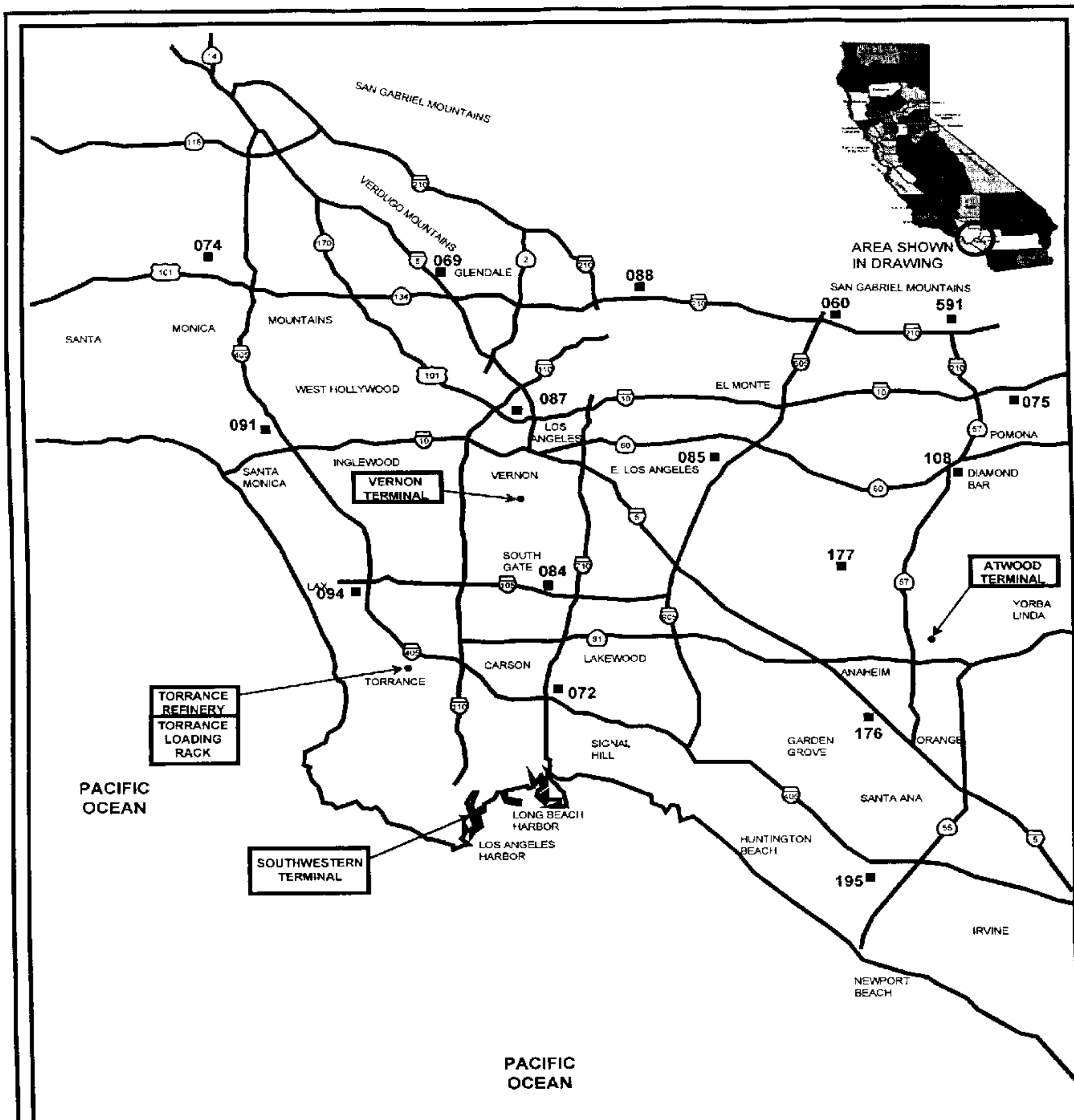
Figure 3.1-8 identifies the locations of ambient air monitoring stations in the Basin. Tables 3.1-5, 3.1-6, and 3.1-7 summarize four years of data (1996-1999) for the stations located in the vicinity of the project sites.

Table 3.1-4
Ambient Air Quality Standards

Air Pollutant	State Standard	Federal Primary Standard	Most Relevant Effects
	Concentration/ Averaging Time	Concentration/ Averaging Time	
Ozone	0.09 parts per million (ppm), 1-hr. avg.	0.12 ppm, 1-hr avg.	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage
Carbon Monoxide	9.0 ppm, 8-hr avg. 20 ppm, 1-hr avg.	9.0 ppm, 8-hr avg. 35 ppm, 1-hr avg.	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses

Table 3.1-4 (Concluded)
Ambient Air Quality Standards

Air Pollutant	State Standard	Federal Primary Standard	Most Relevant Effects
	Concentration/ Averaging Time	Concentration/ Averaging Time	
Nitrogen Dioxide	0.25 ppm, 1-hr avg.	0.053 ppm, ann. avg.	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration
Sulfur Dioxide	0.04 ppm, 24-hr avg. 0.25 ppm, 1-hr. avg.	0.03 ppm, ann. avg. 0.14 ppm, 24-hr avg.	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM_{10})	30 µg/m^3, ann. Geometric mean 50 µg/m^3, 24-hr average	50 µg/m^3, annual arithmetic mean 150 µg/m^3, 24-hr avg.	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function, especially in children
Sulfates	25 µg/m^3, 24-hr avg.		(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardiopulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage
Lead	1.5 µg/m^3, 30-day avg.	1.5 µg/m^3, calendar quarter	(a) Increased body burden; (b) Impairment of blood formation and nerve conduction
Visibility-Reducing Particles	In sufficient amount to reduce the visual range to less than 10 miles at relative humidity less than 70%, 8-hour average (10am - 6pm)		Visibility impairment on days when relative humidity is less than 70 percent



074 AIR MONITORING STATION WITH ID

N

NOT TO SCALE

FIGURE 3.1-8

AMBIENT AIR MONITORING STATIONS WITHIN THE BASIN

Mobil CARB Phase 3 Reformulated Gasoline Project

Drawn by: M. Scop	Date: 5/21/2001	Project number 4700-169-400
Figure Name: REGIONAL.dsf	Checked by:	

Table 3.1-5 presents data for the South West Coast Los Angeles County station, which monitors air quality in the area that includes the Torrance Refinery and Loading Rack. Table 3.1-6 presents data for the South Coast Los Angeles County station, which covers the vicinity of the SWT. Table 3.1-7 presents data for the South Central Los Angeles County station, which covers the Vernon Terminal. Table 3.1-8 details data for the North Orange County station, which includes the Atwood Terminal area.

Table 3.1-5
Background Air Quality Data for the South West Coast Los Angeles County Monitoring Station
(ID No. 094) (1996-1999)

Constituent	Maximum Observed Concentration (in ppm, unless otherwise noted) (No. of Standard Exceedances - most restrictive)					
	State Standard	**Federal Standard**	**1996**	**1997**	**1998**	**1999**
Carbon monoxide 1-hour 8-hour	20.0 ppm 9.0 ppm	35.0 ppm 9.5 ppm	13 (0 days) 11.6 (6 days)	12 (0 days) 10.3 (1 day)	11 (0 days) 9.4 (1 day)	10 (0 days) 8.4 (0 days)
Ozone 1-hour	0.09 ppm	0.12 ppm	0.13 (8 days)	0.11 (6 days)	0.09 (0 days)	0.15 (1 day)
Nitrogen dioxide 1-hour Annual	0.25 ppm ---	--- 0.053 ppm	0.15 (0 days) 0.029 ppm	0.17 (0 days) 0.028 ppm	0.15 (0 days) 0.030 ppm	0.13 (0 days) 0.030 ppm
Sulfur dioxide 1-hour 24-hour Annual	0.25 ppm 0.04 ppm ---	--- 0.14 ppm 0.03 ppm	0.06 (0 days) 0.014 (0 days) 0.003 ppm	0.10 (0 days) 0.015 (0 days) 0.001 ppm	0.03 (0 days) 0.014(0 days) 0.004 ppm	0.09 (0 days) 0.02 (0 days) 0.004 ppm
PM_{10} 24-hour	50 :µg/m^3	150 :µg/m^3	107 : µg/m^3 (5 days)	79 : µg/m^3 (4 days)	66 :µg/m^3 (7 days)	69 :µg/m^3 (6 days)
Annual Mean: Geometric Arithmetic	30 :µg/m^3 ---	--- 50 :µg/m^3	29.2 : µg/m^3 32.6 : µg/m^3	33.8 : µg/m^3 35.5 : µg/m^3	30.3 :µg/m^3 32.7 :µg/m^3	33.4 :µg/m^3 35.6 :µg/m^3
Lead 30-day Calendar Quarter	1.5 :µg/m^3 ---	--- 1.5 :µg/m^3	0.04 :µg/m^3 (0 mos.) 0.03 :µg/m^3 (0 qtrs.)	0.06 : µg/m^3 (0 mos.) 0.05 : µg/m^3 (0 qtrs.)	0.06 :µg/m^3 (0 mos.) 0.04 :µg/m^3 (0 qtrs.)	0.05 :µg/m^3 (0 mos.) 0.04 :µg/m^3 (0 qtrs.)

Table 3.1-5 (Concluded)
Background Air Quality Data for the South West Coast Los Angeles County Monitoring Station
(ID No. 094) (1996-1999)

Constituent	Maximum Observed Concentration (in ppm, unless otherwise noted) (No. of Standard Exceedances - most restrictive)					
	State Standard	Federal Standard	1996	1997	1998	1999
Sulfates 24-hours	25 :µg/m^3	---	18.4 :µg/m^3 (0 days)	14.4 : µg/m^3 (0 days)	13.5 :µg/m^3 (0 days)	18.8 :µg/m^3 (0 days)

* = Incomplete record of data; may not be representative.
PM_{10} and sulfate only monitored every 6 days.
:µg/m^3= micrograms per cubic meter.
Reference CARB Air Quality Data Annual Summaries 1996-1999; SCAQMD Air Quality Data Annual Summaries 1996-1999 (obtained from SCAQMD website http//:www.aqmd.gov.

Table 3.1-6
Background Air Quality Data for the South Coast Los Angeles County Monitoring Station
(ID No. 072) (1996-1999)

Constituent	Maximum Observed Concentration (in ppm, unless otherwise noted) (No. of Standard Exceedances - most restrictive)					
	State Standard	Federal Standard	1996	1997	1998	1999
Carbon monoxide 1-hour 8-hour	20.0 ppm 9.0 ppm	35.0 ppm 9.5 ppm	10 (0 days) 6.9 (0 days)	9 (0 days) 6.7 (0 days)	8 (0 days) 6.6 (0 days)	7 (0 days) 5.4 (0 days)
Ozone 1-hour	0.09 ppm	0.12 ppm	0.11 (5 days)	0.10 (1 day)	0.12 (2 days)	0.13 (3 days)
Nitrogen dioxide 1-hour Annual	0.25 ppm ---	--- 0.053 ppm	0.17 (0 days) 0.034 ppm	0.20 (0 days) 0.033 ppm	0.16 (0 days) 0.034 ppm	0.15 (0 days) 0.034 ppm
Sulfur dioxide 1-hour 24-hour Annual	0.25 ppm 0.04 ppm ---	--- 0.14 ppm 0.03 ppm	0.04 (0 days) 0.013 (0 days) 0.003 ppm	0.04 (0 days) 0.011 (0 days) 0.002 ppm	0.08 (0 days) 0.013 (0 days) 0.002 ppm	0.05 (0 days) 0.011 (0 days) 0.003 ppm

Table 3.1-6 (Concluded)
Background Air Quality Data for the South Coast Los Angeles County Monitoring Station (ID No. 072) (1996-1999)

Constituent	Maximum Observed Concentration (in ppm, unless otherwise noted) (No. of Standard Exceedances - most restrictive)					
	State Standard	Federal Standard	1996	1997	1998	1999
<u>PM_{10}</u> 24-hour	50 :µg/m^3	150 :µg/m^3	113 :µg/m^3 (7 days)	87 :µg/m^3 (10 days)	69 :µg/m^3 (6 days)	79 :µg/m^3 (13 days)
Annual Mean:		---				
Geometric	30 :µg/m^3	50 :µg/m^3	30.8 :µg/m^3	38.2 :µg/m^3	29.2 :µg/m^3	36.4 :µg/m^3
Arithmetic	---		35.3 :µg/m^3	40.5 :µg/m^3	32.3 :µg/m^3	38.9 :µg/m^3
<u>Lead</u> 30-day	1.5 :µg/m^3	---	0.08 :µg/m^3 (0 mos.)	0.05 :µg/m^3 (0 mos.)	0.07 :µg/m^3 (0 mos.)	0.06 :µg/m^3 (0 mos.)
Calendar Quarter	---	1.5 :µg/m^3	0.08 :µg/m^3 (0 qtrs.)	0.03 :µg/m^3 (0 qtrs.)	0.04 :µg/m^3 (0 qtrs.)	0.05 :µg/m^3 (0 qtrs.)
<u>Sulfates</u> 24-hours	25 :µg/m^3	---	19.9 :µg/m^3 (0 days)	11.4 :µg/m^3 (0 days)	14.5 :µg/m^3 (0 days)	13.7 :µg/m^3 (0 days)

* = Incomplete record of data; may not be representative.
PM_{10} and sulfate only monitored every 6 days.
:µg/m^3= micrograms per cubic meter.
Reference CARB Air Quality Data Annual Summaries 1996-1999; SCAQMD Air Quality Data Annual Summaries

Table 3.1-7
Background Air Quality Data for the South Central Los Angeles County Monitoring Station
(ID No. 084) (1996-1999)

Constituent	Maximum Observed Concentration (in ppm, unless otherwise noted) (No. of Standard Exceedances - most restrictive)					
	State Standard	**Federal Standard**	**1996**	**1997**	**1998**	**1999**
Carbon monoxide						
1-hour	20.0 ppm	35.0 ppm	22 (2 days)	19 (0 days)	17 (0 days)	19 (0 days)
8-hour	9.0 ppm	9.5 ppm	17.3 (24 days)	17.0 (18 days)	13.4 (11 days)	11.0 (10 days)
Ozone						
1-hour	0.09 ppm	0.12 ppm	0.10 (1 day)	0.08 (0 days)	0.09 (0 days)	0.12 (1 day)
Nitrogen dioxide						
1-hour	0.25 ppm	---	0.25 (0 days)	0.20 (0 days)	0.16 (0 days)	0.18 (0 days)
Annual	---	0.053 ppm	0.0412 ppm	0.0428 ppm	0.0393 ppm	0.0428 ppm
Sulfur dioxide			No data	No data	No data	No data
1-hour	0.25 ppm	---				
24-hour	0.04 ppm	0.14 ppm				
Annual	---	0.03 ppm				
PM_{10}			No data	No data	No data	No data
24-hour	50 :µg/m^3	150 :µg/m^3				
Annual Mean:						
Geometric	30 :µg/m^3	---				
Arithmetic	---	50 :µg/m^3				
Lead						
30-day	1.5 :µg/m^3	---	0.09* :µg/m^3 (0 mos.)	0.07* :µg/m^3 (0 mos.)	0.07 :µg/m^3 (0 mos.)	0.17 :µg/m^3 (0 mos.)
Calendar Quarter	---	1.5 :µg/m^3	0.05* :µg/m^3 (0 qtrs.)	0.07* :µg/m^3 (0 qtrs.)	0.04 :µg/m^3 (0 qtrs.)	0.09 :µg/m^3 (0 qtrs.)
Sulfates						
24-hours	25 :µg/m^3	---	16.0 :µg/m^3 (0 days)	11.4* :µg/m^3 (0 days)	12.0 :µg/m^3 (0 days)	15.6 :µg/m^3 (0 days)

* = Incomplete record of data; may not be representative. PM_{10} and sulfate only monitored every 6 days.
:µg/m^3= micrograms per cubic meter.
Reference: CARB Air Quality Data Annual Summaries 1995-1998; SCAQMD Air Quality Data Annual Summaries 1996-1999.

Table 3.1-8
Background Air Quality Data for the North Orange County Monitoring Station
(ID No. 177) (1996-1999)

Constituent	Maximum Observed Concentration (in ppm, unless otherwise noted) (No. of Standard Exceedances - most restrictive)					
	State Standard	**Federal Standard**	**1996**	**1997**	**1998**	**1999**
Carbon monoxide 1-hour 8-hour	 20.0 ppm 9.0 ppm	 35.0 ppm 9.5 ppm	 13 (0 days) 6.9 (0 days)	 12 (0 days) 6.0 (0 days)	 15 (0 days) 6.1 (0 days)	 11 (0 days) 5.3 (0 days)
Ozone 1-hour	 0.09 ppm	 0.12 ppm	 0.15 (20 days)	 0.13 (9 days)	 0.18 (16 days)	 0.12 (6 days)
Nitrogen dioxide 1-hour Annual	 0.25 ppm ---	 --- 0.053 ppm	 0.16 (0 days) 0.035 ppm	 0.15 (0 days) 0.033 ppm	 0.13 (0 days) 0.034 ppm	 0.16 (0 days) 0.035 ppm
Sulfur dioxide 1-hour 24-hour Annual	 0.25 ppm 0.04 ppm ---	 --- 0.14 ppm 0.03 ppm	No data	No data	No data	No data
PM_{10} 24-hour Annual Mean: Geometric Arithmetic	 50 :µg/m^3 30 :µg/m^3 ---	 150 :µg/m^3 --- 50 :µg/m^3	No data	No data	No data	No data
Lead 30-day Calendar Quarter	 1.5:µg/m^3 ---	 --- 1.5 :µg/m^3	No data	No data	No data	No data
Sulfates 24-hours	25 :µg/m^3	---	No data	No data	No data	No data

* = Incomplete record of data; may not be representative. PM_{10} and sulfate only monitored every 6 days.
:µg/m^3= micrograms per cubic meter.
Reference: CARB Air Quality Data Annual Summaries 1995-1998; SCAQMD Air Quality Data Annual Summaries 1996-1999.

As stated above, the Torrance Refinery and Loading Rack are located within the SCAQMD South West Coast Los Angeles County monitoring area. Table 3.1-5 presents recent background air quality data for criteria pollutants for the South West Coast Los Angeles County monitoring station. Ambient air quality was compared to the most stringent of either the CAAQS or NAAQS, which was the CAAQS in all cases. These monitored data indicate that this area is in compliance with the NO_2, SO_2, sulfate, and lead standards for both the CAAQS and NAAQS.

The state and federal one-hour CO standard was met in all years; the state eight-hour standard was exceeded on eight days; and the federal eight-hour standard was exceeded on eight days during the four-year period. State O_3 and PM_{10} air quality standards were exceeded at the South

West Coast Los Angeles County air monitoring station on several days during the four-year period. The national PM_{10} standards were met in all years. The maximum O_3 concentrations observed have remained relatively the same, whereas the maximum 24-hour concentration of PM_{10} observed has decreased at this site from 107 $\mu g/m^3$ to 69 $\mu g/m^3$.

For NO_2, the maximum measured concentrations each year were less than the 0.25 ppm one-hour state standard and the annual national standard. For SO_2 and lead, measured concentrations were well below both the state and federal standards. The maximum sulfate concentrations were below the state 24-hour standard each year.

