CHAPTER 4
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER 4.0

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

INTRODUCTION

This chapter assesses the potential environmental impacts of construction and operation of the Ultramar Wilmington Refinery CARB RFG Phase 3 proposed project discussed in Chapter 2 on each resource identified in Chapter 3.

The impacts for each environmental resource discussed in Chapter 4.0 are divided in three parts: (1) "Previous Final EIR" – which describes the impacts discussed in the previous Final EIR (SCAQMD, 2001f); (2) "Storage Tank Farms and Marine Terminal Modifications" – which discusses the impacts associated with currently proposed modifications to the Refinery, Marine Tank Farm, Olympic Tank Farm, and the Marine Terminal described in Chapter 2.0 herein; and (3) "Revised Project Summary" – which discusses the combined impacts of the previous Final EIR (SCAQMD, 2001f) and the impacts associated with the currently proposed modifications to the Refinery, Marine Tank Farm, Olympic Tank Farm, and Marine Terminal. In several instances this format has not been followed. For example, the air quality impacts associated with toxic air contaminants were re-modeled to include all project sources (sources from the previous Final EIR as well as the currently proposed modifications). Therefore, the toxic air contaminant impacts are discussed for the revised project only. Also, the traffic impacts were re-modeled to include traffic from all portions of the project (traffic from the previous Final EIR as well as the currently proposed modifications. Thus, traffic impacts are discussed for the revised project only.

Chapter 4 evaluates those impacts that are considered potentially significant under the requirements of CEQA. Specifically, an impact is considered significant under CEQA if it leads to a "substantial, or potentially substantial, adverse change in the environment."

Impacts from the proposed project fall within one of the following categories:

Beneficial – Impacts will have a positive effect on the resource.

No impact – There would be no impact to the identified resource as a result of the proposed project.

Adverse but not significant – Some impacts may result from the project; however, they are judged to be insignificant. Impacts are frequently considered insignificant when the changes are minor relative to the size of the available resource base or would not change an existing resource.

Potentially significant but mitigation measures reduce to insignificance – Significant adverse impacts may occur; however, with proper mitigation, the impacts can be reduced to insignificance.

Potentially significant and mitigation measures are not available to reduce to insignificance – Adverse impacts may occur that would be significant even after mitigation measures have been applied to lessen their severity.

A. AIR QUALITY

SIGNIFICANCE CRITERIA

To determine whether or not air quality impacts from the proposed project are significant, impacts will be evaluated and compared to the significance criteria in Table 4-1 and Table 4-2. If impacts equal or exceed any of the following criteria, they will be considered significant. All feasible mitigation measures will be identified and implemented to reduce significant impacts to the maximum extent feasible.

Because the Ultramar Refinery emits four or more tons per year of NOx and SOx, it is a RECLAIM facility and specific CEQA significance thresholds apply to emissions of NOx and SOx from the operations of the proposed project. Under the RECLAIM program, the SCAQMD issues facility-wide permits to sources which specify annual emission allocations for NOx and SOx. The allocations decline each year from 1994 through 2003. RECLAIM sources must reduce their emissions each year to remain within their declining annual allocations, or must purchase emission credits (called RECLAIM Trading Credits) generated by other facilities in the RECLAIM program which have reduced emissions to levels below their required allocations. Each facility is given the flexibility to determine the best means of compliance through reducing emissions at the facility to remain within its declining allocations or purchasing RECLAIM Trading Credits on the market to cover any emissions in excess of the annual allocation.

To maintain compliance flexibility inherent in the SCAQMD's RECLAIM program, the SCAQMD has established separate NOx and SOx mass daily operational emissions significance thresholds for RECLAIM facilities. Air quality impacts for a RECLAIM facility are considered to be significant if the incremental mass daily emissions of NOx or SOx from sources regulated under the RECLAIM permit, when added to the allocation for the year in which the project will commence operations, will be greater than the facility's 1994 allocation (including non-tradable credits) plus the increase established in the SCAQMD Air Quality Handbook for that pollutant (55 pounds per day (lbs/day) for NOx and 150 lbs/day for SOx). In order to make this calculation, annual allocations as well as the project's incremental annual emissions are converted to a daily average by dividing by 365. Thus, the proposed project is considered significant if:

$(A_1/365) + I < (P + A_2)/365$

Where:

P = the annual emissions increase associated with the proposed project.

A_1 = 1994 initial annual allocation (including non-tradable credits).

A_2 = Annual allocation in the year the proposed project will commence operations.