The SWT is located within the SCAQMD's South Coast Los Angeles County monitoring area. Table 3.1-6 presents recent background air quality data for criteria pollutants for this monitoring station. Ambient air quality was compared to the most stringent of either the CAAQS or NAAQS, which was the CAAQS in all cases. These monitored data indicate that this area is in compliance with the CO, NO_2, SO_2, sulfate, and lead standards for both the CAAQS and NAAQS.

State standard O_3 and PM_{10} air quality standards were exceeded at the South Coast Los Angeles County air monitoring station on several days during the four-year period. The national O_3 standard was exceeded in 1999. The national PM_{10} standards were met in all years. The maximum O_3 concentrations observed have remained relatively the same, whereas the maximum 24-hour concentration of PM_{10} observed has decreased at this site from 113 $\mu g/m^3$ to 79 $\mu g/m^3$.

For NO_2, the maximum measured concentrations each year were less than the 0.25 ppm one-hour state standard and the annual national standard. For SO_2 and lead, measured concentrations were well below both the state and federal standards. The maximum sulfate concentrations were below the state 24-hour standard each year.

The Vernon Terminal is located within the South Central Los Angeles County monitoring station area. Table 3.1-7 presents recent background air quality data for criteria pollutants. Ambient air quality was compared to the most stringent of either the CAAQS or NAAQS, which was the CAAQS in all cases. These monitored data indicate that this area is in compliance with the NO_2, sulfate, and lead standards for both the CAAQS and NAAQS.

The state O_3 air quality standard was exceeded at the South Central Los Angeles County air monitoring station on one day in 1996 and one day in 1999. The national O_3 standard was attained in all years. Data were not available for SO_2 and PM_{10} at this station for these years.

The state 1-hour CO standard was exceeded twice in 1996. Both the state and federal 8-hour standards were exceeded for CO. For NO_2, the maximum measured concentration each year was less than or equal to the 0.25 ppm one-hour state standard and the annual national standard. For lead, measured concentrations were well below both the state and federal standards when data were available. The maximum sulfate concentrations were below the state 24-hour standard each year.

The Atwood Terminal is located within the North Orange County monitoring station area. Table 3.1-8 summarizes recent background air quality data for criteria pollutants. Ambient air quality was compared to the most stringent of either the CAAQS or NAAQS, which was the CAAQS in all cases. These monitored data indicate that this area is in compliance with the CO and NO_2 standards for both the CAAQS and NAAQS.

State and federal O_3 air quality standards were exceeded at the North Orange County air monitoring station on several days during the four-year period. The number of days that the state O_3 standard was exceeded has dropped significantly, from 20 to six days, over this period. The state and federal one-hour and eight-hour CO standards were not exceeded during this four-year period. For NO_2, the maximum measured concentrations each year were less than the 0.25 ppm one-hour state standard and the annual national standard. Data were not available for SO_2, PM_{10}, sulfate, and lead at this station for these years.

3.1.3.2 Toxic Air Contaminants

Cancer Risk

A primary health risk due to exposure to toxic air contaminants (TACs) is the risk of contracting cancer. Health statistics show that one in four people will contract cancer over their lifetime, or 250,000 in a million, from all causes, including diet, genetic factors, and lifestyle choices. The carcinogenic potential of TACs is a particular public health concern because it is currently believed by many scientists that there is no “safe” level of exposure to carcinogens, i.e., any exposure to a carcinogen poses some risk of causing cancer. About two percent of cancer deaths in the United States may be attributable to environmental pollution (Doll and Peto, 1981).

Noncancer Health Risks

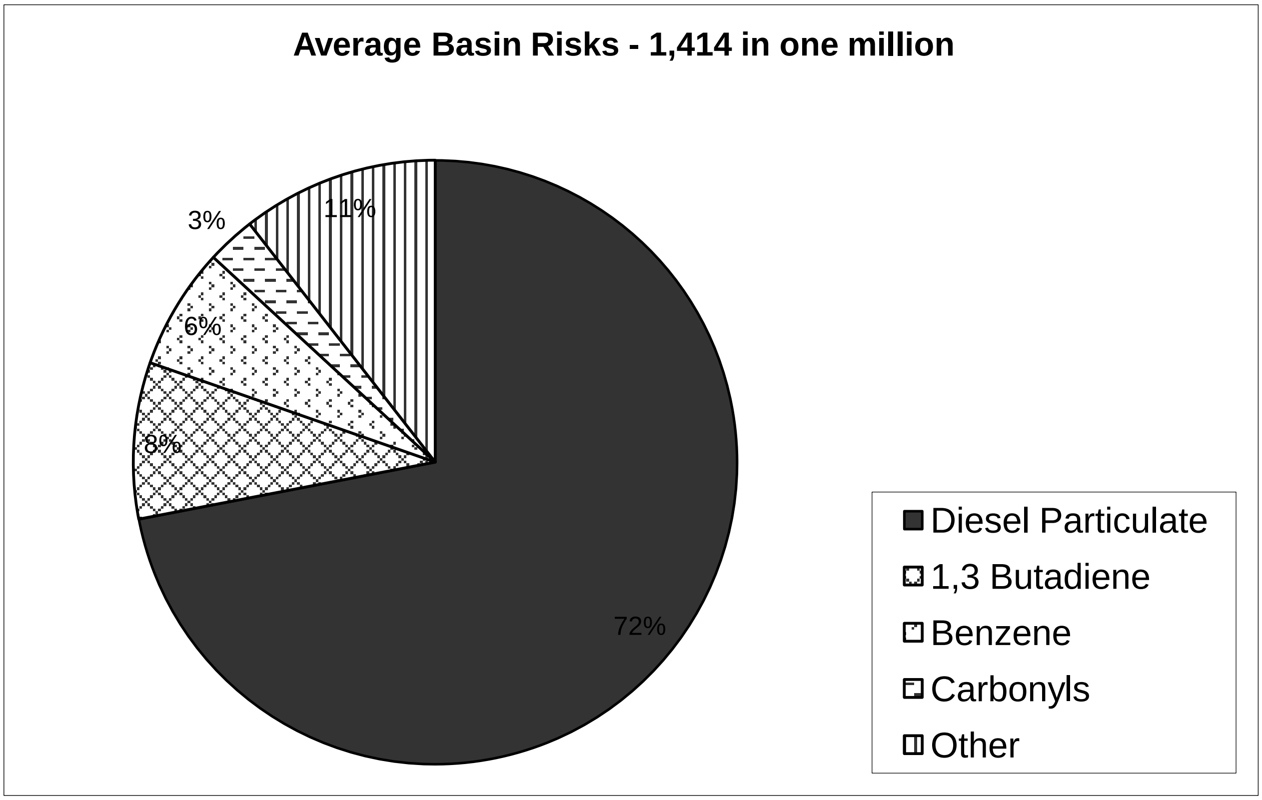
Unlike carcinogens, for most noncarcinogens it is believed that there is a threshold level of exposure to the compound below which it will not pose a health risk. The California Environmental Protection Agency and Office of Environmental Health Hazard Assessment (OEHHA) develop reference exposure levels (RELs) for TACs that are health-conservative estimates of the levels of exposure at or below which health effects are not expected. The noncancer health risk due to exposure to a TAC is assessed by comparing the estimated level of exposure to the REL. The comparison is expressed as the ratio of the estimated exposure level to the REL, called the hazard index.

Multiple Air Toxics Exposure Study II (MATES II) Study

The MATES II study, which is the most comprehensive study of urban toxic air pollution ever undertaken, shows that motor vehicles and other mobile sources of air pollution are the predominant source of cancer-causing air pollutants in the Basin. The SCAQMD’s Governing Board directed staff to undertake the MATES II study as part of the agency’s environmental justice initiatives (e.g., EJ Initiative #7) adopted in late 1997. A panel of scientists from universities, an environmental group, businesses, and other government agencies helped design and guide the study. The study was aimed at determining the cancer risk from toxic air pollution throughout the area by monitoring toxics continually for one year at 10 monitoring sites. Another goal was to determine if there were any locations where TAC concentrations emitted by local industrial facilities were causing a disproportionate cancer burden on surrounding communities. To address this second goal, the SCAQMD monitored toxic pollutants at 14 sites for one month each with three mobile monitors. Monitoring platforms were placed in or near residential areas adjacent to clusters of facilities. Although no TAC hotspots were identified, models show that elevated levels can occur very close to facilities emitting TACs.

In the 1999 MATES II study, SCAQMD monitored more than 30 toxic air pollutants at 24 sites over a one-year period. The SCAQMD collected more than 4,500 air samples and together with the CARB performed more than 45,000 separate laboratory analyses of these samples. A similar, but less extensive, study (known as MATES I) was conducted in 1986 and 1987. In each study, SCAQMD calculated cancer risk assuming 70 years of continuous exposure to monitored levels of pollutants.

The MATES II study found that the average carcinogenic risk throughout the South Coast Air Basin is about 1,400 in one million (1,400 x 10^{-6}). Mobile sources (e.g., cars, trucks, trains, ships, aircraft, etc.) represent the greatest contributors. As shown in Figure 3.1-9, about 70 percent of all risk is attributed to diesel particulate emissions; about 20 percent to other toxics associated with mobile sources (including benzene, butadiene, and formaldehyde); and about 10 percent of all risk is attributed to stationary sources (which include industrial facilities and certain other businesses such as dry cleaners).



Source: Mates II Final Report, March 2000, Page ES-9

Figure 3.1.9 Major Pollutants Contributing To Cancer Risk In The South Coast Air Basin

3.1.4 Regional Emissions Inventory

The SCAQMD compiles emissions inventories for anthropogenic sources, i.e., those associated with human activity, and natural sources such as vegetation and wind erosion. Table 3.1-9 summarizes SCAQMD's current emissions inventory for the District. . The emissions inventory for the anthropogenic inventory is made up of stationary sources (both point and area sources are in this category) and mobile sources encompassing on-road and off-road mobile sources. On-road mobile sources include light-duty passenger vehicles; light-, medium-, and heavy-duty trucks; motorcycles, and urban buses. Off-road mobile sources include off-road vehicles, trains, ships, aircraft, and mobile equipment.

Table 3.1-9
Sources of Criteria Pollutant Emissions Caused by Human Activities
(tons/day, annual average)

Source Category	NO_x	SO_x	CO	VOC	PM_{10}
Stationary and area sources	155.49	23.12	98.90	461.73	387.32
Mobile sources (on- and off-road)	1,134.32	75.42	8,562.40	857.27	45.36
Total	1,289.81	98.54	8,661.30	1,319.00	432.68
Source: Appendix III, 1997 Air Quality Management Plan (AQMP) (SCAQMD, 1996)					

3.1.4.1 Criteria Pollutants Inventory

The SCAQMD emissions inventory includes district levels for the criteria air pollutants NO_x, CO, SO_x, PM_{10}, and for VOC (a precursor of criteria air pollutants). Since O_3 is formed by photochemical reactions involving the precursors VOC and NO_x, it is not inventoried.

As shown in Table 3.1-9, mobile sources are the major contributors to emissions in the district, i.e., CO (99 percent), NO_x (88 percent), SO_x (77 percent), and VOC (65 percent). The presence of PM_{10} in the atmosphere from mobile sources is mainly attributable to entrained road dust.

3.1.4.2 Toxic Pollutants Inventory

The data available for toxic emissions inventories are not nearly as complete as the data for criteria pollutants. Starting in 1989, industrial facilities have been required to compile toxic emissions inventories under California's AB 2588 program. Companies subject to the program are required to report their toxic emissions to the SCAQMD, which reviews the data.

The SCAQMD's first toxic air pollutant emissions inventory was compiled for 30 TACs for the year 1982 for stationary sources only. This inventory was updated during the first MATES study in the late 1980s, and updated again for the MATES II study in the late 1990s. This is the most up-to-date inventory prepared by the SCAQMD. Table 3.1-10 summarizes the 1998 toxics emissions inventory for selected compounds by source category.

Table 3.1-10
1998 Annual Average Day Toxic Emissions for the South Coast Air Basin (lbs/day)

Pollutant	On-Road	Off-Road	Point	AB2588	Area	Total
Acetaldehyde	5,485.8	5,770.3	33.9	57.1	189.1	11,536.2
Acetone	4,945.8	4,824.7	3,543.5	531.4	23,447.4	37,292.8
Benzene	21,945.5	6,533.4	217.7	266.8	2495.4	31,458.8
Butadiene [1,3]	4,033.8	1,566.1	6.7	2.0	151.3	5,759.9
Carbon tetrachloride	0.0	0.0	8.8	1.8	0.0	10.6
Chloroform	0.0	0.0	0.0	35.5	0.0	35.5
Dichloroethane [1,1]	0.0	0.0	0.0	0.1	0.0	0.1
Dioxane [1,4]	0.0	0.0	0.0	105.0	0.0	105.0
Ethylene dibromide	0.0	0.0	0.0	0.2	0.0	0.2
Ethylene dichloride	0.0	0.0	4.9	17.6	0.0	22.5
Ethylene oxide	0.0	0.0	58.1	12.3	454.1	524.4
Formaldehyde	16,664.9	16,499.3	521.6	674.7	1,107.5	35,468.0
Methyl ethyl ketone	905.1	906.9	3,240.2	385.9	14,535.4	19,973.5
Methylene chloride	0.0	0.0	1,378.6	1,673.6	9,421.7	12,473.9
MTBE	58,428.9	2,679.2	40.5	434.4	5,473.7	67,056.7
p-Dichlorobenzene	0.0	0.0	0.0	4.5	3,735.6	3740.1
Perchloroethylene	0.0	0.0	4,622.0	2,249.1	22,813.1	29,684.2
Propylene oxide	0.0	0.0	0.0	22.3	0.0	22.3
Styrene	1,114.8	287.1	447.0	3,836.7	21.4	5,707.0
Toluene	63,187.6	11,085.9	5,689.6	3,682.4	52,246.7	13,5892.2
Trichloroethylene	0.0	0.0	1.1	58.0	2,550.3	2,609.3
Vinyl chloride	0.0	0.0	0.0	4.3	0.0	4.3

Table 3.1-10 (Concluded)
1998 Annual Average Day Toxic Emissions for the South Coast Air Basin (lbs/day)

Pollutant	On-Road	Off-Road	Point	AB2588	Area	Total
Arsenic	0.1	0.3	2.7	0.7	21.4	25.2
Cadmium	1.6	1.5	0.5	0.7	27.5	31.8
Chromium	2.4	2.3	3.9	2.2	302.2	313.0
Diesel particulate	23,906.3	22,386.3	0.0	5.4	815.3	47,113.4
Elemental carbon[a]	27,572.1	6,690.3	702.8	0.0	16,770.5	51,735.7
Hexavalent chromium	0.4	0.4	0.3	1.0	0.1	2.2
Lead	0.7	0.9	1.9	24.5	1016.3	1044.3
Nickel	2.5	2.2	2.9	21.6	85.6	114.9
Organic carbon	16,426.2	15,381.8	0.0	0.0	108,612.1	140,420.2
Selenium	0.1	0.1	3.0	5.7	2.6	11.6
Silicon	68.6	67.6	167.2	0.0	248,614.0	248,917.4

Source: Final MATES II Study, SCAQMD (March 2000).
[a] = Including elemental carbon from all sources, including diesel particulates.

3.2 Cultural Resources

The Initial Study established that proposed project's ground-disturbing activity may have the potential to impact cultural resources at the Torrance Refinery, Torrance Loading Rack, Atwood Terminal, SWT, and Vernon Terminal. The findings and recommendations presented in this section are based on a Phase I archaeological investigation conducted by Conejo Archaeological Consultants, and presented in a report dated December 13, 2000.

3.2.1 Resource Identifications

3.2.1.1 California Environmental Quality Act

The State of California has formulated laws for the protection and preservation of archaeological resources. Generally, a cultural resource shall be considered to be "historically significant" if the resource meets the criteria for listing on the California Register of Historic Resources (Pub. Res. Code §5024.1, Title 14 CCR, §4852) including the following:

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; or

4. Has yielded, or may be likely to yield, information important in prehistory or history.

The fact that a resource is not listed in, or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to §5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in §5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code §5020.1(j) or 5024.1.

If the project may cause damage to a significant cultural resource, the project may have a significant effect on the environment. CEQA Guidelines §15064.5 pertains to the determination of the significance of impacts to archaeological and historic resources. CEQA provides guidelines for dealing with archaeological resources that may be adversely affected by project development in §15126.4. Achieving CEQA compliance with regard to treatment of impacts to significant cultural resources requires that a mitigation plan be developed for the resource(s). Preservation in place is the preferred manner of mitigating impacts to archaeological resources.

3.2.1.2 California Register of Historical Resources

Drafted in 1995, the California Register of Historical Resources provides proposed guidelines for the nomination of properties to the California Register. The California Register is an authoritative guide to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate which properties are to be protected, to the extent prudent and feasible, from substantial adverse change. The criteria for listing resources on the California Register are based on those developed by the National Park Service for listing on the National Register of Historic Places. The California Register criteria modify the National Register criteria in order to include a broader range of resources that better reflect the history of California.

3.2.1.3 California Public Resources Code

California Public Resources Code §5097.9 stipulates that it is contrary to the free expression and exercise of Native American religion to interfere with or cause severe irreparable damage to any Native American cemetery, place of worship, religious or ceremonial site, or sacred shrine.

3.2.1.4 California Health and Safety Code

If human remains are exposed during construction, California Health and Safety Code §7050.5 requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code §5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the NAHC. The NAHC will then contact the most likely descendent of the deceased Native American, who will serve as a consultant on how to proceed with the remains.

3.2.2 Ethnographic Setting

The project sites lie within the historic territory of the Native American group known as the Gabrielino or Tongva, one of the wealthiest, most populous, and most powerful ethnic nationalities in aboriginal southern California (Bean and Smith, 1978). The native word Tongva has been used to designate what were previously called Gabrielino speakers and is a preferred designation by many native people in the area (King, 1994). The Tongva/Gabrielino followed a sophisticated hunter-gatherer lifestyle, and were a deeply spiritual people (McCawley, 1996). Their historic territory included the Los Angeles Basin (which includes the watersheds of the Los Angeles, San Gabriel, and Santa Ana Rivers), the coast from Aliso Creek in the south to Topanga Creek in the north, and the four southern Channel Islands. The Tongva/Gabrielino's ancestors were Shoshonean speakers, who migrated into the Los Angeles area around 500 B.C. from the Great Basin, slowly displacing the indigenous Hokan speakers. By 500 A.D. distinct dialects were forming among the Tongva/Gabrielino.

Prior to the arrival of the Tongva/Gabrielino's Shoshonean speaking ancestors into southern California, the archaeological record indicates that sedentary populations occupied the coastal regions of California more than 9,000 years ago (Erlandson and Colten, 1991). Several chronological frameworks have been developed for the Tongva/Gabrielino region including Wallace (1955) and Warren (1968).

The Tongva/Gabrielino aboriginal way of life ended with Spanish colonization. As neophytes brought into the mission system, they were transformed from hunters and gatherers into agricultural laborers and exposed to diseases to which they had no resistance. By the end of the Mission Period in 1834, the Tongva/Gabrielino population had been decimated by disease and declining birthrates. Population loss as a result of disease and economic deprivation continued into the twentieth century.