I = Incremental emissions established as significant in the SCAQMD Air Quality Handbook (55 lbs/day NOx or 150 lbs/day SOx).

TABLE 4-1
AIR QUALITY SIGNIFICANCE THRESHOLDS

Mass Daily Thresholds		
Pollutant	**Construction**	**Operation**
NO_x	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
SOx	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
TAC, AHM, and Odor Thresholds		
Toxic Air Contaminants (TACs)	Maximum Incremental Cancer Risk $\geq$ 10 in 1 million Cancer Burden $\geq$ 0.5 Hazard Index $\geq$ 1.0 (project increment) Hazard Index $\geq$ 3.0 (facility-wide)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality for Criteria Pollutants		
NO_2 1-hour average annual average	 500 ug/m^3 (= 0.25 ppm) 100 ug/m^3 (= 0.053 ppm)	
PM10 24-hour annual geometric mean	 2.5 ug/m^3 1.0 ug/m^3	
Sulfate 24-hour average	 25 ug/m^3	
CO 1-hour average 8-hour average	 1.1 mg/m^3 (= 1.0 ppm) 0.50 mg/m^3 (= 0.45 ppm)	

ug/m^3 = microgram per cubic meter; pphm = parts per hundred million; mg/m^3 = milligram per cubic meter; ppm = parts per million; TAC = toxic air contaminant; AHM = Acutely Hazardous Material

This approach is appropriate for a RECLAIM facility since the emissions from the universe of RECLAIM sources were capped in 1994 and the emissions cap is declining each year. In order for one facility to increase its emissions, it must reduce its emissions from other on-site sources or purchase RECLAIM trading credits from another facility that has reduced its emissions beyond what is required under RECLAIM. For localized impacts associated with a physical modification, the RECLAIM regulations require modeling and establish thresholds that cannot be exceeded.

The significance thresholds for RECLAIM pollutants NOx and SOx are calculated in Table 4-2.

TABLE 4-2

RECLAIM CEQA SIGNIFICANCE THRESHOLDS FOR ULTRAMAR REFINERY

POLLUTANT	INITIAL ALLOCATION (lbs/year)*	INITIAL ALLOCATION (lbs/day)*	CEQA INCREMENT (lbs/day)	SIGNIFICANCE THRESHOLD (lbs/day)
NOx	849,881	2,328	55	2,383
SOx	1,010,497	2,768	150	2,918

* Including non-tradable credits.

The CEQA significance thresholds for RECLAIM facilities apply only to operational emissions of NOx and/or SOx that would be included in the RECLAIM allocation and subject to the RECLAIM regulations. The RECLAIM CEQA significance thresholds do not apply to sources that would not be regulated by the RECLAIM regulations (i.e., indirect sources of emissions such as trucks, rail cars, and marine vessels), construction emission sources, and to non-RECLAIM pollutants (i.e., VOCs, CO, and PM10) for which the SCAQMD has established significance thresholds. This Draft EIR uses the RECLAIM CEQA NOx and SOx significance criteria to determine the significance of air quality impacts from stationary sources at the Refinery.

The SCAQMD makes significance determinations based on the maximum daily emissions during the construction period, which provides a "worst-case" analysis of the construction emissions.

CONSTRUCTION EMISSION IMPACTS

1. Previous Final EIR

The construction emissions calculated in the previous Final EIR are summarized in Table 4-3.

2. Storage Tank Farms and Marine Terminal Modifications

Construction activities associated with the modifications to the Refinery, Marine Tank Farm, Olympic Tank Farm, and Marine Terminal would result in emissions of CO, VOCs, NOx, SOx, and PM10. Construction emissions are expected from the following equipment and processes:

Construction Equipment (dump trucks, backhoes, graders, etc.)
Equipment Delivery/On-Site Travel
Heavy Diesel Trucks
Construction Workers Commuting
Fugitive Dust Associated with Site Construction Activities
Fugitive Dust Associated with Travel on Unpaved and Paved Roads
Architectural Coatings

TABLE 4-3

PREVIOUS FINAL EIR
PEAK DAY CONSTRUCTION EMISSIONS PRIOR TO MITIGATION
(lbs/day)

ACTIVITY	CO	VOC	NOx	SOx	PM10
Construction Equipment	304	100	216	40	13
Equipment Delivery/Travel On-Site	8	<1	<1	--	<1
Heavy Diesel Trucks	33	1	13	--	<1
Workers Commuting	102	11	10	--	1
Fugitive Dust From Construction(1)	--	--	--	--	78
Fugitive Dust/ Travel on Paved & Unpaved Roads	--	--	--	--	12
Architectural Coatings	--	175	--	--	--
Total Construction Emissions	**447**	**288**	**240**	**40**	**106**
SCAQMD Threshold Level	550	75	100	150	150
Significant?	NO	YES	YES	NO	NO

(1) Assumes application of water two times per day.