3.2.3 History

The history of oil in the Los Angeles area begins in 1892, when Edward L. Doheny and Charles A. Canfield hand-excavated the first oil well in Los Angeles near the present corner of Second Street and Glendale Boulevard. Thus began Los Angeles' oil boom. By 1897 the Los Angeles field was yielding 1.3 million barrels per year and "Big Oil" became the biggest and most powerful industry in the Los Angeles area. The first oil boom crashed in the early 1900s due to falling prices, and the oil industry turned its major exploration efforts towards the San Joaquin Valley. Following World War I, oil companies took another serious look at the Los Angeles area and major discoveries were made in Santa Fe Springs, Huntington Beach, and Signal Hill. With the oil fields came the need for refineries and terminals to process, store, and distribute the oil and petroleum products being produced.

Mobil's roots date to the late 19th century when John D. Rockefeller purchased and then organized various petroleum interests into the Standard Oil Trust (www.exxon.mobil.com 2000).

The Standard Oil Company of New York "Socony" was the chief predecessor of Mobil. In 1955, Socony-Vacuum became Socony Mobil Oil Co. and, in 1966, simply Mobil Oil Corp. In 2000, Exxon acquired Mobil, becoming ExxonMobil. Mobil Oil Corp., as a subsidiary of ExxonMobil, now operates the facilities involved in the proposed project. The Torrance Refinery (including the Torrance Loading Rack), and Atwood, Southwestern, and Vernon Terminals were constructed in 1929, 1963, in the 1920s, and the early 1900s, respectively (Perez, Smittle, and Sakamoto, personal communication).

3.2.4 Site-Specific Setting

The information provided below is based on record searches conducted at the South Central Coastal Information Center (SCCIC) and with the Native American Heritage Commission (NAHC). Record search data were supplemented by a review of historic maps housed at the Los Angeles County's Central Library and information provided by Mobil personnel. Field surveys of potential project impact areas (areas where project ground-disturbing activities are planned) were conducted at the Torrance Refinery (including the Torrance Loading Rack) and Atwood Terminal in November and December 2000. No survey was conducted for SWT because it is built on top of fill. The potential project impact areas within the Vernon Terminal were unsurveyable because they are currently paved.

- **Torrance Facilities** (Torrance Quadrangle): The SCCIC identified no archaeological sites or surveys within a one-quarter mile radius of the refinery property. The NAHC identified no sacred lands within or adjacent to the refinery. An archaeological survey of the proposed project impact areas on December 6, 2000, identified no important cultural resources. All proposed project areas at the Torrance Refinery and Torrance Loading Rack were subject to previous ground disturbance.
- **Vernon Terminal** (Los Angeles Quadrangle): The SCCIC identified no archaeological sites or prior surveys within a one-quarter mile radius of the terminal. The NAHC identified no sacred lands within or adjacent to the facility. The Vernon Terminal, which is the oldest facility in the study, was not surveyed because the proposed project areas at the site are paved, and thus the ground surface is not visible or accessible. Some old bricks and glass have been unearthed at the Vernon Terminal during past earth-disturbing projects at the locations of existing Tanks 10 and 11, which are adjacent to the location of the new storage tank to be constructed as part of the proposed project (Perez, personal communication). The Vernon Terminal is located adjacent to the Los Angeles River. Because of its geographical setting, the Vernon Terminal has the greatest likelihood to have buried historic or prehistoric deposits. However, the Vernon Terminal has been extensively disturbed to varying (but unknown) depths over the past century by grading, excavation, and trenching projects within the facility.

- **Atwood Terminal** (Orange Quadrangle): The SCCIC identified one prehistoric site, CA-ORA-430, and no historic archaeological sites or previous archaeological surveys within a one-quarter mile radius of the terminal. Site CA-ORA-430 is located at the edge of the one-quarter mile radius and will not be impacted by the project. The NAHC identified no sacred lands within or adjacent to the terminal. An archaeological survey of the proposed project impact areas on November 29, 2000, identified no cultural resources. All proposed project areas at the terminal site were subject to previous ground disturbance.
- **Southwestern Terminal** (San Pedro Quadrangle): No prehistoric or historic archaeological sites were identified within a one-quarter mile radius of the terminal. Two surveys have been conducted within a one-quarter mile radius of the terminal, including one that covered the terminal itself. The NAHC identified no sacred lands within or adjacent to the facility. Review of older quadrangles indicates that the SWT is built on fill. Therefore, no archaeological survey was warranted or conducted for this facility.

The listings of the National Register of Historic Places, California Points of Historical Interest (1992), and City of Los Angeles Historic Cultural Monuments include no properties within a one-quarter mile radius of any of the Mobil facilities. The listings of the California Historical Landmarks (1996) lists one property, No. 384, Timms' Point and Landing, within a one-quarter mile radius of the SWT. No other California Historical Landmarks (1996) are listed within a one-quarter mile radius of the above facilities.

3.3 Energy Sources

Based on the evaluation of project-related impacts to energy sources conducted as part of the Initial Study, it was determined that the only potentially significant impact to energy sources would be associated with the operational use of electricity. The proposed project will result in a small increase in the amount of natural gas consumed at the SWT and Vernon Terminal. The proposed project will also result in an increase in electrical power use due to an increase in pumping requirements and operation of other new or modified equipment at the various Mobil facilities. Therefore, the energy setting discussed below focuses on the availability of natural gas and electricity in the project areas.

3.3.1 Electricity

Electricity is supplied to Mobil's Torrance facilities by the Southern California Edison (SCE) distribution system. Electricity is provided to the SWT by the Los Angeles Department of Water and Power (LADWP). The Atwood Terminal receives its electricity supply from the City of Anaheim Public Utilities Department. Electricity is supplied to the Vernon Terminal by the City of Vernon's Light and Power Department.

SCE is the second largest utility in North America (SCE, 2001). Since the electric utility industry was deregulated in California in 1996, SCE's main role is power transmission and distribution. More than 78 billion kilowatt-hours of electricity were supplied to customers throughout southern California by the SCE distribution system in 1999 (Alexander, 2000).

The LADWP is the largest municipally owned utility in the nation. It operates under the Charter of the City of Los Angeles enacted in 1925. The LADWP provides water and electricity to some 3.5 million residents and businesses in a 464-square-mile area. In 1999, LADWP provided 21.9 billion kilowatt-hours of electricity to its customers and sold five billion kilowatt-hours to other utility companies (LADWP, 2001).

The City of Anaheim Public Utilities Department is Orange County's only customer-owned electric and water utility, serving Anaheim's 300,000 plus residents and 15,000 businesses (City of Anaheim, 2001). The Public Utilities Department has partial ownership in various power plants, generates some its own power, and purchases electricity at predictable rates through long-term power contracts. As a result, the City of Anaheim Public Utilities Department provides its current customer base more than 2.7 billion kilowatt-hours annually (City of Anaheim, 2001).

Similar to the City of Anaheim Public Utilities Department, the City of Vernon's Light and Power Department is a publicly owned utility serving the businesses within the City of Vernon. The Light and Power Department purchases wholesale power and has a reliable electric system which provides electricity to a small service territory (City of Vernon, 2001).

Table 3.3-1 summarizes current electricity use at the project sites.

Table 3.3-1
Summary of Current Electricity Usage

Project Site	Kilowatt Hours Per Year	Provider
ance Facilities	7,796,400,000[1]	SCE
on Terminal	1,481,756[2]	City of Vernon
od Terminal	849,600[3]	City of Anaheim
hwestern Terminal	2,970,791[4]	LADWP
l	**7,801,702,147**	

[1] Data from July 1998 to July 1999 obtained from Mobil.
[2] Data for calendar year 2000 obtained from Mobil.
[3] Data from December 21, 1999 to May 23, 2000 obtained from City of Anaheim Public Utilities Electricity usage for the remainder of calendar year 2000 obtained by calculating the monthly ave December 1999 to May 2000 data.
[4] Data for calendar year 2000 obtained from LADWP.

The current electrical usage for the Mobil facilities represents approximately eight percent of the total electrical demand in southern California. The Torrance Refinery also generates a portion of the electricity it consumes.

Although the various utilities providing electricity to the project sites have been fairly reliable, California has recently experienced higher-than-expected electricity demand and supply shortages due to a number of factors, such as the deregulation of California's electric industry, and the fact that few major power plants have been built in recent years. The demand for electricity is expected to increase in the future.

There are a variety of measures being taken to address the current energy challenge. The state is reviewing the organization and operations of the California electric power industry and marketplace, and is modifying the electrical power rate structure for consumers. The state also is streamlining the regulatory review and permitting process for new power generating facilities to allow new facilities to come on stream more quickly. These changes are expected to adequately provide for future electricity demand.

As of May 2001, there were nine power plant projects over 300 megawatts (MW) in size under construction in California, with a total generating capacity of 6,037 MW. Of these projects, 2,353 MW in additional capacity are expected to be online by the end of 2001 (CEC, 2001b). Installation of pollution control equipment on some existing boilers and construction of six new peaker turbines at several LADWP power-generating stations will increase LADWP's generating capacity by 288 MW by June 2001. The CEC also has approved nine peaker plants, which are expected to be online by September 2001, and which represent an additional 814 MW in generating capacity (CEC, 2001b).

As of May 2001, there were 12 power plant projects over 300 MW in the CEC permitting process, totaling 5,060 MW in capacity. There also are four additional peaker projects under CEC review on an emergency basis (21-day review). These peaker plants represent an additional 405 MW in total, and are expected to be online by September 2001 (CEC, 2001b).

3.3.2 Natural Gas

Natural gas is a colorless, highly flammable gaseous hydrocarbon, consisting primarily of methane and ethane. Natural gas can be found in subsurface gas reservoirs, or is produced as a by-product of oil production. In 2000, California consumed more than 14,400 million therms of natural gas, which is equivalent to approximately four billion cubic feet per day (CEC, 2000).

The service area of the Southern California Gas Company, which encompasses much of the southern portion of the state, including the greater Los Angeles area, consumed over 8,200 million therms in 2000, nearly 60 percent of the statewide total (CEC, 2000). Statewide natural gas consumption is forecast to increase by 1.5 percent per year between 2001 and 2010, with virtually all of that increase stemming from increased electric generation (CEC, 2001a).

Factors including the growth in natural gas demand in California, and limitations in the ability of the gas transmission pipeline system that supplies the state to serve this increased demand, have led to dramatic increases in natural gas prices in California in 2001. Existing pipelines transport up to 7,000 million cubic feet per day of natural gas to California. There are a number of planned projects to increase natural gas pipeline delivery capacity to California. These projects are expected to add 915 million cubic feet per day of capacity by 2002, an increase in capacity of 13 percent (CEC, 2001).

As the only project-related increase in natural gas usage is expected at the SWT and Vernon Terminal, these are the only project sites for which baseline natural gas usage is provided. Currently, the SWT uses about 75,000 therms per year of natural gas. This information was obtained for calendar year 2000 from the Southern California Gas Company, the utility that provides natural gas to the SWT. According to information provided by Mobil, the Vernon Terminal uses approximately 25,000 therms per year of natural gas.

3.4 Geology and Soils

The following subsections address the key geological hazards associated with the various project sites and the proposed activities.

3.4.1 Geological Setting

Southern California is characterized by a variety of geographic features that form the basis for subdividing the region into several geomorphic provinces. The Mobil facilities involved with the proposed project are all located within the northwestern portion of the Peninsular Range Province, a major physiographic and tectonic province characterized by a prevailing northwesterly orientation of structural geologic features. This general area, known as the Los Angeles (geological) Basin, is a northwest-trending lowland plain approximately 50 miles long and 20 miles wide. Structurally this geologic basin is divided into four major subdivisions: the southwestern block, the northwestern block, the central block, and the northeastern block.

The dominant structural feature near all involved Mobil facilities except the Atwood Terminal is the northwest trending Newport-Inglewood Fault Zone, which is a structural zone extending from Newport Bay in the south, northwest to Beverly Hills. This feature is expressed topographically as a line of low discontinuous hills and ridges. In addition, the Torrance facilities and SWT are near the trace of the Palo Verdes Fault, which, although less extensive than the Newport-Inglewood Fault Zone, has the potential to generate significant ground motion. The Atwood Terminal area is dominated by the Whittier-Elsinore Fault, a northwest-trending structural feature that extends from near the California-Mexico border in the south, northwestward approximately 135 miles to Whittier.

The Torrance facilities and SWT are located in coastal environments, both of which are underlain by recent alluvial Holocene and upper Pleistocene silts and clays. SWT is located in the Port of Los Angeles, while the Torrance facilities are located inland on the coastal plain.

The Vernon Terminal is located within an inland subsection of the Los Angeles Basin known as the Downey Plain. The site is underlain by Holocene and older alluvial deposits that comprise alternating beds of dense to very-dense sand, clay, and silts. The site is on the banks of the Los Angeles River.

The Atwood Terminal is located inland near the eastern edge of the Los Angeles Basin, southwest of the Santa Ana Mountains, approximately one mile north of the Santa Ana River. Unconsolidated Holocene alluvial deposits of gravels, sand, and clays underlie the site.

3.4.2 Structural Setting

The Torrance facilities, Vernon Terminal, and SWT are located in areas of well-known historic seismic activity, and are subject to the effects of moderate to large seismic events. California Division of Mines and Geology (CDMG) historic seismic records (CDMG, 1999, 1998a, 1998b, and 1998c) indicate that between 1932 and 2000, over 30 earthquakes of Richter magnitude 5.0 or greater occurred within 50 miles of these sites. Approximately 35 active faults are known to exist within this same 50-mile radius (CDMG, 1994). Figure 3.4-1 illustrates the locations of major faults in the Los Angeles area. Of primary concern to these project sites is the Newport-Inglewood Fault, located approximately five miles northeast of the Torrance Refinery property and

SWT, approximately seven miles southwest of the Vernon Terminal, and the Palos Verdes Fault, which lies four miles southwest and approximately one mile north of SWT.

The Newport-Inglewood Fault Zone dominates the geologic structure of the area encompassing these facilities, and represents the most significant potential sources of strong ground shaking there. The northwest-trending Newport-Inglewood Fault Zone is over 45 miles long and is marked at the surface by low eroded scarps along subparallel, offsetting faults and by a northwest-trending chain of elongated low hills and mesas that extend from Newport Bay to Beverly Hills (CDMG, 1998). The orientation of the structural elements of the zone is generally attributed to right-lateral, strike-slip faulting at depth.

The Palos Verdes Fault, which is local to the Torrance and Southwestern Terminal sites, is also northwest trending, extending nearly 50 miles on and offshore. Onshore traces of the fault reveal no recent fault rupture, but offshore segments of the Palos Verdes Fault are suspected to have more recent, Holocene ruptures.

Historic seismic records (CDMG, 1999, 1998a, 1998b, and 1998c) indicate that over the last 70 years numerous earthquakes of Richter magnitude 5.0 or greater have occurred within 50 miles of the Atwood Terminal site. Approximately 35 active faults are known to exist within this same 50-mile radius (Jennings, 1994). Of primary concern is the Whittier-Elsinore Fault, which lies approximately four miles to the northeast of the Atwood Terminal. Because of its proximity, the Whittier-Elsinore fault is considered to be the most likely source for significant seismic effects at the Atwood site.

3.4.2.1 Seismicity

Southern California is a seismically active area for which there are good-to-excellent historic records available for the last 150 to 200 years. Instrumental seismic records are available for the past 50 years. Earthquake magnitudes are expressed using the Richter scale, a log scale generally ranging from 0 to slightly less than 9.0. Figure 3.4-1 is a regional fault map of the Los Angeles area.

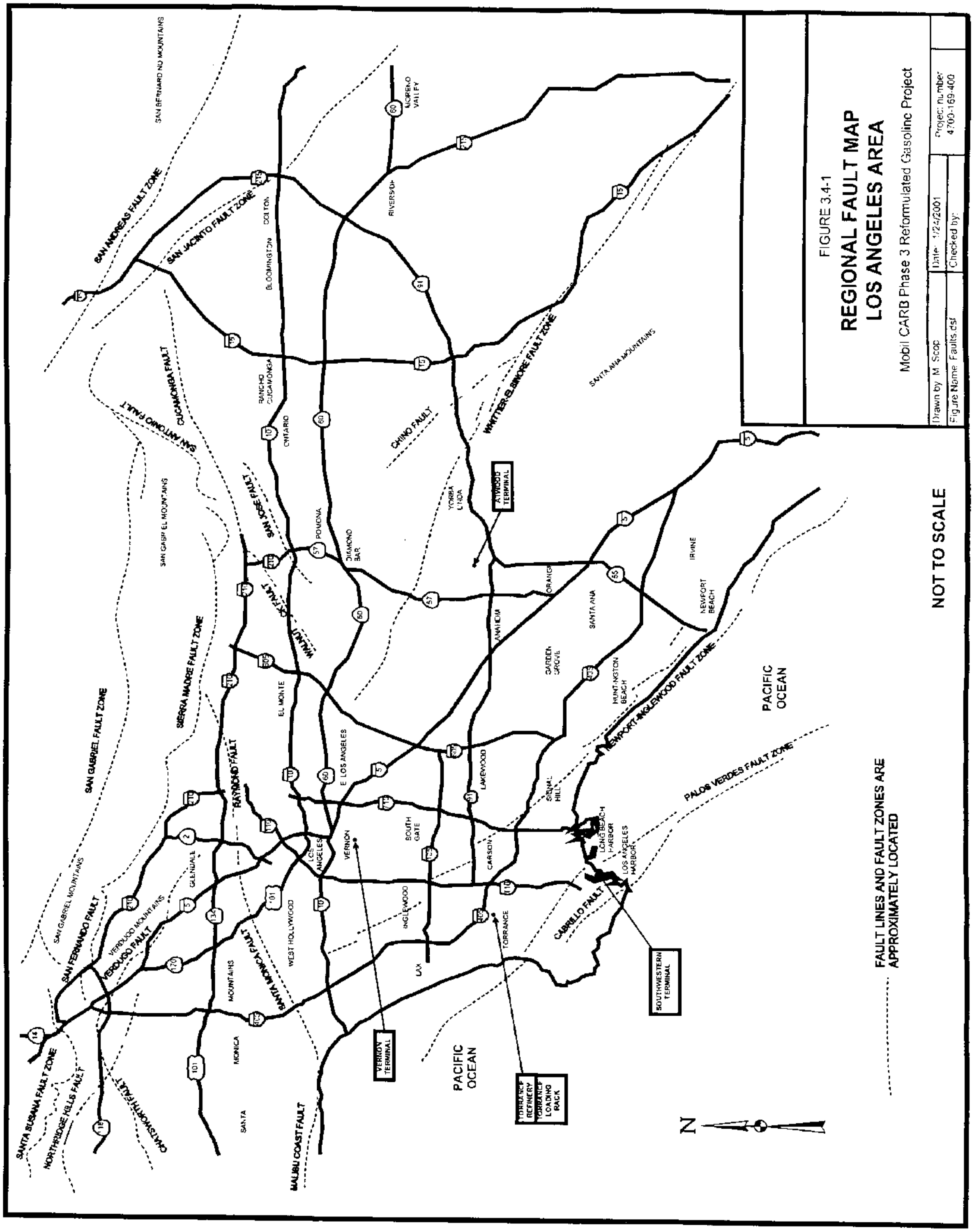


FIGURE 3.4-1
REGIONAL FAULT MAP
LOS ANGELES AREA
Mobil CARB Phase 3 Reformulated Gasoline Project
NOT TO SCALE
FAULT LINES AND FAULT ZONES ARE APPROXIMATELY LOCATED
PACIFIC OCEAN
SOUTHWESTERN TERMINAL
VERNON TERMINAL

There is a strong correlation between the distribution of seismic events and the location of major faults. This correlation is particularly true for events greater than magnitude 6.0. The proximity of major faults to the project location areas increases the probability that an earthquake of magnitude 6.0 or greater may affect the project site. A magnitude 7.0 or higher earthquake would be capable of adversely affecting most existing structures in the project vicinity.

The greatest concentration of seismic events in the area encompassing the Torrance, Vernon, and SWT facilities has resulted from activity on the Newport-Inglewood Fault Zone. Most notable of the historic earthquakes on the Newport-Inglewood Fault was the magnitude 6.3 Long Beach earthquake, which occurred in 1933. Within the past 30 years, an annual average of between two and three local earthquakes in the magnitude range of 3.0 to 4.5 have been recorded at various locations along the zone. The fault is considered capable of generating a 6.9 maximum moment magnitude earthquake. Slip rate on the fault is estimated to be 1.0 millimeter per year.

Atwood Terminal

The greatest concentration of local seismic events in the vicinity of the Atwood Terminal site has resulted from activity on the Whittier-Elsinore Fault. The Whittier Fault, located approximately five miles northeast of the site is about 40 kilometers long, and comprises the northwest terminus of the more extensive Elsinore Fault Zone to the southeast. The Whittier fault is a right-lateral strike slip fault, with a slip rate of nearly 3.0 millimeters per year. The most recent seismic activity in the Atwood vicinity was the 1987 Whittier Narrows Earthquake, a magnitude 5.9 event, involving the Whittier and Puente Faults. Because of its proximity, this geologic structure is considered to be the most likely source for significant future seismic events affecting the Atwood site.

3.4.2.2 Important Historic Earthquakes/Earthquake Probability

The CDMG has completed a seismic hazard evaluation study of the areas encompassing the project sites (CDMG, 1999, 1998a, 1998b, and 1998c). The CDMG evaluation forms the basis for the following discussion on seismic hazards. CDMG compiled available historic local and regional seismic records and used these data to develop defensible and site-specific seismic hazard analyses. The hazard analysis, in particular, was designed to predict earthquake-induced ground motions capable of causing ground failure (liquefaction, landslides) for the areas that include the project sites.

In the CDMG hazard evaluation, the ground-shaking levels for the various project sites were estimated for each of the sources (local or regional faults capable of generating an earthquake) included in the seismic source model using attenuation relationships that correlate earthquake shaking with magnitude, distance from the earthquake, and type of fault rupture (strike-slip, reverse, normal, or subduction).

The CDMG hazard evaluation included the hazards associated with ground motion exceeding peak horizontal ground acceleration at 10 percent probability of exceedance in 50 years (CDMG, 1998). Table 3.4-1 summarizes the CDMG-calculated estimates for probable ground motion and the maximum magnitude of a causative earthquake at the project sites.

Table 3.4-1
Ground Motion and Maximum Magnitude Estimates for the Project Sites

Site	Ground Motion*	Maximum Earthquake Magnitude (distance from source fault in miles)	Source
Torrance Facilities	0.51 g	7.1 (1.2 mi)	CDMG 1998, Seismic Hazard Evaluation, Inglewood Quadrangle, Los Angeles County, CA
Vernon Terminal	0.42 g	6.7 (1.2 mi)	CDMG 1998, Seismic Hazard Evaluation, Los Angeles Quadrangle, Los Angeles County, CA
Atwood Terminal	0.40-0.50g	6.5-7.0 (1.2 mi)	CDMG 1999, Seismic Shaking- Hazard Maps of California
Southwestern Terminal	0.55 g	7.1 (1.2 mi)	CDMG 1998, Seismic Hazard Evaluation, Long Beach Quadrangle, Los Angeles County, CA

* Peak ground acceleration at 10 percent probability of exceedance in 50 years on spatially uniform soft rock site conditions.
g = Acceleration due to gravity, i.e., 32 feet/sec^2 = 1 g.

3.4.2.3 Ground Rupture - Earthquake Zoning

The Alquist-Priolo Special Studies Zones Act specifies that after a review of seismic records and geological studies, an area, (termed an "Earthquake Fault Zone" area) is to be delineated surrounding faults that are deemed "sufficiently active" or "well defined" to constitute a surface rupture hazard. This legislation was passed to prohibit the location of most structures for human occupancy across the traces of active faults, and thus to mitigate the hazard of earthquake-induced ground rupture. Cities and counties affected by these Earthquake Fault Zones must regulate certain existing and future development projects within the zones through their permitting and building code enforcement (CDMG, 2000).

Torrance, Vernon, and SWT facilities are located near the Newport-Inglewood Fault, the trace of which has been designated as a special studies zone. However, none of these sites overlies the delineated fault trace. This information was verified by mapping and site investigations conducted as part of the Alquist-Priolo Act.

Although located in an acknowledged seismically active area, the Atwood Terminal also is not located on a fault trace. This information was verified by mapping and site investigations conducted as part of the Alquist-Priolo Act.

3.4.2.4 Subsidence

Of the various project sites, only SWT has been affected by significant historic ground subsidence. Subsidence is the vertical displacement of the ground surface. Human-induced subsidence of land in the southwest portion of the Los Angeles (geological) Basin was first observed in the Wilmington oil field south of the project area in 1937. The removal of oil and gas in this and neighboring oil fields allowed the rock and mineral grains in the oil reservoirs to pack together more closely, reducing bed thickness and causing subsidence of the ground surface.

Human-induced withdrawal of oil from the 1920s to the 1950s in the nearby Long Beach area caused subsidence up to 70 feet, whereas historically the area near SWT had a subsidence of less than two feet (Association of Engineering Geologists, 1969). In the late 1950s, mitigation measures, including water-flooding depressurization, reduced subsidence to insignificant levels, and has served to re-establish ground surface stability.

3.4.3 Soils (Surficial Geology)

All of the project sites are located on undifferentiated Quaternary and more recent Holocene alluvial deposits of gravels, sand, silts and clay.

3.4.3.1 Expansive Soils

Expansive soils have the ability to shrink and swell with wetting and drying. The shrink-swell capacity of expansive soils can result in differential movement beneath foundations. Investigation of all the various project sites indicates that the majority of the near-surface soils are granular in nature. Accordingly, the expansion potential of site soils is anticipated to be low.

3.4.3.2 Soil Liquefaction

Soil liquefaction is a phenomenon in which saturated, cohesionless soils (sand) temporarily lose their strength and liquefy when subjected to dynamic forces such as intense and prolonged ground shaking. Liquefaction typically occurs when the water table is shallow (generally less than 40 feet below ground surface) and the soils are predominantly granular and unconsolidated. The potential for liquefaction increases as the groundwater approaches the surface. Recent analysis of seismic hazards in California by the CDMG indicates that, of the various project sites, only the SWT and Atwood sites are in areas where geologic conditions and historic occurrence of liquefaction suggests the potential for future liquefaction-related ground displacements (CDMG, 1999).

3.4.3.3 Landslides

Landslides involve the downslope movement of masses of soil and rock material under gravity. Landslides can be caused by ground shaking, such as earthquakes, or heavy precipitation events. Generally, landslides occur on the sideslopes of mountains comprised of sedimentary materials. Sedimentary rocks are particularly susceptible to landslides because they often contain relatively less competent beds of clays and other fine-grained rocks interbedded with more competent beds of sand and gravel.

Recent analysis of seismic hazards in California by the CDMG indicates that none of the project sites is considered to be in areas subject to earthquake-induced landslides (CDMG, 1999).

3.5 Hazards and Hazardous Materials

In general, hazard impacts are not a discipline with specific environmental characteristics that can be easily described or quantified. Instead, hazard impacts typically consist of random, unexpected accidental occurrences that may create adverse effects on human health or the environment.

This section describes features of the existing environment as they relate to the risk of a major accident occurring at the Torrance Refinery site and the various terminals.

3.5.1 Types of Onsite Hazards and Upset Scenarios

Determining the magnitude of the risk of an upset event considers the following factors:

- the consequences of the event;
- the types of materials potentially involved in the upset event; and
- the location of sensitive receptors, e.g. residences, schools, and businesses.

Under SCAQMD CEQA significance criteria the probability of an event occurring cannot be used in determining whether impacts are considered "significant." Based on a review of the existing Torrance Refinery and terminal operations and processes, the greatest potential for an upset condition to occur that would affect the public would result from the ignition or explosion of flammable material. The most likely flammable materials to have an offsite impact would be MTBE, pentane, gasoline, or butane, which are flammable liquids stored in large quantities at the Torrance Refinery; large quantities of gasoline are stored at all the terminals and MTBE is received at SWT. Both radiant heat and blast over-pressures could result from ignition of flammable liquids. For the terminals, gasoline is the flammable material most likely to have off-site impacts. Other events that could have offsite impacts are a gasoline release and fire due to a tank truck accident, or a gasoline or butane release due to a railcar accident during export of these products. These are the types of upset events most likely to occur in an environment such as a refinery and its associated terminals, and as such, establish a basis for analysis (SCAQMD, 1993).

Mobil currently adheres to the following safety design and process standards:

- California Health and Safety Code Fire Protection specifications;
- Design standards for petroleum refinery equipment established by the American Petroleum Institute, American Society of Mechanical Engineers, the American

Institute of Chemical Engineers, the American National Standards Institute, and the American Society of Testing and Materials; and

- Applicable Cal-OSHA requirements.

Mobil maintains its own emergency response capabilities, including onsite equipment and trained emergency response personnel who are available to respond to emergency situations anywhere within the refinery (see Section 3.8).

The Torrance Refinery also has instituted a Risk Management Prevention (RMP) program for the hazardous materials, butane, pentane, and ammonia that are currently used. Risk management program modifications under RMP and the California Accidental Release Prevention Program (CalARP) will be required for the new butane and pentane processes associated with this project. The City of Torrance Fire Department administers this program for the Torrance Refinery. In addition, the refinery has prepared an Emergency Response Manual. This manual describes the emergency response procedures that would be followed in the event of any of several release scenarios and the responsibilities for key response personnel. The scenarios currently include the following:

- Release of ammonia stored at the refinery for NO_x control and other uses;
- Releases of pentane or butane involving both ignited and unignited vapors
- Releases from other hydrocarbon storage tanks that are located throughout the refinery

3.5.2 Applicable Hazards Regulations

The following discussion describes laws and regulations affecting the proposed project and the management of risk associated with process upsets.

A variety of safety laws and regulations have been in existence for many years to reduce the risk of accidental releases of chemicals at industrial facilities. Initially, the federal government passed legislation to enhance emergency planning efforts in Title III of the Superfund Amendments and Reauthorization Act. Next, the U.S. EPA developed Emergency Preparedness and Community Right-to-Know regulations.

The U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) passed a rule in 1992, known as Process Safety Management of Highly Hazardous Chemicals (29 Code of Federal Regulations [CFR] 1910.119), which addresses the prevention of catastrophic accidents. The rule requires companies handling hazardous substances in excess of specific threshold amounts to develop and implement process safety management (PSM) systems. The requirements of the PSM rule are directed primarily at protecting workers within the facility. One of the key components of the required PSM systems is the performance of process hazard analyses, which are assessments to anticipate causes of potential accidents and to improve safeguards to prevent these accidents.

In California, Assembly Bill 3777 first required facilities handling acutely hazardous materials (AHMs) to establish Risk Management Prevention Programs (RMPPs) in 1986. The objective of these regulations was to identify facilities that handle AHMs above certain threshold limits and to require these facilities to develop RMPPs to address the potential hazards involved. The RMPPs were intended to identify hazards involving AHMs, evaluate potential consequences of releases, and identify recommended changes in equipment, training, operating, and maintenance procedures, mitigation systems, and emergency response plans to minimize both the potential for these releases and their effects should they occur. The California Office of Emergency Services published guidelines for preparing RMPPs in November 1989 (OES, 1989). In some cases, administering agencies (usually cities or counties responsible for emergency response and preparedness) have issued additional guidance. The RMPP program has been replaced with the CalARP.

The U.S. EPA established a federal RMP under the 1990 Clean Air Act Amendments (CAAA), which were passed in November 1990. The CAAA mandated that EPA create regulations to require facilities possessing listed chemicals above specified threshold amounts to develop and implement RMPs. The RMPs contain a hazard assessment of potential worst-credible accidents, an accident prevention program, and an emergency-response program. Federal regulations were promulgated for RMPs in June 1996. The Federal RMP was provisionally accepted by California in January 1997 to replace the California RMPP and California regulations. The CalARP program was finalized by June 1997, as California's version of the RMP. RMP/CalARP regulations require that risk management programs be completed for affected processes by the first time a listed substance exceeds the threshold quantity in the process.

3.6 Hydrology/Water Quality

Water issues in the Los Angeles area are complex and affect supply, demand, and quality of water for domestic, commercial, industrial, and agricultural use. Because of the combination of a large population and the low average rainfall in the region, over half of the water supply in the area is imported, making water supply and water quality issues of substantial importance. Elements of both the regional and local hydrologic environment are presented in this section.

3.6.1 Water Quality

Extensive urbanization in the Los Angeles area has resulted in significant alteration and deterioration of the natural hydrologic environment. Presently, surface runoff flows into a network of storm drains that empty into several large rivers (e.g., Los Angeles River, Rio Hondo) and a complex of manmade channels. Due to extensive paving and coverage of the ground surface by manmade structures throughout the area, groundwater recharge by infiltration has steadily decreased at the same time groundwater pumping has increased.

3.6.1.1 Surface Water Quality

The primary objective of the Federal Water Pollution Control Act, otherwise known as the Clean Water Act (CWA), is to restore and maintain the chemical, physical, and biological integrity of the nation's surface waters. Pollutants regulated under the CWA include "priority" pollutants, (including various toxic pollutants); "conventional" pollutants, such as biochemical oxygen demand, total suspended solids, oil and grease, and pH; and "nonconventional' pollutants, which includes any pollutant not identified as either "conventional" or "priority."

The CWA regulates both direct and indirect discharges. The National Pollution Discharge Elimination System (NPDES) Program (CWA §502) controls direct discharges into waters of the United States. NPDES permits contain industry-specific, technology-based limits and may also include additional water quality-based limits, and establish pollutant-monitoring requirements. A NPDES permit also may include discharge limits based on federal or state water quality criteria or standards.

In 1987, the CWA was amended to require a program to address stormwater discharges. In response, the U.S. EPA promulgated the NPDES stormwater permit application regulations.

California received U.S. EPA approval of its NPDES permit program on May 14, 1973. Pursuant to §402(p) of the CWA and 40 CFR Parts 122, 123, and 124, the State Water Resources Control Board adopted a general NPDES permit to regulate stormwater discharges associated with industrial activity and a permit to regulate stormwater discharges associated with construction activity. Stormwater discharges from petroleum-refining operations are subject to requirements under this general permit unless a site-specific NPDES permit has been issued to the facility. Terminal operations are also subject to NPDES stormwater requirements if vehicle or equipment maintenance is conducted onsite.

CWA requirements also include both spill prevention planning (Spill Prevention Control and Countermeasure Plan [SPCC]) and spill response planning (Facility Response Plans) for certain facilities.

On June 13, 1994, the Los Angeles Regional Water Control Board (LARWQCB) adopted an updated Water Quality Control Plan for the Los Angeles Region (LA Basin Plan). The LA Basin Plan incorporates by reference key State Board policies that are applicable to the Los Angeles Region. The Torrance Refinery, SWT, and Vernon Terminal are located within the area covered by the LA Basin Plan. The LA Basin Plan includes water quality objectives and beneficial uses for the Los Angeles Inner Harbor. The beneficial uses of the Los Angeles Inner Harbor are industrial service supply, navigation, non-contact water recreation, preservation of rare and endangered species, and marine habitat.

The Atwood Terminal is within the Santa Ana Basin. On March 11, 1994, the Santa Ana Regional Water Quality Control Board adopted an updated Water Quality Control Plan for the Santa Ana River Basin (Santa Ana Basin Plan). The regional boundaries for the Santa Ana Region are the

Los Angeles County line, the crest of the San Gabriel and San Bernardino Mountains, the Santa Margarita River, and the Pacific Ocean. The beneficial uses of the Santa Ana River are municipal, contact and non-contact recreation, groundwater recharge, wildlife habitat, and warm freshwater habitat.

Torrance Facilities

The Torrance facilities are located adjacent to a City of Torrance stormwater drainage basin. This basin collects drainage from an industrial park, the Torrance Promenade Mall, and the Union Carbide Chemicals and Plastics distribution facility. Although the offsite drainage basin does not collect drainage from the Torrance Refinery, by agreement between Mobil and the City of Torrance, stormwater that collects in this basin is pumped directly to the Mobil site via a culvert and is discharged from there, as described below.

Under NPDES Permit No. CA0055387, which expires in January 2003, the Torrance Refinery is authorized to discharge up to 15 million gallons of stormwater and up to three million gallons of treated groundwater per day to a concrete channel under Van Ness Avenue, which ultimately discharges to the Dominguez Channel. Effluent limitations are identified in Table 3.6-1.