Daily construction emissions were calculated for the peak construction day activities. Peak day emissions are the sum of the highest daily emissions from employee vehicles, fugitive dust sources, construction equipment, and transport activities for the construction period. The peak emissions were determined for each pollutant and included in Table 4-4. The peak emissions for all emissions, except VOC, are estimated to occur during month 1 of the construction period (see Appendix A). The peak emissions for VOCs are estimated to occur during month 8 of the construction period (associated with painting storage tanks). Peak daily construction emissions are summarized in Table 4-4. Detailed construction emissions calculations are provided in Appendix A.

Construction Equipment

On-site construction equipment will be a source of combustion emissions. Construction equipment may include backhoes, compactors, trench machines, air compressors, forklifts, generators, manlifts, welding machines, cranes, and pavers. All of the equipment is assumed to be operational for eight hours per day, which likely over estimates actual operations and the related emissions. Emission factors for construction equipment were taken from the CEQA Air Quality Handbook (SCAQMD, 1993, Tables 9-8-A and 9-8-C) using site-specific information, where available. Estimated emissions from construction equipment used for construction activities are included in Table 4-4.

TABLE 4-4

ULTRAMAR REFINERY
PEAK DAY[2] CONSTRUCTION EMISSIONS FOR STORAGE TANK MODIFICATIONS AND RELATED FACILITIES
(lbs/day)

ACTIVITY	CO	VOC	NOx	SOx	PM10
Construction Equipment	396	100	387	66	26
Light Duty Trucks	15	1	<1	--	<1
Heavy Diesel Trucks	11	<1	4	--	<1
Workers Commuting	25	3	2	--	<1
Fugitive Dust From Construction[2]	--	--	--	--	276
Fugitive Dust/ Travel on Paved & Unpaved Roads	--	--	--	--	5
Architectural Coatings	--	350[1]	--	--	--
Total Construction Emissions[3]	**447**	**455**	**394**	**66**	**310**
SCAQMD Threshold Level	550	75	100	150	150
Significant?	NO	YES	YES	NO	YES

(1) Peak VOC emissions predicted to occur during month 8; all other peak emissions predicted to occur during month one.
(2) Assumes application of water two times per day.
(3) The emissions in the table may differ slightly from those in Appendix A due to rounding.

Light Duty Trucks

Light-duty trucks will be used for delivering supplies to the construction site, and transporting various materials on-site to other locations. Primary emissions generated will include combustion emissions from engines during idling and while operating. Emissions are based on the estimated number of trips per day and the round trip travel distances. All light-duty trucks whether used for delivery or on-site travel were assumed to travel 11.5 miles per trip (SCAQMD 1993, Table A9-5-D). Emission factors, their sources, and other assumptions used to estimate emissions from trucks are provided in Appendix A. Estimated emissions for light-duty trucks are included in Table 4-4.

Heavy Diesel Trucks

Heavy diesel trucks include water trucks, dump trucks and other trucks that will be watering, or delivering and removing materials from the site. Primary emissions generated will include exhaust emissions from diesel engines while operating. Emission calculations were estimated assuming a

maximum of one delivery truck traveling to the site each weekday to deliver large equipment. Emissions are based on the estimated number of trips per day and the round trip travel distances. One heavy diesel truck will be a water truck for dust control at the site. The water truck is expected to remain onsite during the construction period and is assumed to travel four miles per day. The other heavy diesel truck will be used for delivery or removal of materials and is assumed to travel 50 miles per day. Emission factors, their sources, and other assumptions used to estimate emissions from trucks are provided in Appendix A. Estimated emissions for heavy trucks are included in Table 4-4.

Construction Workers Commuting

Construction emissions also include emissions from construction worker vehicles traveling to and from the work site. Emission calculations were estimated assuming about 50 workers traveling to the site each weekday during Month 1, since Month 1 represents the highest total emissions (see Appendix A). It should be noted that the peak number of construction workers (150) is expected to occur during months three through six of the construction period. However, the heavy construction equipment used during months three through six is expected to be much less than during month one so that the maximum emissions (including construction equipment and worker related travel) are expected to be higher during month one (see Appendix A for detailed emission calculations). Each worker vehicle is assumed to travel 11.5 miles (SCAQMD Guidance 1993, Table A9-5-D) to and from work each day, making two one-way trips per day. Emissions from employee vehicles are presented in Table 4-4. Emissions from employee vehicles were calculated using the EMFAC2000 emission factors developed by CARB. Estimated exhaust emissions for workers commuting are included in Table 4-4.