Table 3.6-1
Discharge Limitations for Mobil Torrance Refinery

Constituent	Units	Discharge Limitations[1]		
		Daily Average	30-Day Average[2]	Instantaneous Maximum
Aldrin	pg/l	---	140	---
Antimony	µg/l	---	---	6
Arsenic	µg/l	190	---	360
Benzene	µg/l	---	---	1.0
Beryllium	µg/l	---	---	4
$BOD_5$20°C	mg/l	---	20	30
Cadmium	µg/l	b	---	b
Carbon tetrachloride	µg/l	---	---	0.5
Chlordane	pg/l	4,300	81	---
Chlorobenzene	µg/l	---	---	100.0
Chloroform	µg/l	---	480	---
Chromium (VI)[3]	µg/l	11	---	16
Copper	µg/l	c	---	c
Cyanide	mg/l	---	---	0.2
DDT[4]	ng/l	1.0	0.6	---
1,2-dichlorobenzene	mg/l	---	18	---
1,3-dischlorbenzene	mg/l	---	2.6	---
1,4- dichlorobenzene	µg/l	---	64	---
1,1-dichloroethane	µg/l	---	---	5.0
1,2-dichloroethane	µg/l	---	---	0.5
1,1-dichloromethane	µg/l	---	---	6.0
Dichloromethane	µg/l	---	1,600	---
Dieldrin	ng/l	1.9	0.14	---
Ethylbenzene	µg/l	---	---	10.0
Endosulfan	ng/l	56	2.0	220
Endrin	ng/l	2.3	---	180
Fluoranthene	µg/l	---	42	---
Halomethanes	µg/l	---	480	---
Heptachlor	ng/l	3.8	0.17	---
Heptachlor epoxide	ng/l	---	0.07	---
Hexachlorocyclohexane				
alpha	ng/l	---	13	---
beta	ng/l	---	46	---
gamma	ng/l	---	62	80
Lead	µg/l	d	d	

Table 3.6-1 (Continued)
Discharge Limitations for Mobil Torrance Refinery

Constituent	Units	Discharge Limitations[1]		
		Daily Average	30-Day Average[2]	Instantaneous Maximum
Mercury	µg/l	---	0.012	2.4
Nickel	µg/l	e	4,600	e
Oil and grease	mg/l	---	10	15
PAHs[4]	ng/l	---	31	---
PCBs[4]	ng/l	---	0.07	14
Pentachlorophenl	µg/l	h	8.2	h
Phenols (total)	mg/l	---	---	1.0
Phenol	mg/l	---	0.3	---
4-chloro-3-methylphenol	mg/l	---	3.0	---
2,4,6-trichlorophenol	µg/l	---	1.0	---
Residual chlorine	mg/l	---	---	0.5
Selenium	µg/l	5.0	---	20
Settable solids	ml/l	---	0.1	0.2
Silver	µg/l	---	---	f
Suspended solids	mg/l	---	50	75
TCDD equivalents[4]	pg/l	---	0.014	---
Tetrachloroethylene	µg/l	---	---	5.0
Thallium	µg/l	---	---	2
Toluene	µg/l	---	---	10.0
Toxaphene	ng/l	0.2	0.69	730
Tributyltin	ng/l	40	---	60
Trichloroethylene	µg/l	---	---	5.0
Turbidity	NTU	---	50	75
Vinyl chloride	µg/l	---	---	0.5

Table 3.6-1 (Concluded)
Discharge Limitations for Mobil Torrance Refinery

Constituent	Units	Discharge Limitations[1]		
		Daily Average	30-Day Average[2]	Instantaneous Maximum
Xylene	µg/l	---	---	10.
Zinc	µg/l	g	---	g

1 = The discharge rate mass limitations (in lbs/day) shall be determined using the tabulated concentration limits and flow rate of the effluent.

2 = The 30-day average concentration shall be the arithmetic average of all the values of daily concentrations calculated during the month. If only one sample were taken within than month, compliance would be based on the result of analyses of that sample.

3 = Discharger may, at their option, meet this limitation as total chromium.

4 = As defined in the California Inland Surface Waters Plan, 1991.

e = Day average nickel = $e^{0.864H+1.1645}$; Inst. nickel = $^{e0.846H+3.3612}$

f = Instantaneous maximum silver = $e^{172H-6.52}$

h = Day average pentachlorophenol = $e^{1.005(pH)-5.290}$; Inst. Maximum pentachlorophenol = $e^{1.005(pH)-4.830}$

H = ln (effluent hardness in mg/l as $CaCO_3$)

g = Day average zinc = $e^{0.8473H+0.7614}$; Inst. zinc = $e^{0.8473H+08604}$

pH = Effluent pH

Stormwater runoff from the site (including the Torrance Loading Rack) is collected in a 24-million gallon unlined retention basin and a 12.6-million gallon reclamation basin. Floating oil is skimmed off. Some of this water is pumped or gravity flows to the refinery cooling towers for reuse as make-up water. The rest of the water, with the approval of the Los Angeles County Sanitation Districts (LACSD), is treated and discharged to the municipal sewer system. In the event that both basins are full and flooding of the facility is imminent, water would be diverted to an oil/water separator prior to discharge to the concrete channel and ultimately the Dominguez Channel. However, no emergency situation has occurred that has required stormwater discharge from the site to the Dominguez Channel since March 1992.

Erosion is not a significant water quality issue because the Torrance Refinery property is generally flat and the existing vegetation, paving, and other coverings provide sufficient erosion control. In addition, berms are sealed with tar to prevent erosion. However, portions of the stormwater conveyance system are unlined. The earthen drainage ditches on the west side of Crenshaw Boulevard are cleaned of vegetation during the dry season so that vegetation does not divert water outside the ditches. These unlined ditches flow to ditches on the east side of Crenshaw Boulevard where all drainage ditches are concrete-lined. Erosion from the unlined ditches appears minimal, as sediment does not build up appreciably in the lined portion of the conveyance system.

The stormwater outfall is known as O'Brian Lake, which is a 200,000-gallon capacity concrete-lined sump. The sump is equipped with adjustable skimming equipment, a dam with a gate valve, and pumps. The pumps are used to divert water to the LACSD. The valve would be opened only in case of an emergency when all measures to control the lake level have been exhausted. If necessary, stormwater discharges would be treated to meet NPDES permit limits prior to opening this gate valve and discharging to a surface water body.

NPDES stormwater requirements also include:

- Elimination of nonstormwater discharges to the stormwater system;
- Preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP); and
- Development and implementation of a Stormwater Monitoring and Reporting Program.

Mobil's Torrance facilities have complied with the above requirements.

Additionally, a SPCC Plan and an approved Facility Response Plan have been prepared for the Torrance Refinery. These plans detail the procedures and equipment used to minimize the chance of spills to the environment. All employees with responsibilities in potential spill areas are trained in spill prevention and mitigation procedures.

Two Industrial Wastewater Discharge permits have been issued to the Refinery (No. 1148R-3 and No. 516 R-1); these permits apply to the Torrance Loading Rack as well. Permit No. 516 R-1 is for the Van Ness outfall and is issued for the discharge of treated wastewater from normal refinery operations and turnarounds including processed refinery wastewater, reverse osmosis reject water, reclaimed water de-nitrification waste streams, biotreatment wastestreams, groundwater from site remediation, onsite well rehabilitation wastes, and contaminated stormwater. This permit expires in December 2001.

Permit No. 1148R-3 is for the discharge to the Del Amo outfall of treated wastewater from sour water stripping, demineralizer wastewater, reverse osmosis reject water, contaminated rainwater, groundwater, boiler blowdown, and cooling tower bleed. The permit expires in January 2003.

Runoff from paved areas during dry weather, stormwater from the first 10 minutes of continuous rainfall, spills, and all oily wastewater streams are directed to the oily water treatment system. Surface water collected in the oily water sewer flows by gravity to the oily water treatment unit located in the refinery tank farm. Discharge to this system includes crude desalter mud tank waters, process wastewaters, boiler blowdown, sample cooler drainings, pump gland oil, vacuum truck wash water, and equipment and pad washdown water. The treated wastewater is discharged to the LACSD at the Van Ness outfall.

Oil-free wastewater, such as cooling tower blowdown, demineralizer wastewater, and stripped sour water, is collected in holding tanks and drained to the LACSD at the Del Amo outfall.

Figures 3.6-1 and 3.6-2 present flow diagrams of the portions of the refinery's wastewater system that flow to the Van Ness Outfall and Del Amo Outfall, respectively.

Vernon Terminal

The Vernon Terminal is located adjacent to the Los Angeles River. Several ASTs are located onsite, with a total capacity of approximately 260,000 bbls. The tanks are equipped with high-level alarms and visual gauges. The ASTs have double steel bottoms with a liner and cathodic protection. In addition, five small underground storage tanks (USTs) are located at the terminal, with a total capacity of just under 1,000 bbls.

Drain valves and tank water draw-off valves are closed and locked when not in use. All tanks are located within secondary containment. The diked area is sufficient to contain the contents of the largest tank plus precipitation.

Water drained from the roofs of the ASTs and stormwater that accumulates in the diked areas is normally retained onsite and allowed to evaporate. In cases of extreme rainfall, the discharge is inspected prior to opening the valve and during the discharge. The valve is shut when the discharge is completed.

The surface of the terminal's loading/unloading area is concrete paved and bermed with catch basins that discharge into a clarifier and steel UST.

Vehicle and equipment maintenance are conducted at the terminal and the facility is subject to stormwater regulations. Vernon operates under a general stormwater permit and has in-place a SWPPP.

The facility also has a SPCC Plan that describes spill prevention measures, which include loading/unloading procedures (e.g., ensuring that truck brake system are interlocked with hose connections, which prevents truck movement until the hoses are disconnected), inspections and training requirements.

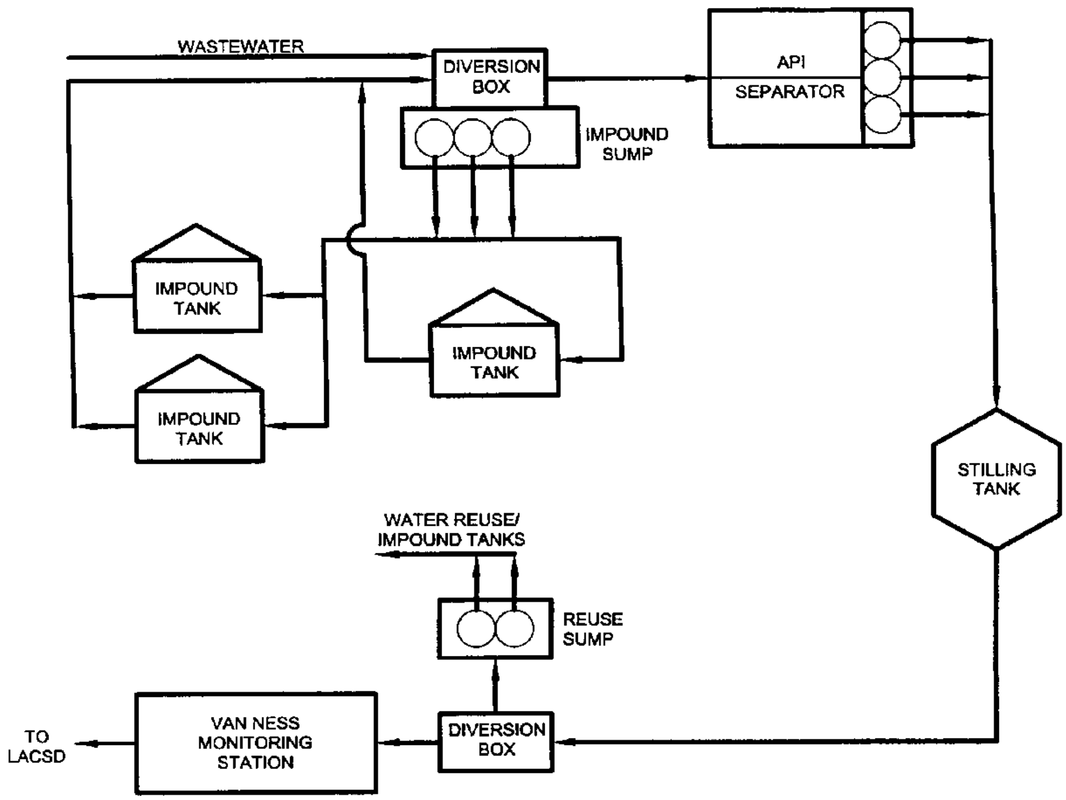


FIGURE 3.6-1

WASTEWATER FLOW DIAGRAM

Torrance Refinery Van Ness Outfall

Mobil CARB Phase 3 Reformulated Gasoline Project

DRAWN: M. SCOP	DATE: 5/21/01	PROJECT NO.	REV.
FILE NO. van ness	CHK BY:	4700-170	

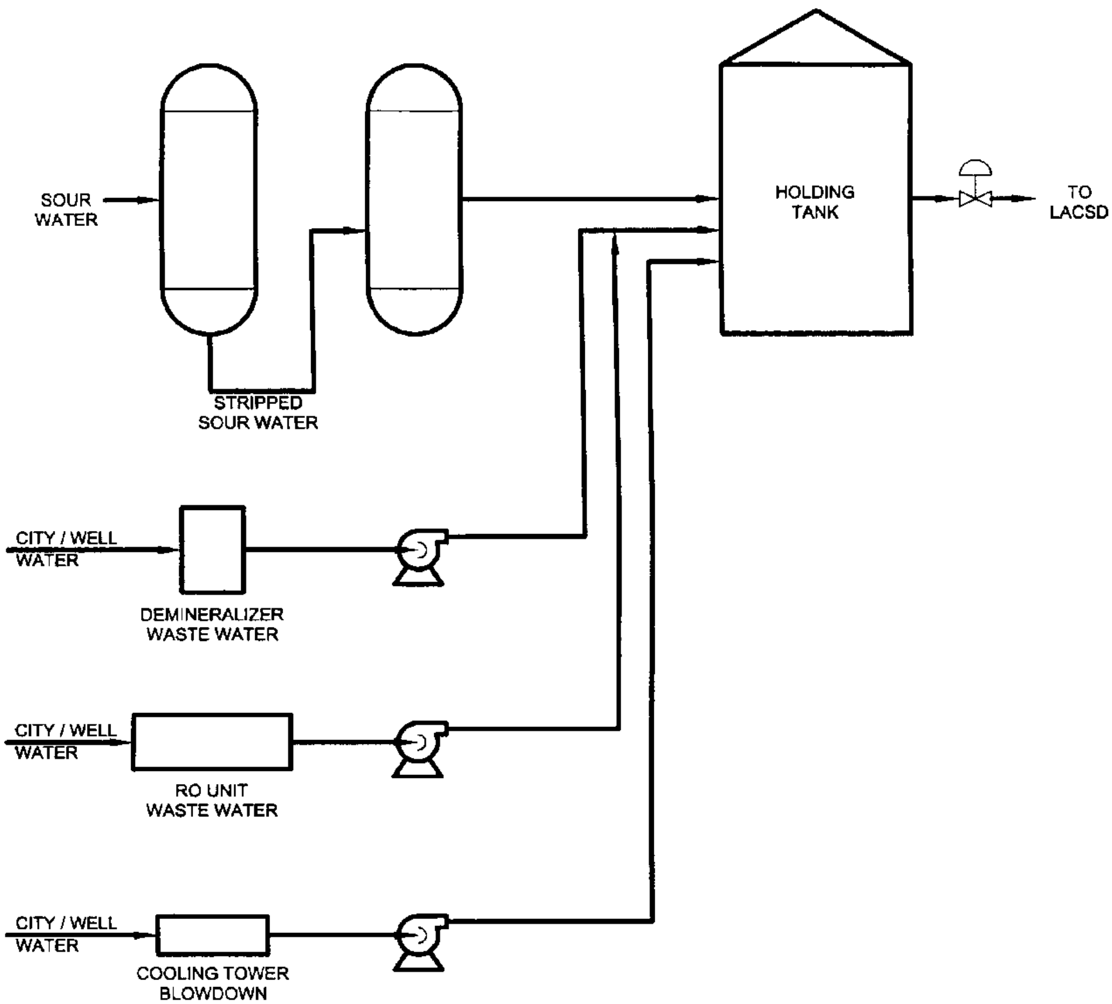


FIGURE 3.6-2

WASTEWATER FLOW DIAGRAM

Torrance Refinery Del Amo Outfall
Mobil CARB Phase 3 Reformulated Gasoline Project

DRAWN: M. SCOP	DATE: 5/21/01	PROJECT NO. 4700-170	REV.
FILE NO. del amo	CHK BY:		

The terminal also has received a permit (NPDES Permit No. CAG674001 and Monitoring and Reporting Program No. CI-8160) for the discharge of up to 6,000,000 gallons per day of hydrostatic test water. The water is being generated as a result of inspecting and repairing three ASTs. Prior to discharge, a sample must be taken and analyzed for settable solids, total suspended solids, turbidity, biological oxygen demand, oil and grease, temperature, pH, sulfides, total dissolved solids, nitrogen, sulfate, chloride, residual chlorine, and acute toxicity. If any constituent exceeds the limit in Order No. 97-047, the discharge must be terminated and may only be resumed after remedial measures have been implemented.

Atwood Terminal

The Atwood Terminal is located in the City of Anaheim. Stormwater is not discharged from the facility's tank farm. Instead, it is retained within the diked area of the tank farm until it evaporates. However, vehicle maintenance is conducted at the terminal, and therefore, the facility is subject to stormwater regulations and has a SWPPP. The facility also has a SPCC Plan in place that addresses operating procedures, inspections, and training requirements that are intended to avoid spills.

Several ASTs are located onsite, with a total capacity of approximately 50,000 bbls. Each tank is equipped with a visual gauge and high-level alarms. Drain valves and tank water draw-off valves are closed and locked when not in use. All tanks are located within secondary containment. All tank bottoms have cathodic protection. The diked area is sufficient to contain the contents of the largest tank plus precipitation.

The truck loading rack is contained within a berm. The bermed area drains into a 12,000-gallon double-walled UST. The UST is pumped out before the volume of material in the tank exceeds 5,000 gallons and the material is recycled at the refinery.

Southwestern Terminal

The SWT is located on Terminal Island in the Port of Los Angeles, immediately adjacent to the Main Harbor channel. Twenty-four ASTs are located onsite, with a total capacity of approximately 997,000 bbls. The tanks have visual gauges and high-level alarms. Tank levels and high-level alarms are transmitted to a computer system at the Terminal Control Center, which is manned 24 hours per day. Drain valves and tank water draw-off valves are closed and locked when not in use. All tanks are located within secondary containment, which has enough capacity to contain the contents of the largest tank plus 10-percent freeboard to account for precipitation. Special access ports that are equipped with leakless doors are built through the concrete firewalls. These doors are kept closed at all times except when the tank dike area is being accessed.

Water drained from the roofs of the ASTs and stormwater that accumulates within secondary containment surrounding the ASTs is retained within the dike and allowed to evaporate. Stormwater collected within the paved areas that are curbed flows to a UST and is recovered in the slop oil tank. The contents of the tank are pumped out and sent offsite for oil recovery.

Drainage from undiked areas flows to catchment basins. The valves on the basins are kept closed at all times except when draining stormwater. During periods of heavy rainfall, the discharge is inspected prior to and during the time that the bypass valve is opened, and the valve is shut immediately upon completion of the discharge.

The terminal is allowed to discharge up to 150,000 gallons per day of wastewater to the Los Angeles Harbor Main Channel under NPDES Permit No. CA0003689 (which is a combined industrial wastewater discharge and stormwater discharge permit). This wastewater can consist of steam condensate, stormwater runoff, tank washing/line displacement, and ship ballast water. The permit expires in March 2002. Wastewater passes through a settling tank where oil is skimmed off and solids are allowed to settle. The water is then discharged to an API separator for further physical separation. After aeration, the water is filtered and discharged to the harbor through Discharge Point 001. A schematic of the wastewater treatment system is presented in Figure 3.6-2. Discharge limitations for the terminal are presented in Table 3.6-2.

Table 3.6-2
Discharge Limitations for SWT

Constituents	Units of Measurement	Discharge Limitations Maximum
Settable solids[2]	ml/l	0.2
Suspended solids[2]	mg/l lbs/day[1]	75 93.71
$BOD_5 20°C$	mg/l lbs/day[1]	30 37.49
Oil and grease	mg/l lbs/day[1]	15 18.74
Detergent (as MBAS)	mg/l lbs/day[1]	0.5 0.625
Residual chlorine[3]	mg/l lbs/day[1]	0.1 0.125
Turbidity	TU	75

1 – Based on a maximum flow of 150,000 gallons per day
2 – Not applicable during periods of rainfall
3 – If no chlorine is used, the report shall so state

SWT received Waste Discharge Requirements for the discharge of hydrostatic test water (NPDES Permit No. CAG674001, CI-7952). The Waste Discharge Requirements authorize the discharge of up to 4.5 million gallons per day of hydrotest water into the Main Channel of the Los Angeles harbor. These discharges are associated with the recently completed refurbishing of 19 ASTs at the facility. These tanks now all have double bottoms and leak-detection ports.