Fugitive Dust Associated with Site Construction Activities

Fugitive dust sources include grading, trenching, wind erosion and truck filling/dumping at the site to construct necessary foundations. During construction activities, water used as a dust suppressant will be applied, if applicable, in the construction area during grading, trenching, and earth-moving activities to control or reduce fugitive dust emissions. Application of water reduces emissions by a factor of approximately 34 to 68 percent (SCAQMD, 1993). It is assumed herein that one water application per day reduces emissions by 34 percent and two applications reduce emissions by 50 percent. Fugitive dust suppression, often using water, is a standard operating practice and is one method of complying with SCAQMD Rule 403. Estimated peak controlled PM10 emissions from construction activities for fugitive dust sources are 276 lbs/day (see Table 4-4). The detailed emission calculations are provided in Appendix A.

Fugitive Dust Associated with Travel on Paved and Unpaved Roads

Vehicles and trucks traveling on paved and unpaved roads are also a source of fugitive emissions during the construction period. The emissions estimates for travel on paved roads assumed that 56 vehicles per day associated with construction workers and light duty trucks will travel on paved roads. The fugitive emissions for trucks assumes travel on both paved and unpaved roads. Emissions of dust caused by travel on paved roads were calculated using the U.S. EPA's, AP-42,

Section 13.2.1 emission factor for travel on paved roads and using the CARB's Methodology 7.9 to determining the appropriate silt loading. Emissions of dust caused by travel on unpaved roads were calculated using the U.S. EPA's AP-42 Section 13.2.2 methodology. The estimated PM10 emissions from trucks and passenger autos for fugitive dust on paved and unpaved roads is five lbs/day (see Table 4-4).

Architectural Coatings

There is the potential for emissions from the use of architectural coatings on new structures, e.g., new storage tanks. A maximum of 100 gallons per day of paint is expected to be used in the eighth month of construction when the completed storage tanks are expected to be painted. Assuming that the VOC content of the coating complies with SCAQMD Rule 1113 (3.5 lbs/gallon for industrial maintenance coatings), a maximum of 350 lbs/day of VOC emissions would be expected from the use of architectural coatings. As of July 1, 2002, the VOC content of industrial maintenance coatings must be 2.1 lbs/gallon or less. The analysis herein will assume the use of coatings with a VOC content of 3.5 lbs/gallon to provide a conservative ("worst-case") analysis and in case some tanks are finished and painted prior to July 1, 2002.

Miscellaneous Emissions

In addition to the construction-related emissions already identified for the proposed project, the project could generate emissions of VOC if contaminated soil is found and soil remediation activities are necessary. Emission estimates for VOC would be speculative at this time, however, because the amount of contaminated soil, if any, and the levels of contamination are currently unknown. VOC contaminated soil is defined as soil which registers 50 parts per million or greater per the requirements of SCAQMD Rule 1166 – Volatile Organic Compound Emissions from Decontamination of Soil. If VOC contamination is found, soil remediation must occur under an SCAQMD approved Rule 1166 Plan to assure the control of fugitive emissions which generally includes covering soil piles with heavy plastic sheeting and watering activities to assure the soil remains moist. Soil remediation activities are under the jurisdiction of the RWQCB and it may be necessary for the RWQCB and SCAQMD to coordinate in order to assure air quality impacts are adequately mitigated.

Construction Emission Summary

Construction emissions for the storage tank and marine terminal modifications are summarized in Table 4-4, together with the SCAQMD's daily construction threshold levels. The construction phase of this portion of Ultramar's proposed project will exceed the significance thresholds for VOC, NOx, and PM10. Therefore, the air quality impacts associated with construction activities are considered significant.

3. Revised Project Construction Emission Summary

Controlled construction emissions from the revised project are summarized in Table 4-5, together with the SCAQMD's significant impact daily construction emission threshold levels for the construction phase of the proposed project.

TABLE 4-5

ULTRAMAR CARB PHASE 3 PROPOSED PROJECT
REVISED PROJECT PEAK DAY CONSTRUCTION EMISSIONS
(lbs/day)

PROJECT COMPONENT	CO	VOC	NOx	SOx	PM10
Previous Final EIR	447	288	240	40	106
Storage Tank and Marine Terminal Modifications	447	455	394	66	310
Total Project Emissions	894	743	634	106	416
SCAQMD Thresholds	550	75	100	150	150
Significant	YES	YES	YES	NO	YES

The construction phase of Ultramar's CARB Phase 3 proposed project will exceed the significance thresholds for CO, VOC, NOx, and PM10. Therefore, the air quality impacts associated with construction activities are considered significant. The significance threshold for SOx is not expected to be exceeded during the construction phase, and the air quality impacts of SOx are less than significant. A large portion of the total emissions is associated with on-site construction equipment and mobile sources (trucks and worker vehicles). No overlap is expected between construction activities and the operation of the proposed project, i.e., all construction activities are expected to be completed prior to operation of the proposed project. Mitigation measures for construction emissions are identified beginning on page 4-26.

OPERATIONAL EMISSION IMPACTS

1. Previous Final EIR

The total emissions from the project identified in the previous Final EIR are identified in Table 4-6. These emissions are associated with modifications to existing refinery units, including the Fluid Catalytic Cracking Unit, the Light Ends Recovery Unit/Naphtha Hydrotreater Unit, the Olefin Treater and the Fuel Gas Mercaptan Extraction Unit. Emissions were also associated with new propane/propylene storage bullets, storage tank modifications and truck emissions associated with the transport of ethanol.

2. Storage Tank Farms and Marine Terminal Modifications

Proposed modifications at the Refinery, Marine Tank Farm, Olympic Tank Farm, and Marine Terminal will generate emissions. Emissions are expected from the following activities or sources.

Storage tanks additions and modifications
Fugitive components additions and modifications
Diesel fire water pumps
On-road vehicles associated with new workers
Marine vessels associated with the transport of gasoline blending stocks

The proposed project operational emissions are evaluated in this section. Detailed emission calculations are provided in Appendix A.

TABLE 4-6

ULTRAMAR REFINERY PREVIOUS FINAL EIR
STATIONARY SOURCE OPERATIONAL EMISSIONS
(lbs/day)

SOURCE	CO	VOC	NOx	SOx	PM10
Stationary Source Emissions:					
Fugitive Emissions (e.g., pumps, valves).	--	67	--	--	--
Storage Tank Modifications	--	-9	--	--	--
Truck Loading	--	1	--	--	--
Total Stationary Source Emission Increases:	**0**	**59**	**0**	**0**	**0**
Indirect Emission Sources:					
New Worker Vehicles	4	<1	<1	--	<1
New Heavy Diesel Trucks to/from Refinery	107	3	42	--	1
Ethanol Trucks	206	7	86	--	3
Fugitive Dust Emissions/Travel on Roads	--	--	--	--	60
Railcar Emissions	8	3	84	5	2
Total Indirect Emission Increases:	**325**	**14**	**213**	**5**	**67**
Total Operational Emission Increases	**325**	**73**	**213**	**5**	**67**

Note: A negative number denotes an emission reduction.

The emissions associated with the proposed project modifications are shown in Table 4-7. Note that changes to the Marine Terminal include the shutdown of a number of storage tanks, which will result in VOC emission reductions at the Terminal.

TABLE 4-7

ULTRAMAR REFINERY
STORAGE TANK AND RELATED FACILITY MODIFICATIONS
OPERATIONAL EMISSIONS
(lbs/day)

SOURCE	CO	VOC	NOx	SOx	PM10
Stationary Source Emissions:					
Refinery Fugitive Emissions (e.g., pumps)	--	5	--	--	--
Marine Tank Farm Fugitive Emissions	--	8	--	--	--
Olympic Terminal Fugitive Emissions	--	5	--	--	--
Refinery Storage Tank Modifications	--	12	--	--	--
Marine Tank Farm Modifications	--	9	--	--	--
Olympic Terminal Tank Modifications	--	226	--	--	--
Olympic Tank Farm Diesel Pump	9	3	39	1	3
Marine Terminal Modifications	--	7	--	--	--
Marine Terminal Emission Reductions(1)	-	-99	--	--	--
Indirect Emission Sources:					
New Worker Vehicles	4	<1	<1	--	<1
Total Operational Emission Increases	***13***	***177***	***40***	***1***	***4***

(1) Based on annual emission fee estimates for the last two years for the storage tanks that are being removed.