Additionally, a SPCC Plan and an approved Facility Response Plan have been prepared for the terminal. These plans detail the procedures and equipment used to minimize the chance of spills to the environment. All employees with responsibilities in potential spill areas are trained in spill prevention and mitigation procedures.

3.6.1.2 Groundwater Quality

The Torrance facilities, SWT, and Vernon Terminal are located in the Los Angeles geologic basin. The Los Angeles geologic basin is bordered by the Newport-Inglewood Fault on the east, the Santa Monica Bay on the west, the Ballona Gap on the north, and the Palos Verdes hills on the south. Many of the shallow water-bearing units in the Los Angeles Basin are hydraulically connected to offshore sediments. Withdrawal of fresh water from these zones has resulted in significant saltwater intrusion into the groundwater basins. The West Coast Basin Barrier Project is an ongoing project operated by the Los Angeles County Department of Public Works (LACDPW). This project involves a series of injection and monitoring wells installed and maintained by the LACDPW to prevent seawater intrusion.

Groundwater resources are managed by the Water Replenishment District of Southern California (WRD), formerly known as the Central and West Basin Water Replenishment District. The State Department of Water Resources acts as the court-appointed Watermaster in connection with water rights adjudications. In addition to limiting total extractions from the Basin, groundwater resources management programs administered by the WRD include:

- Purchase of imported and reclaimed water for replenishment;
- Creation of fresh water barriers along the coast by injection of purchased imported water into injection wells (which allows water levels in the more inland portions of the South Coast Air Basin to be drawn below sea level without the threat of seawater intrusion); and
- Monitoring of groundwater quality and determination of the relative quantities of local, imported, and reclaimed water to be used for replenishment) in order to maintain the chemical quality of the groundwater)

During a recent geotechnical investigation conducted at the Vernon Terminal, borings were advanced to a depth of 95 feet below ground surface and no groundwater was encountered (PSI, 2001).

Groundwater below the Torrance Refinery property has been impacted by past operations and a groundwater remediation project has been underway since 1986. Treated groundwater is discharged to the sanitary sewer.

Groundwater below the SWT occurs at approximately 10 feet below ground surface. Groundwater flow direction and gradient are highly variable and are a function of tidal fluctuations. Previous subsurface investigations have identified a layer of free hydrocarbon product on the groundwater. The thickness of the layer ranges from an observable sheen to approximately two feet. LARWQCB Cleanup and Abatement Order No. 99-003 requires free hydrocarbon product recovery both on and offsite. Removal of free hydrocarbon product began in January 1999.

The Atwood Terminal is located in the Santa Ana Region. Contaminated groundwater underlies many areas of the region, resulting from historic discharges of chlorinated solvents. According to the City of Anaheim, groundwater in the area of the terminal is being pumped and treated to remove chlorinated solvents. During a recent geotechnical investigation conducted at the site, soil borings were advanced to a depth of approximately 75 feet below ground surface, and no groundwater was encountered. It is expected that groundwater below the site occurs at approximately 100 feet below ground surface (PSI, 2001).

3.6.2 Water Supply

This subsection discusses water supply issues for the areas that include the proposed project sites.

Since the turn of the century, extensive water development has been carried out in the Los Angeles Basin. The Los Angeles Aqueduct, which imports water from the Owens Valley, was completed in 1913 and extended to the Mono Lake Basin in 1940. Due to restrictions on diversions from the Mono Basin and Owens Valley, the amount of water that can be diverted to the Los Angeles area has been reduced.

According to the Water Supply Fact Sheet published by the City of Los Angeles, the Colorado River Aqueduct, which now provides approximately 25 percent of the region's water supply, was completed in 1941. Contracts allow the diversion of 1.21 million acre-feet per year to the Los Angeles area.

In an average year, 75 percent of the water used in the Los Angeles area comes from the eastern Sierras via the Los Angeles Aqueduct. Wells in the San Fernando Valley and other local groundwater basins supply approximately 15 percent of the water (City of Los Angeles, 2001).

Annually, approximately 628,000 acre-feet of water are provided to the Los Angeles area from the above sources. About two-thirds of the water demand is for residential uses, about one quarter of the demand is for commercial and governmental uses, with industry consuming only a small percentage (City of Los Angeles, 2001).

Both the Colorado River Aqueduct and California's State Water Project deliver water to the Santa Ana Basin region. In addition, a Santa Ana River Watermaster guarantees minimum average annual flows and quality from the San Bernardino area to the lower basins. This water can consist of wastewater, imported water, and/or dry weather runoff. The Santa Ana River transports more than 125 million gallons per day of reclaimed water from Riverside and San Bernardino counties for recharge into the Orange County Groundwater Basin. This satisfies approximately 40 percent of the county's water demand.

3.6.2.1 Torrance Facilities

The Torrance Refinery currently purchases an average of 3,190,000 gallons of raw water per day from the Metropolitan Water District, and uses 1,132,000 gallons of onsite well water daily. Typical water uses at the facility include boiler makeup water, cooling towers, firewater, and potable water. The facility has active water conservation and recycling programs. In the most significant such program, about 6,000,000 gallons of reclaimed water is used daily. This reclaimed water, which is treated water from a municipal wastewater treatment plant, is used in cooling towers, high-pressure bodies, reverse osmosis units, and other refinery facilities.

3.6.2.2 Southwestern, Vernon, and Atwood Terminals

The SWT purchases an average of 50,000 to 60,000 gallons of water per day from LADWP. This water is used for maintenance-related activities, fire system checks, and as potable water. Generally, minimal quantities of water are used at the Vernon and Atwood terminals, although on infrequent occasions (e.g., when new or modified tanks are about to be put into service), several million gallons are used for one-time hydrostatic testing.

3.7 Land Use and Planning

This section discusses existing land uses in the vicinity of each of the project sites.

3.7.1 Regional Setting

Mobil's Torrance facilities, Vernon Terminal, and SWT are located in southern Los Angeles County while the Atwood Terminal is located in the City of Anaheim in Orange County. The general area of southern Los Angeles County is highly urbanized and includes a substantial amount of industrial and port-related development, due to the proximity of the Ports of Los Angeles and Long Beach.

Los Angeles County is one of the nation's largest counties, encompassing nearly 4,100 square miles. It is bordered on the east by Orange and San Bernardino counties, on the north by Kern County, on the west by Ventura County, and on the south by the Pacific Ocean. It has the largest population (9.8 million as of July 1999) of any county in the nation, and contains approximately 29 percent of California's residents (County of Los Angeles, 2000).

Orange County is comprised of approximately 800 square miles, including 42 miles of coastline, and is situated between Los Angeles and San Diego Counties. (County of Orange, 2000). Orange County is the third most populous county in California and one of the most densely populated areas in the United States. Between 1950 and 1990, the population has increased tenfold. Growth is expected to continue, with the population projected to rise from 2.8 million to approximately 3.3 million people by 2020 (County of Orange, 2000).

The areas surrounding the project sites can generally be characterized as a blend of heavy and light industrial, commercial, medium- and high-density residential, and industrial/manufacturing.

3.7.2 Project Site and Vicinity Land Uses

3.7.2.1 Torrance Facilities

The proposed modifications to the Torrance facilities will be developed within the existing property boundaries. Land use on the property is dominated by heavy industry and manufacturing.

Land to the north of the site on the north side of 190th Street between Prairie Avenue and Crenshaw Boulevard is primarily residential. The north side of 190th Street between Crenshaw Boulevard and Western Avenue consists of commercial and light industrial development, including an auto repair facility, various building contractors (air conditioning, plumbing, etc.), and a kitchen cabinet maker. Columbia Regional Park is located northwest of the refinery, and additional residential development is found northeast of the site.

Land uses east of the Mobil property on the east side of Van Ness Avenue include primarily commercial and light industrial facilities, including car dealerships, auto repair facilities, aerospace research and development, and computer/electronic equipment sales.

The southern boundary of the Torrance Refinery site is the Burlington Northern Santa Fe (BNSF) railroad line, beyond which are several land uses ranging from industrial to residential. Southwest of the refinery, in the triangle formed by the railroad line, Prairie Avenue, and Del Amo Boulevard, land use is primarily commercial and industrial. Industrial development is located south of the site between Prairie Avenue and Crenshaw Boulevard. A strip of residential housing is located immediately south of the railroad line along Del Amo Boulevard between Crenshaw Boulevard and Van Ness Avenue. South of the residential housing is a business park occupied by various commercial and light industrial businesses, such as building contractors, architects, software development firms, and machine shops. Southeast of the Mobil site is additional commercial, light industrial, and industrial development, such as automobile dealerships and repair shops, furniture builders, and machine shops.

Large industrial warehouse buildings are located west of the Mobil facilities.

3.7.2.2 Vernon Terminal

The Vernon Terminal is located in the northeastern portion of the City of Vernon. Land uses in the immediate vicinity are industrial, as Vernon is located at the center of the transportation network for the huge southern California market. Since it was incorporated in the early 1900's, the City of Vernon's land use policies have been established to promote and advance manufacturing industries (City of Vernon, 1992). Other land uses are subsidiary and are permitted as long as they "respect the rights of manufacturing interests" (City of Vernon, 1992).

North and northwest of the terminal site are warehouse buildings occupied by Roadway Express Trucking and Arizona Westex, a package delivery company. Northeast of the terminal is the Los Angeles River, beyond which are warehousing and transportation-related facilities.

Adjacent to the east of the terminal site is Soto Street. Beyond Soto Street is the Los Angeles River and transportation-related facilities such as truck and rail terminals and freight transfer companies.

To the south of the terminal site is East 37th Street, beyond which are additional warehousing facilities and industrial businesses such as packaging and shipping services, pharmaceutical wholesalers, and other merchandise wholesalers.

Adjacent and to the west of the terminal is a BNSF rail line, beyond which are large warehouse buildings occupied by Maas-Hansen Steel. Other large warehouse buildings occupied by industrial and light industrial businesses are located east of Maas-Hansen Steel.

3.7.2.3 Atwood Terminal

The Atwood Terminal is located in the northeastern portion of the City of Anaheim at the edge of the city limits. Land uses in the vicinity of the terminal site are primarily industrial. Adjacent to the north of the terminal is Atwood Channel (also known as Carbon Creek Channel), beyond which is a vehicle dismantling facility. Within the vehicle dismantling facility boundaries is an oil well. North of the vehicle dismantling facility is a BNSF railroad right-of-way and Orangethorpe Avenue. North of Orangethorpe Avenue is residential and commercial development located within the City of Placentia.

Adjacent to the east of the terminal is Jefferson Street, beyond which are commercial and manufacturing buildings. An active oil well is located across from the terminal site on the east side of Jefferson Street. The area east of Jefferson Street is located within the City of Placentia city limits.

South of the terminal site is a large construction equipment storage facility and another active oil well. Further south and southwest of the construction equipment storage facility is a parking lot for the storage of vehicles for Manheim/Cade, a vehicle auction company.

West of the terminal site is a large warehouse building occupied by an auto racing equipment sales company and additional parking for Manheim/Cade.

3.7.2.4 Southwestern Terminal

The SWT is located on Terminal Island in the Port of Los Angeles. Land uses in the vicinity of the terminal site are industrial in nature, as the Port of Los Angeles (in combination with the Port of Long Beach) is one of the leading shipping facilities in the world.

SWT occupies Berths 239 through 240C toward the end of the main water channel leading into the port. The terminal is surrounded by water to the west, south, and east, beyond which are additional marine-loading terminals and other industrial facilities. To the north of the terminal is the Evergreen Container Terminal.

3.7.3 Zoning

The following is a summary of the zoning designations for the Refinery and the terminals.

3.7.3.1 Torrance Facilities

The refinery property is zoned by the City of Torrance as Heavy Manufacturing (M-2), and the refinery and loading rack are permitted uses in the M-2 zone. Zoning surrounding the refinery is primarily industrial, with some residential development. Northwest of the refinery, land is zoned Public Use (P-U). Land to the north of the refinery on the north side of 190th Street, between Prairie Avenue and Crenshaw Boulevard is zoned Single-Family Residential (R-1), Multiple-Family Residential (R-3), and General Commercial (C-2). The north side of 190th Street between Crenshaw Boulevard and Van Ness Avenue is zoned M-2. Northeast of the refinery, land is zoned R-1, Light Manufacturing (M-1), and M-2. East and southeast of the refinery land is zoned M-2. The strip of residential housing located immediately south of the railroad line along Del Amo Boulevard between Crenshaw Boulevard and Van Ness Avenue is zoned R-1. The land south of the refinery between Prairie Avenue and Crenshaw Boulevard is zoned M-2. Southwest of the refinery in the triangle formed by the railroad line, Prairie Avenue, and Del Amo Boulevard, land is zoned M-2. Southwest and west of the refinery, land is zoned M-2.

Figure 3.7-1 depicts land uses and zoning in the vicinity of the refinery.

3.7.3.2 Vernon Terminal

The Vernon Terminal is zoned by the City of Vernon as General Industrial (M). Sites north, south, and west are also zoned M. Northeast of the terminal site, across from the Los Angeles River, zoning is Heavy Industry/ Warehousing/Transportation-Related (M-2). Southeast of the terminal site at the southeast corner of Soto Street and East 37th Street, zoning is M, but is part of the Slaughtering Overlay District (S).

The terminal site's use is considered a 'petroleum-related use' and is a conditionally permitted use in the General Industrial zone. The zoning of this site and surrounding sites is depicted on Figure 3.7-2.

3.7.3.3 Atwood Terminal

The Atwood Terminal is zoned by the City of Anaheim as Specific Plan 94-1, which provides for development of a variety of industrial and related uses. Sites north of Orangethorpe Avenue are zoned by the City of Placentia as Specific Plan 7 (SP-7), which provides for the development of residences, neighborhood commercial, public institutions, and open space/parks. Land on the east side of Jefferson Street is zoned by the City of Placentia as Planned Manufacturing. Land south and west of the terminal site is also zoned by the City of Anaheim as Specific Plan 94-1.

The terminal is a conditionally permitted use in the Specific Plan 94-1 zone. Figure 3.7-3 depicts the zoning in the vicinity of the Atwood Terminal.

3.7.3.4 Southwestern Terminal

The SWT is zoned by the Port of Los Angeles as [Q]M3 (Qualified, Manufacturing). The terminal is a permitted use in the [Q]M3 zone.

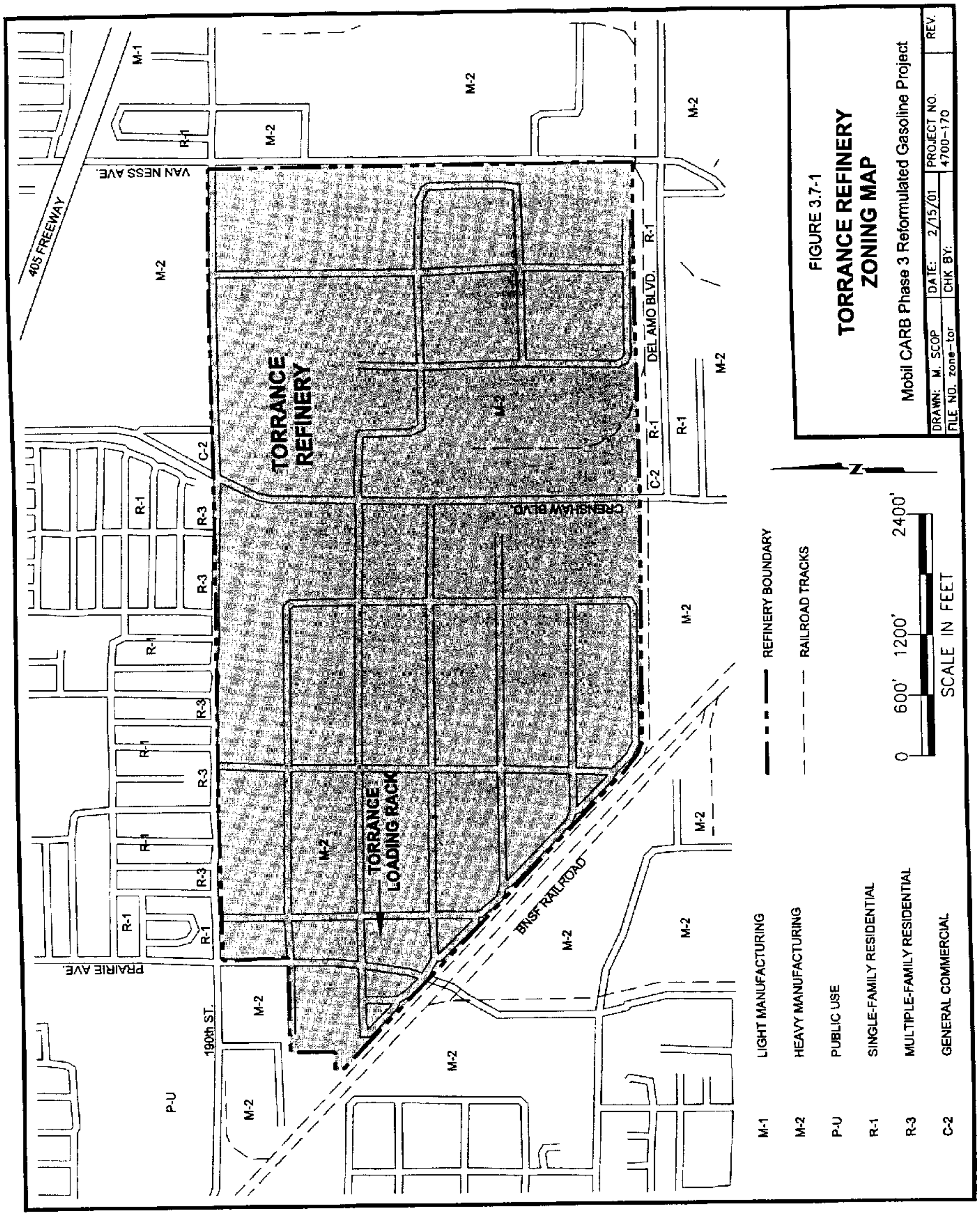


FIGURE 3.7-1
TORRANCE REFINERY
ZONING MAP
Mobil CARB Phase 3 Reformulated Gasoline Project
DRAWN: M. SCOP
DATE: 2/15/01
PROJECT NO. 4700-170
FILE NO. zone-tor
CHK BY:
REV.
TORRANCE REFINERY
TORRANCE LOADING RACK
405 FREEWAY
VAN NESS AVE.
DEL AMO BLVD.
CRENSHAW BLVD.
PRAIRIE AVE.
190th ST.
BNSF RAILROAD
M-1
M-2
P-U
R-1
R-3
C-2
REFINERY BOUNDARY
RAILROAD TRACKS
0
600'
1200'
2400'
SCALE IN FEET
M-1 LIGHT MANUFACTURING
M-2 HEAVY MANUFACTURING
P-U PUBLIC USE
R-1 SINGLE-FAMILY RESIDENTIAL
R-3 MULTIPLE-FAMILY RESIDENTIAL
C-2 GENERAL COMMERCIAL
June 2001