Operational emissions are characterized as either stationary source emissions or indirect source emissions. Stationary emission sources include fugitive emissions sources with process equipment components such as valves, flanges, vents, pumps, drains, and compressors. Fugitive emissions will also be associated with modifications at the Refinery (addition of a storage tank), Marine Tank Farm, and Olympic Tank Farm. (Note: the modifications to the Marine Terminal only include the change of service of an existing tank and construction of a floating roof so no additional fugitive components are expected.) The emissions calculations herein are based on emission factors that are outlined in a Memorandum from the SCAQMD dated April 2, 1999 (SCAQMD, 1999). That Memorandum provides the appropriate emission factors for fugitive sources that include best available control technology (BACT) and lowest achievable emission reductions (LAER).

Modifications to existing equipment and new equipment are required to comply with BACT requirements in SCAQMD Rules 1303 or 2005.

The proposed project includes new storage tanks and modifications to existing storage tanks. The modifications to existing storage tanks include changing the throughput and/or material stored in some of the tanks. The project also includes new storage tanks to store gasoline or gasoline blending components. Emission increases associated with the changes to the storage tanks were calculated using the U.S. EPA TANKS 4.07 model and are shown in Table 4-7.

Additional documentation of the procedures used to calculate the emissions estimates is provided in Appendix A. All new and modified process components are required to conform to the SCAQMD's BACT Guidelines. The criteria pollutant emission rates associated with all project components assumed the use of BACT. The BACT associated with each of the major project components is discussed below. Fugitive emission sources are also regulated under New Source Performance Standards (NSPS) Subpart GGG and SCAQMD Rule 1173.

Process Pumps: Sealless pumps will be used, to the extent feasible and commercially available, as BACT for pumps in gas or light hydrocarbon service. For those instances where sealless pumps are deemed unacceptable, two types of double or tandem mechanical seals will be evaluated for use: (1) tandem mechanical seals that use a barrier fluid and a seal pot vented to a closed system; and (2) dry-running tandem mechanical seals vented to a closed system. The dry-running tandem mechanical seals are considered to be equivalent control technology since they control fugitive VOC emissions as well as the tandem mechanical seals with the barrier system. All pumps will be subject to an SCAQMD-approved inspection and maintenance program, as required under SCAQMD Rule 1173.

Process Valves: Bellow sealed valves will be installed on project components to reduce fugitive VOC emissions. The SCAQMD BACT/LAER guidelines indicate that leakless valves must be used, except for the following applications.

- Heavy hydrocarbon liquid service
- Control valves
- Instrument tubing/piping
- Installations where valve failure could pose a safety hazard
- Retrofit/special applications with space limitations
- Applications requiring torsional valve stem motion
- Drain valves with stems in a horizontal position

For heavy hydrocarbon liquids and for applications where leakless valves cannot be used, valves of standard API/ANSI design will be used. Fugitive VOC emissions from these valves will be monitored and controlled in accordance with an SCAQMD-approved inspection and maintenance program, as required under SCAQMD Rule 1173. Valves in gas/vapor and in light liquid service initially will be monitored on a monthly basis, in compliance with the Federal Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries (40 CFR Part 60, Subpart GGG). Valves that do not leak during two successive monthly

inspections will revert to a quarterly inspection interval. New valves will be subject to a 500 ppm performance limit.

Process Drains: New process drain lines will be provided with two normally closed block valves in series, or a single block valve in series with a cap or plug. New drain hubs (funnels) will be equipped with P-Traps and/or seal pots along with an SCAQMD-approved inspection and maintenance program, as required under SCAQMD Rule 1173.

Flanges: The use of flanged connections will be minimized to the extent practicable. Where required for maintenance or other routine operations, flanged connections will be designed in accordance with ANSI B16.5-1988, Pipe Flanges and Flanged Fittings. Fugitive emissions will be monitored and controlled in accordance with an approved inspection and maintenance program, as required under SCAQMD Rule 1173.

Pressure Relief Devices (PRDs): PRDs will be routed to the existing Refinery fuel gas system, to the extent feasible, to control VOC emissions. In the fuel gas system, VOCs are recovered, treated, and used as fuel in various combustion sources, as required under SCAQMD Rule 1173.

Storage Tanks: All new and modified storage tanks that store organic liquids with a true vapor pressure greater than 0.1 psia will be required to install internal floating roof tanks or domes on external floating roof tanks. Domes further reduce VOC emissions from the tanks.