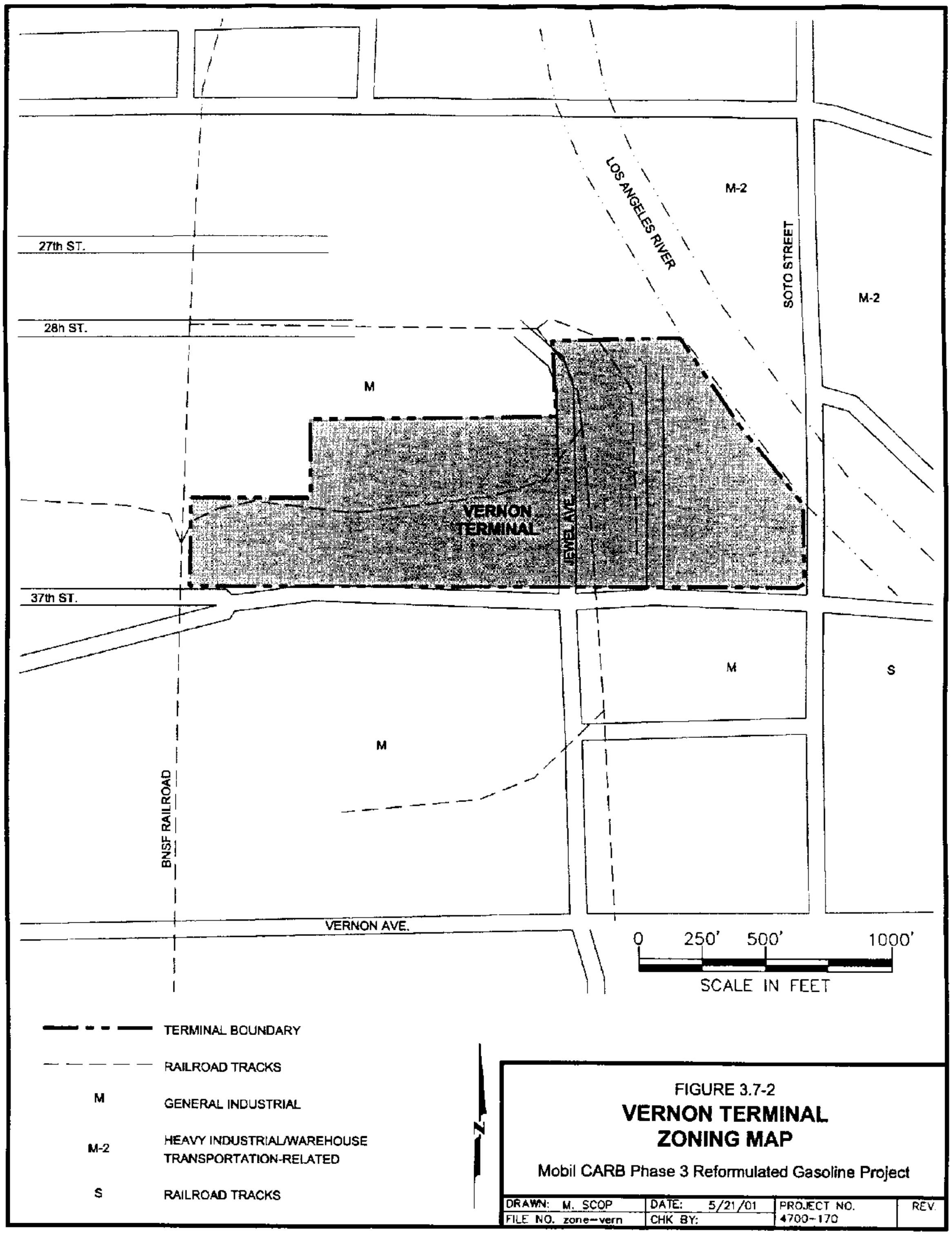


FIGURE 3.7-2
VERNON TERMINAL ZONING MAP

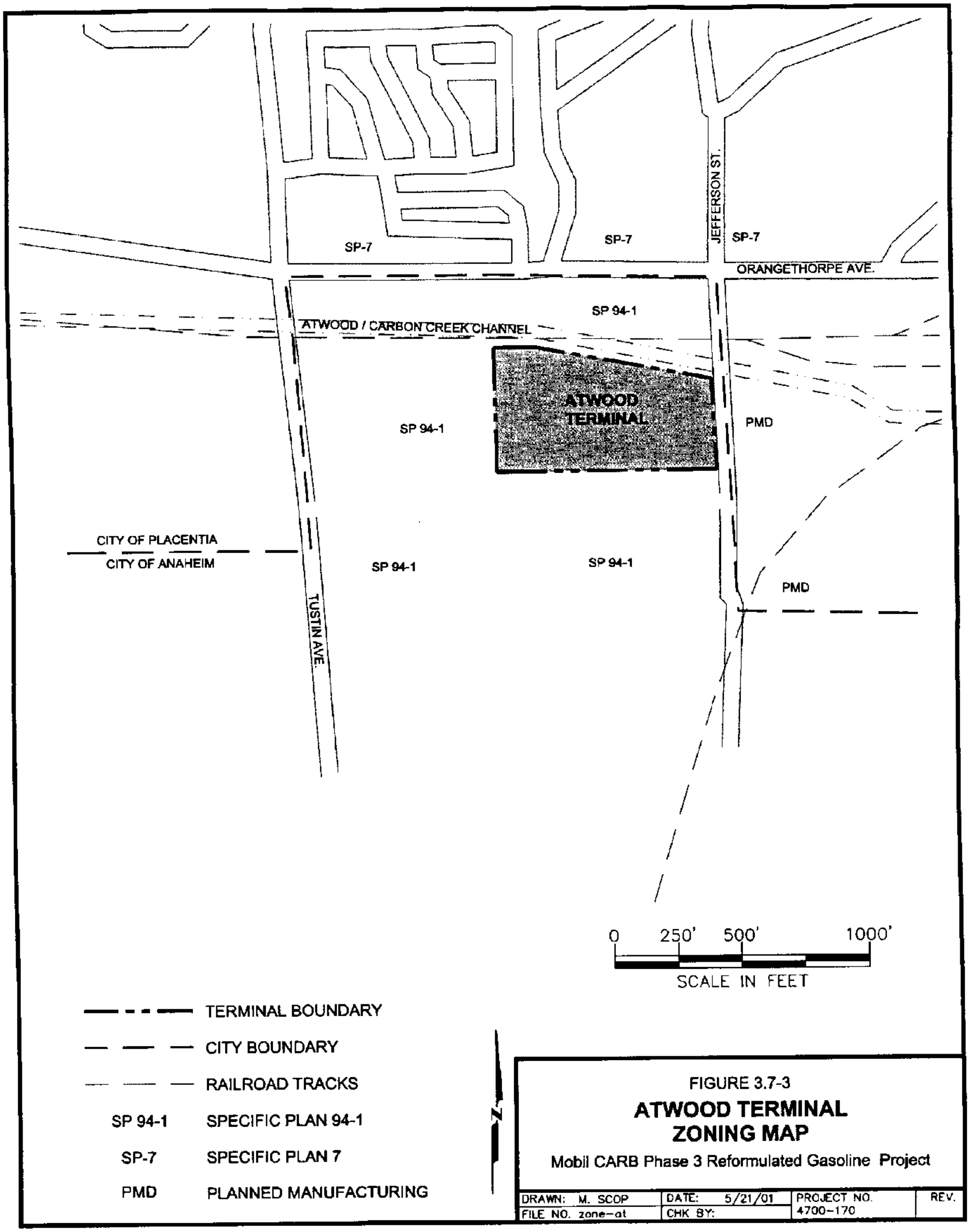


FIGURE 3.7-3
ATWOOD TERMINAL ZONING MAP
Mobil CARB Phase 3 Reformulated Gasoline Project

SWT occupies Berths 239 through 240C towards the end of the main water channel leading into the port. The terminal is surrounded by water to the west, south, and east, beyond which are additional marine loading terminals and other industrial facilities. To the north of SWT is the Evergreen Container Terminal, which is also zoned [Q]M3.

Figure 3.7-4 depicts the zoning in the vicinity of the SWT.

3.7.4 Land Use Development Plans

The following information summarizes land use development plans in the areas of the refinery and the terminals.

3.7.4.1 Torrance Facilities

According to the Land Use Element of the City of Torrance General Plan, the City currently has approximately 2,085 acres of industrially used land (about 16 percent of the total land area of the city). The Land Use Element further indicates that there are no plans to add land dedicated to heavy industrial uses beyond the existing acreage currently dedicated to this use (City of Torrance, 1992).

3.7.4.2 Vernon Terminal

The Vernon Terminal is located in the City of Vernon's Planning Area 3. No significant changes in the boundaries or composition of this land use district are planned. The location, type, and distribution of existing land uses are generally consistent with those proposed in the General Plan (City of Vernon, 1992). There are no specific plans under consideration for redevelopment, nor are there any changes of the planning area under consideration (Pirnejad, 2000)

3.7.4.3 Atwood Terminal

According to the City of Anaheim Land Use Map, industrial uses comprise approximately 5,300 acres of the City's total land area (City of Anaheim, 2000). No changes to land uses are planned for the existing areas designated for industrial development (Wright, 2000).

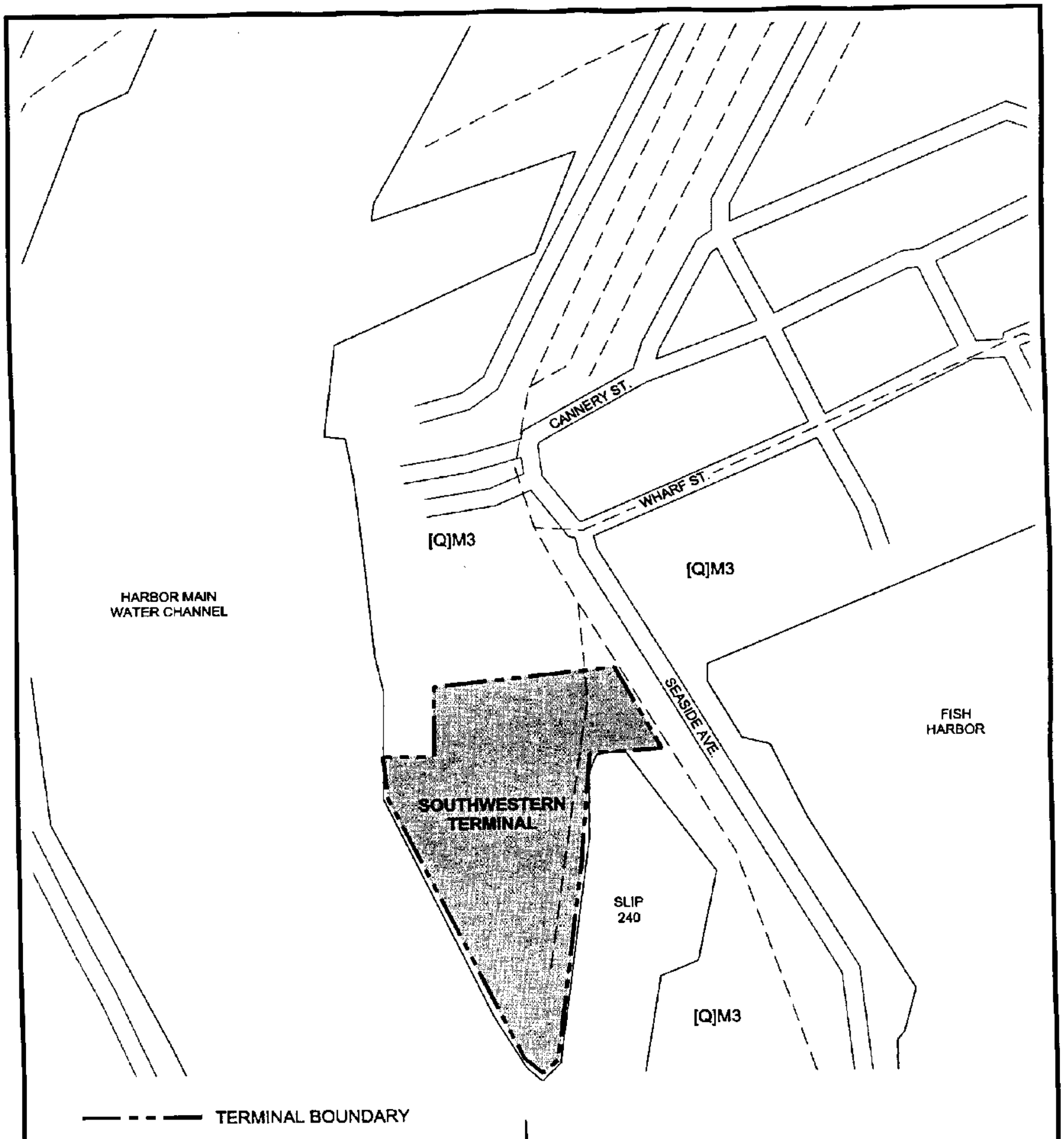


FIGURE 3.7-4
SOUTHWESTERN TERMINAL ZONING MAP
Mobil CARB Phase 3 Reformulated Gasoline Project

June 2001

3.7.4.4 Southwestern Terminal

The Port of Los Angeles is one of the major seaports in the world, ranking second in the United States and eighth in the world in container cargo volume (Port of Los Angeles, 2001). Cargo forecasts call for continued growth in upcoming years as the world's major shipping lines continue to concentrate their import/export cargo at seaports most capable of handling high volumes with the greatest efficiency (Port of Los Angeles, 2001). In 1994, the Port of Los Angeles launched a large dredging and landfilling project to form the Pier 400 container terminal. Future plans call for the proposed development of a 70-acre liquid bulk terminal, which may feature two shipping berths with 81 feet of water depth to accommodate very large crude carriers up to 375,000 deadweight tons, liquid bulk storage tanks and a pipeline corridor (Port of Los Angeles, 2001). Discussions are ongoing between Mobil and the Port of Los Angeles to avoid or minimize potential conflicts between SWT and planned development projects in the Port.

3.8 Public Services

The Torrance Refinery and the project terminals are serviced by local public service agencies, including fire and police. The Initial Study determined that the only public service that could be significantly affected by the proposed project is related to fire protection; therefore, the following discussion is limited to fire protection agencies.

The following four fire stations within the City of Torrance Fire Department serve the Torrance Refinery area and would respond to an emergency there (Shinkle, 2001):

- Station 3 at 3535 West 182nd Street (approximately 0.5 mile north of the refinery)
- Station 1 at 1701 Crenshaw Boulevard (approximately 1.25 miles south of the refinery)
- Station 5 at 3940 Del Amo Boulevard (approximately 0.75 mile southwest of the refinery)
- Station 6 at 21401 Del Amo Circle (approximately 1.5 miles southwest of the refinery)

Average response time for the fire stations listed above to the Torrance Refinery is from two to eight minutes depending on the nature of the service call (Shinkle, 2001). All City of Torrance Fire Department personnel are certified Emergency Medical Technicians. In addition, Stations 1 and 6 are staffed with paramedics.

The Torrance Refinery fire brigade, which includes approximately 95 members, provides 24-hour coverage of the refinery. The fire brigade has three fire engines, one hazardous material response rig, one, 3,000-gallon foam tender, one rescue response vehicle and other fire suppression equipment. The fire brigade includes persons trained to respond to hazardous material incidents and rescue situations.

Mobil has a comprehensive training program for the fire brigade members. Each member receives an initial 32- to 40-hour fire-fighting training course, annual First Aid and cardiopulmonary resuscitation CPR training, 10-hour quarterly fire-fighting training and offsite fire fighting training every two to three years. The training includes fire-fighting techniques, fire engine training, and spill response. Hazardous material incident and rescue responders receive the same training as the fire fighters with additional emphasis on hazardous material response and rescue procedures. In addition, hazardous material incident and rescue responders receive monthly training, which focuses on hazardous material incident and rescue response. Mobil also has Tank Fire, Fire Water Systems, and Fire Suppression Standard Operating Procedures for the refinery.

In order to provide 24-hour coverage, a Safety Group Technician is on staff for each of the refinery work shifts. In the event of an emergency situation, the Safety Group Technician is responsible for contacting the local responding fire stations. In addition, the Safety Group Technician monitors fire brigade attendance and oversees the monthly emergency response training for each shift.

In the event that an operator is unable to control an emergency situation using available fire-fighting or leak control equipment, unit operators are trained to initiate the emergency response sequence. The unit operator contacts the on-call Safety Group Technician who in turn is responsible for assessing the emergency response situation and contacting onsite and offsite response teams, as well as key management personnel, as necessary. The emergency response sequence can be initiated by radio (each operator carries a radio unit) or by phone (control room). Annual fire, safety, and health training is conducted to inform all refinery personnel of the refinery emergency response procedures.

The Vernon Terminal is serviced by the three fire departments (Stations 1, 2, and 3), depending on the nature of the service call. Vernon Fire Station 1, located at 3375 Fruitland Avenue, is situated approximately two miles from the terminal. The response time to the terminal for Station 1 is four minutes (Moore, 2001). Vernon Fire Station 2, located at 4305 South Santa Fe Avenue, and Vernon Fire Station 3, located at 2800 Soto Street, are situated approximately two miles and ¼-mile, respectively, from the terminal. The response times from Station 2 and Station 3 are each two minutes (Moore, 2001). Fire Station 2 also has a hazardous materials response team.

City of Anaheim Fire Station 5, located at 1154 North Kraemer, provides emergency response service to the Atwood Terminal (Curran, 2001). This station, which is located 1.5 miles from the terminal, has a response time of three to four minutes. In the case of a hazardous materials response incident, City of Anaheim Fire Station 8, located at 4555 East Riverdale, would respond. Station 8 has a response time of three to four minutes (Curran, 2001). The Orange County Fire Authority Station 35, located at 110 South Bradford Avenue in Placentia, also services the terminal area. Station 35 is located approximately 1.8 miles from the terminal and has a response time of five minutes (Layman, 2001).

The SWT is serviced by the City of Los Angeles Fire Department. Depending on the nature of the service call, several different fire stations would respond to an emergency incident at the SWT. Fire boats are located at Stations 111 and 112. The first station that would respond to the SWT is Station 40, which is located approximately one mile northeast of the terminal. The response time of the responding stations to an incident at the terminal would be between two and 30 minutes (Vela, 2001). The first responding station would respond in two minutes. If additional units were called in from other stations to support the first responders, they would arrive in up to 30 minutes, depending on the distance and traffic conditions. The following is a list of the responding fire stations:

- Station 40 at 330 Ferry Avenue, Terminal Island
- Station 6 at 400 Yacht Street, Wilmington
- Station 13 at 7800 South Vermont, Los Angeles
- Station 79 at 18030 South Vermont, Gardena
- Station 48 at 1601 South Grand Avenue, San Pedro
- Station 38 at 124 East I Street, Wilmington
- Station 111 at 1444 South Seaside Avenue, Terminal Island
- Station 112 at 550 Sampson Way, San Pedro

In addition, Mobil recently completed a $15 million upgrade to the fire protection system at SWT. SWT currently has a sophisticated fire detection, alarm, and monitoring system for the onsite storage tanks, as well as a fire suppression system.