In addition, emission offsets are required for new and modified permitted emission sources by SCAQMD Regulation XIII and/or Regulation XX. Emission offsets are required for all emission increases associated with stationary sources, thus minimizing the impacts associated with emissions from stationary sources. Per the requirements of SCAQMD Rule 1304(c)(4), offsets are not required for projects that are needed to comply with state or federal regulations provided that there is no increase in rating. The reformulated fuels projects are required to comply with state reformulated fuels requirements. Therefore, emission offsets are not required for the reformulated fuels projects identified in this EIR, as long as there is no increase in the crude capacity of the Refinery. The proposed project is not expected to result in an increase in crude capacity at the Refinery. Two naphtha tanks at the Olympic Tank Farm (299-TK-1002 and 299-TK-501) are being constructed to replace tanks that were lost due to the reduction in size of the Marine Terminal and are not directly related to the CARB Phase 3 project. Therefore, offsets will be provided for the emission increases associated with these two tanks.

Indirect emission sources are those that are related to the project but that would not be directly emitted from the project site, i.e., trucks and worker vehicles. Indirect emissions are expected to be associated with new workers at the tank farms. The operation of the proposed project is expected to require eight additional workers at the tank farms. Therefore, the proposed project is expected to increase the worker vehicles traveling to/from the tank farms on a daily basis. The emission increases associated with the increased worker vehicles are shown in Table 4-7.

The proposed project is expected to result in an overall increase in marine vessels. About 32 marine vessels per year were associated with the transport of MTBE to the Marine Terminal, which will be eliminated following completion of the proposed project. The proposed modifications are estimated to result in 97 marine vessels per year to transport gasoline blending stocks. Therefore, the proposed project is expected to result in a net increase of about 65 marine vessels per year. Ultramar receives materials at the Marine Terminal and moves product to its tank farms and Refinery via pipeline.

Emissions from marine vessels are associated with cruising of vessels into the port, maneuvering of vessels within the port, hotelling[1], and emissions from tug boats. Ultramar does not own marine vessels. Ultramar can either contract with the supplier of materials for delivery into the ports or Ultramar can purchase the materials and then arrange for the delivery via a third party marine transportation company. In either case, the composition of vessels associated with the proposed project that will visit the marine terminal are unknown at this time and the related emissions can vary. Therefore, the estimated size and fuel consumption information was obtained from the "Marine Vessel Emissions Inventory and Control Strategies" report (Acurex, 1996). Detailed assumptions for estimating marine vessel emissions are provided in Appendix A. Emissions from marine vessels are presented in Table 4-8. Tug boat emission factors are based on fuel consumption. As detailed information on the fuel consumption for tug boats was not presented in the Acurex report, data from the Mobil Torrance Refinery Reformulated Fuels Project Volume VII – Revised Draft EIR (SCAQMD, 1998) was used to determine hourly emission estimates for tug boats.

The proposed project will not increase the short-term (hourly or daily) emissions of any pollutants at the marine terminal. Vessels currently use the marine terminal and the marine terminal can accommodate only one vessel at a time. Therefore, the project cannot increase the daily maximum number of marine vessels that visit the marine terminal or the maximum daily emissions. The project will however increase the number of marine vessels that visit the terminal on a monthly and yearly basis. The emission increases associated with the increase in marine vessels are provided in Table 4-8. To provide a conservative analysis of the proposed project's impacts, it will be assumed that the highest ship emissions are on a day when a ship arrives at port. The marine vessel emissions are conservative estimates of the project impacts on air quality. The actual emissions could vary depending on the type of vessel, amount of material unloaded, pumping rates and so forth. Assuming that a marine vessel is at berth for a longer period of time would increase the length of stay to more than one day, thus distributing the emissions over several days and reducing the peak daily emissions.

[1] Hotelling emissions for diesel vessels are associated with the use of auxiliary engines which provide power for lights, ventilation, pumps, and to make steam for hot water and to keep fuel from solidifying while at berth. The auxiliary engines are smaller in size and capacity than the main ship engines. Hotelling emissions generally occur while the vessel is at anchor or berth.

TABLE 4-8

ESTIMATED EMISSIONS FROM ADDITIONAL MARINE VESSELS[(1)]

	CO	VOC	NOx	SOx	PM10
Proposed Project					
Cruising, lbs/yr	7,317	2,327	81,006	121,569	19,089
Maneuvering, lbs/yr	2,098	656	24,355	37,406	3,240
Tugboats, lb/yr	601	200	4,425	790	99
Auxiliary Power, lbs/yr	1,453	1,456	14,417	13,886	1393
Total Annual Emissions, lbs/yr	11,469	4,639	124,203	173,651	23,822
Maximum Daily Emissions, lbs/day[(2)]	176	71	1,911	2,672	366

(1) See Appendix A for detailed emission calculations.
(2) Maximum 24-hour day of emissions includes 8.5 hours of cruising and maneuvering, tug boat assistance during maneuvering, and 12 hours of auxiliary power. All cruising, maneuvering, and tug boat assistance occur within a 24-hour period.