3.9 Solid and Hazardous Waste

The Resource Conservation and Recovery Act (RCRA) (42 U.S.C §6901 et seq.) sets forth standards for the management of solid (Subtitle D) and hazardous (Subtitle C) solid wastes. RCRA allows the U.S. EPA to delegate its administration to the various states if and when a state program is shown to be at least equivalent to the federal requirements. California received RCRA authorization on August 1, 1992.

There are other federal and state regulatory programs associated with hazardous and nonhazardous solid wastes. These include, but are not limited to the following: 42 USC Chapter 82 addresses solid waste disposal; California Code of Regulations (CCR), Title 22, §66260 et seq., contains the RCRA-equivalent regulations governing hazardous waste management in California; the California Health and Safety Code, §25100 et seq., identifies California-specific requirements for the identification and management of non-RCRA hazardous wastes; and CCR Title 14, §17020 et seq., sets forth the minimum standards for the management of solid wastes, as well as enforcement and administration provisions for solid waste storage and disposal.

3.9.1 Disposal Facilities

The LACSD maintains three landfills in Los Angeles County (Nellor, 2000). These landfills (Puente Hills, Scholl Canyon, and Calabasas) accept municipal waste and nonhazardous industrial waste. They do not accept liquids or hazardous wastes. Permitted daily throughput ranges from 3,500 tons per day at Calabasas to 13,200 tons per day at Puente Hills (Nellor, 2000).

Hydrocarbon-impacted soils encountered during project activities at the Torrance Refinery will be treated at the onsite soil remediation facility. The facility is divided into four separate areas: a lined biocell, a VOC extraction and catalytic oxidizer system, Reservoir 15 bioremediation facilities, and a contaminated soil storage pad. Each area can accept a specific type of soil depending on the concentration of hydrocarbons in the soil. No hazardous wastes can be placed in any area of the facility.

The County of Orange Integrated Waste Management Department operates three landfills, Frank R. Bowerman, Olinda Alpha, Prima Deshecha. Permitted daily peak throughput ranges from 4,000 tons per day at Prima Deshecha to 8,500 tons per day at Frank R. Bowerman (CIWMB, 2001).

There are a number of Class I (hazardous waste) landfills located in California that may be used by Mobil. Chemical Waste Management Corporation in Kettleman City is a permitted treatment, storage, and disposal facility with a capacity of 13 million cubic yards. At current disposal rates, this capacity would last for approximately 26 years (Turek, 1996). Safety Kleen operates a Class I facility in Buttonwillow with a permitted capacity of 13 million cubic yards, of which 2.5 million cubic yards has been filled. The Kettleman City and Buttonwillow facilities are on Mobil's approved list for use by company facilities. Hazardous waste landfill disposal also is available at the Safety Kleen facility located in Westmoreland. In addition, hazardous waste can be transported to permitted facilities outside California.

3.9.2 Waste Generation

Mobil's Torrance facilities generated approximately 40,000 tons of hazardous waste in 2000 and 92.3 percent of that waste was recycled, reused, or regenerated. Approximately 1,250 tons of regularly generated hazardous waste was sent offsite for treatment (incineration) and/or disposal. In addition, approximately 2,450 tons of hazardous waste generated on a one-time basis were sent offsite for treatment and/or disposal. No hazardous wastes are disposed onsite.

The terminals generate minimal amounts of hazardous waste during the course of normal operations. The ongoing waste streams include spent aerosol cans and parts washer solution.

3.9.3 Waste Minimization

The Hazardous Waste Source Reduction and Management Review Act (SB14) encourages waste minimization for generators of hazardous waste that generate hazardous waste in quantities that exceed a certain threshold. The Torrance Refinery exceeds this threshold, but the terminals do not. Per the requirements of SB 14, Mobil has evaluated its major hazardous waste streams at the Torrance Refinery and implemented waste minimization practices, including construction of a bio-filtration unit and process changes that result in less overall benzene production.

3.10 Transportation/Circulation

This section describes the transportation setting for the various project sites. It describes the existing circulation system, and summarizes existing traffic volumes and levels of service.

3.10.1 Surrounding Highway Network

Figure 3.10-1 illustrates regional transportation facilities in the vicinity of the project sites; these facilities provide excellent accessibility to the entire southern California region. Interstate 405 (I-405) lies immediately north of the Torrance facilities. The I-405 provides full ramp connections at Crenshaw Boulevard and Western Avenue.

Construction traffic generated by the proposed project at the Torrance site will access the property via a construction gate located on 190th Street. Construction at the Torrance facilities site will occur over 28 months and will require a larger work force than at the terminals.

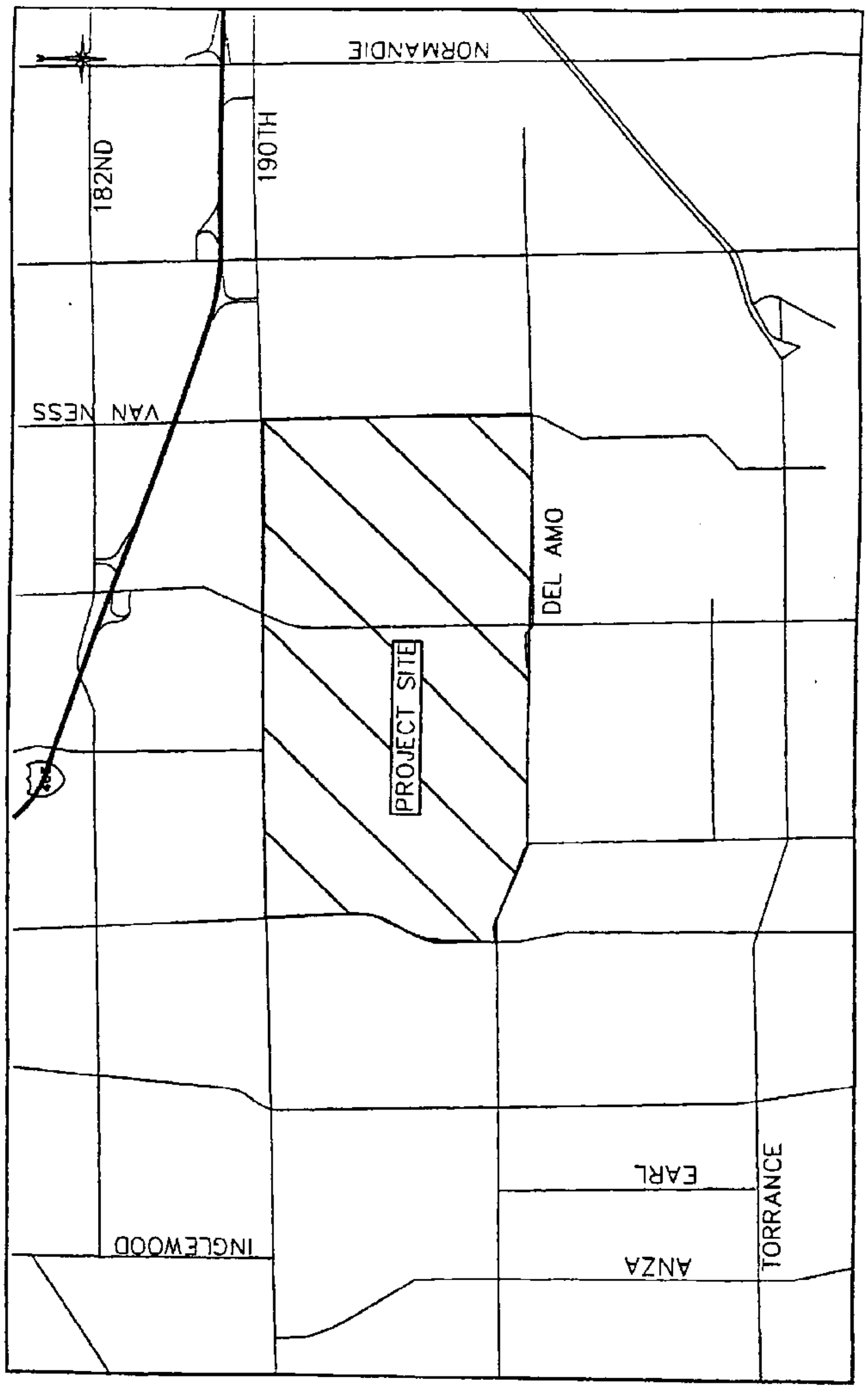


Figure 3.10-1 Primary Roadways Near the Torrance Refinery

Construction phase traffic volumes at the Vernon Terminal, Atwood Terminal, and SWT sites are expected to be small because of the small construction labor requirements (peaks of about 50 workers or less at any of the terminals at any one time). Impacts also will be short-term because construction at the various terminals is expected to range from eight to 10 months duration. There are direct access routes from these terminals to regional roadway and freeway facilities. Because of the low potential for traffic impacts at the terminal sites (small work force and short duration), this traffic setting discussion focuses only on conditions near the Torrance site.

3.10.2 Existing Traffic Conditions

Traffic counts were conducted in December 2000 at fifteen intersections near the Torrance site to establish existing AM and PM peak hour turning movement volumes. Table 3.10-1 summarizes these data; they also are illustrated in Figures 3.10-2 and 3.10-3. Intersection capacity utilization (ICU) values are presented in Table 3.10 -1 (actual ICU calculations are provided in Appendix D). ICU values are a means of representing peak hour volume/capacity ratios. The ICU is the proportion of an hour required to provide sufficient capacity to accommodate all intersection traffic if all approaches operate at capacity. If an intersection is operating at 80 percent of capacity, then 20 percent of the signal cycle is not used.

The signal could show red on all indications 20 percent of the time and the signal would just accommodate approaching traffic. ICU values provide the basis for establishing the Level of Service (LOS) of an intersection. LOS can range from Level A (free flowing, with an ICU of 0.60 or lower), to Level F (highly congested, with an ICU greater than 1.0). As shown on Table 3.10-1, of the 15 intersections examined, seven are presently operating at an unacceptable level of service during the AM or PM peak hour, based on the intersection capacity utilization criteria used by the City of Torrance.

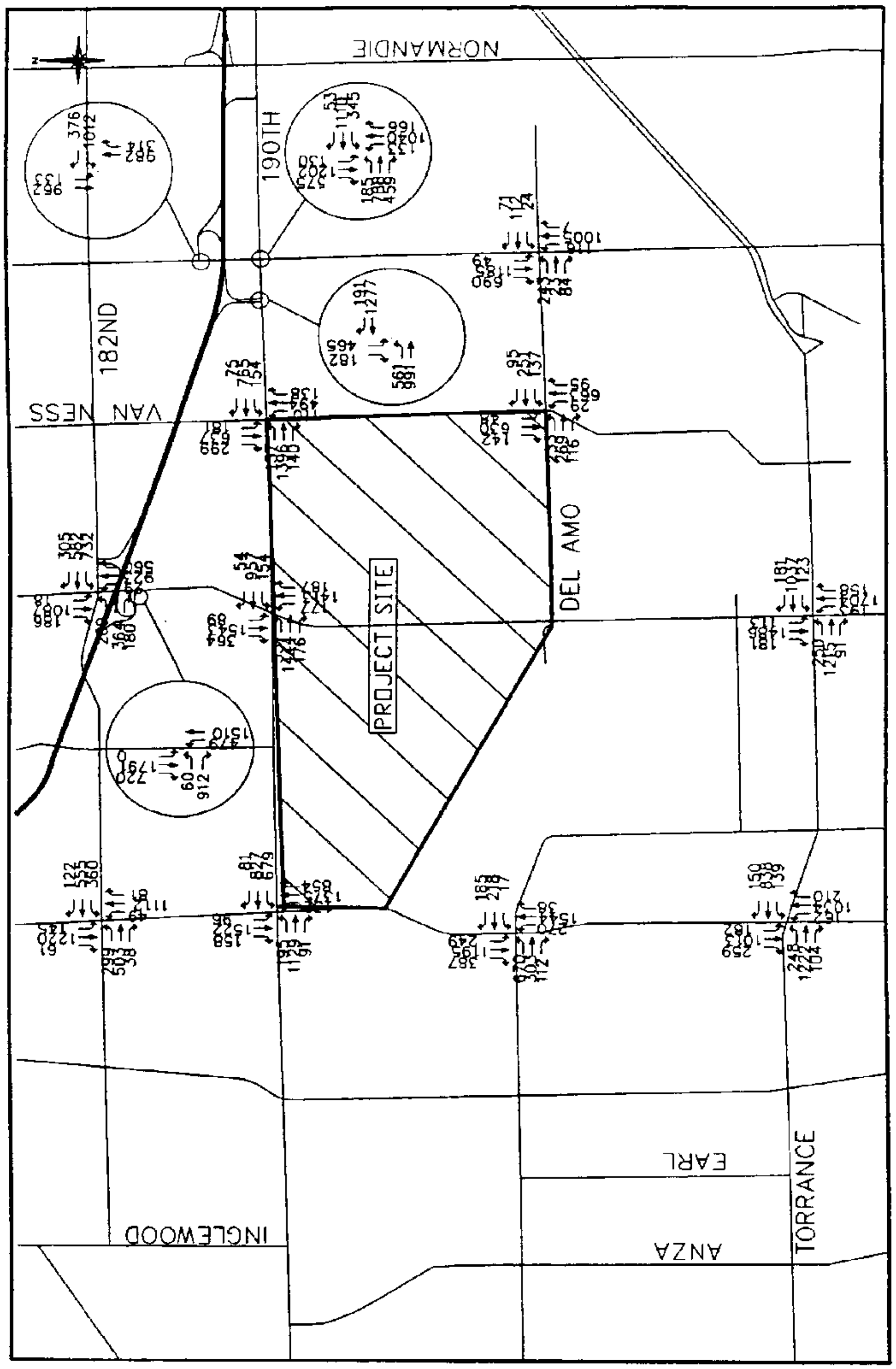


Figure 3.10-2 Existing AM Peak Hour Turn Volumes (Torrance Refinery)

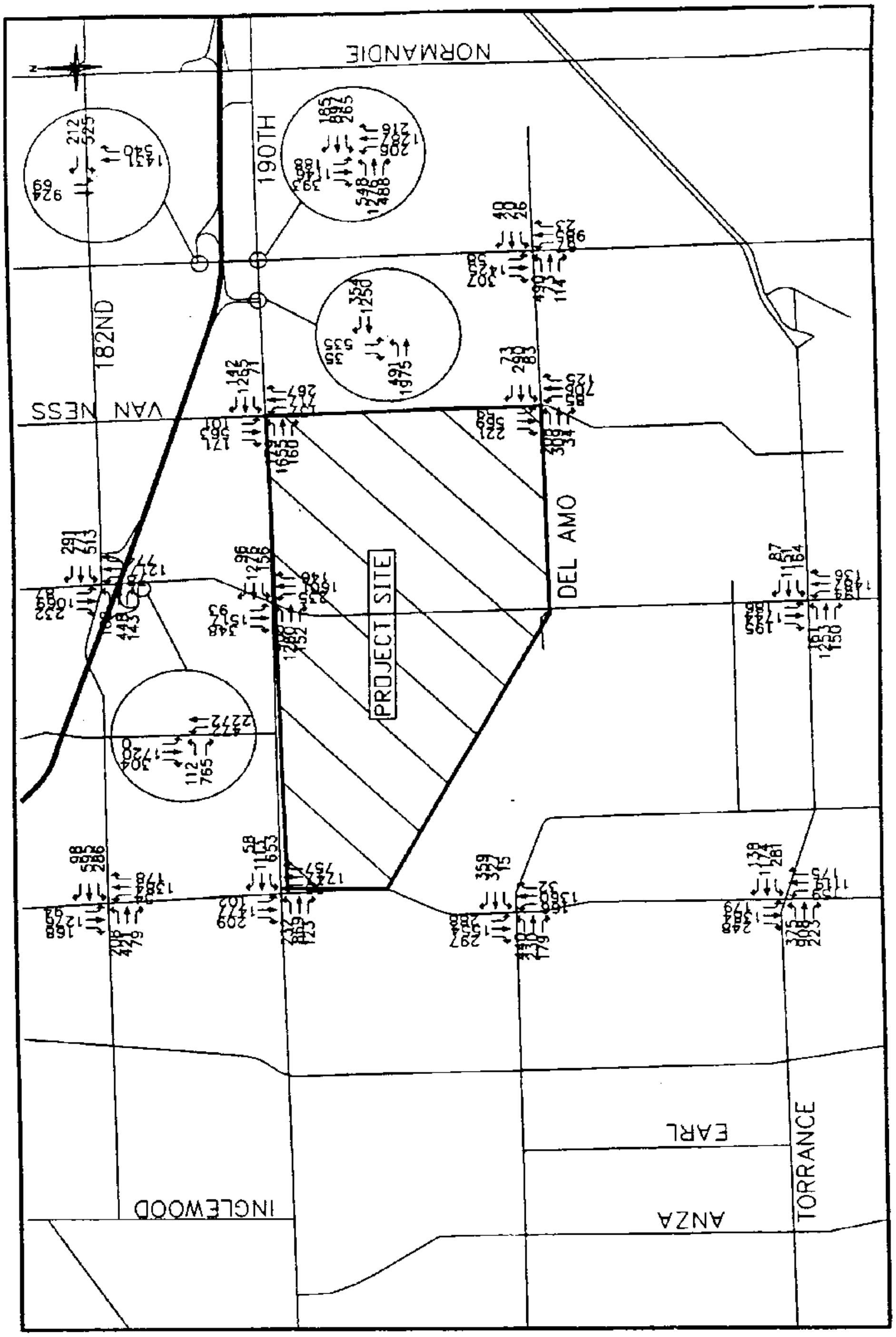


Figure 3.10-3 Existing PM Peak Hour Turn Volumes (Torrance Refinery)

Table 3.10-1
Intersection Capacity Utilization Ratios – Existing

	Intersection	AM ICU	AM LOS	PM ICU	PM LOS
1.	Prairie and 182nd	0.94	E	0.94	E
2.	Crenshaw and 182nd	0.89	D	1.11*	F
3.	I-405 and 182nd	0.70	B	1.18*	F
4.	Prairie and 190th	1.09*	F	1.04*	F
5.	Crenshaw and 190th	0.94	E	1.10*	F
6.	Van Ness and 190th	1.04*	F	1.03*	F
7.	Western and 190th	0.88	D	0.88	D
8.	Prairie and Del Amo	0.80	C	0.77	C
9.	Crenshaw and I-405 SB on/off	1.11*	F	0.98	E
10.	Van Ness and Del Amo	0.74	C	0.76	C
11.	Western and Del Amo	0.82	D	0.86	D
12.	I-405 SB on/off and 190th	1.05*	F	0.98	E
13.	Western and I-405 NB on/off	0.93	E	0.82	D
14.	Prairie/Madrona and Torrance	0.84	D	0.83	D
15.	Crenshaw and Torrance	0.95	E	1.00	E

* Exceeds acceptable Level of Service E

Level of Service Ranges:

0.00 - 0.60 = A	0.81 - .90 = D
0.61 - 0.70 = B	.91 -1.00 = E
0.71 - 0.80 = C	Above 1.00 = F

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