3. Revised Project Operational Emissions Summary

Total operation emissions from the CARB Phase 3 project are summarized in Table 4-9, together with the SCAQMD's daily operational threshold levels. The operation of the proposed project will not exceed the SCAQMD significance thresholds for direct emissions of NOx and SOx RECLAIM pollutants as the proposed project is not expected to result in an increase in these pollutants at the Refinery. The operation of the proposed project will exceed the SCAQMD significance threshold for indirect emissions of NOx and SOx. The operation of the proposed project will exceed the SCAQMD significance thresholds for VOCs and PM10. Therefore, the air quality impacts associated with operational emissions from the proposed project are significant and mitigation measures are required.

TABLE 4-9

UlLTRAMAR REFINERY CARB PHASE 3 PROPOSED PROJECT
REVISED STATIONARY SOURCE OPERATIONAL EMISSIONS SUMMARY
(lbs/day)

	CO	VOC	NOx	SOx	PM10
Background Data:					
2002 RECLAIM Allocation[(1)]	--	--	1,315	1,171	--
Previous Final EIR Emissions (see Table 4-6)	325	73	213	5	67
Tank Farm and Terminal Mods. (see Table 4-7)	*13*	*177*	*40*	*1*	*4*
Marine Vessel Emissions (see Table 4-8)	176	71	1,911	2,672	366
Significance Determination for Emissions Subject to RECLAIM Thresholds:					
Project + 2002 RECLAIM Allocation	--	--	1,315	1,171	--
Significance Threshold for RECLAIM Pollutants[(1)]	--	--	2,383	2,918	--
SIGNIFICANT?	**--**	**--**	**NO**	**NO**	**--**
Significance Determination for Emissions Not Subject to RECLAIM Thresholds:					
Project Emissions	*514*	*321*	*2,164*	*2,678*	*437*
Significance Threshold	550	55	55	150	150
SIGNIFICANT?	***NO***	**YES**	**YES**	**YES**	**YES**

(1) See Table 4-2 for CEQA significance threshold for RECLAIM pollutants.

CO Hot Spots

The potential for high concentrations of CO emissions associated with truck/vehicle traffic was considered and evaluated per the requirements of the SCAQMD CEQA Air Quality Handbook (SCAQMD, 1993). The Handbook indicates that any project that could negatively impact levels of service at local intersections may create a CO hot spot and should be evaluated. The analysis in the previous Final EIR (SCAQMD, 2001f) indicated that no significant increase in CO was expected such that a hot spot would be created.

The traffic analyses herein (see Section H, Transportation/Circulation) included traffic from both the previously proposed project as well as the currently proposed project. The combined traffic analysis indicates that there are no significant impacts at local intersections (i.e., there is no change in LOS from C, D, or E to the next lower LOS or an intersection's volume to capacity does not increase by two percent or more) during the project operation and no significant increase in CO is expected such that a hot spot or high concentration of CO would be created.

Air Quality Management Plan

Pursuant to CEQA Guidelines CCR Title 14 §15125(d), an EIR shall discuss any inconsistencies between the proposed project and applicable general plans and regional plans which include air quality management plans. An inventory of existing emissions from the industrial facilities is included in the baseline inventory in the Air Quality Management Plan (AQMP). The AQMP identifies emission reductions from existing sources and air pollution control measures that are necessary in order to comply with the state and federal ambient air quality standards (SCAQMD, 1993). The control strategies in the AQMP are based on projections from the local general plans provided by the cities in the district (including the City of Los Angeles). Projects that are consistent with the local General Plans are consistent with the air quality related regional plans. The proposed project is considered to be consistent with the air quality related regional plans since it is consistent with the City of Los Angeles' General Plan.

The 1997 AQMP and the 1999 amendments to the AQMP demonstrate that applicable ambient air quality standards can be achieved within the timeframes required under federal law. This project must comply with applicable SCAQMD requirements and control measures for new or modified sources. It must also comply with prohibitory rules, such as Rule 403, for the control of fugitive dust. By meeting these requirements, the project will be consistent with the goals and objectives of the AQMP. Furthermore, the production of CARB Phase 3 reformulated gasoline will result in emission reductions from motor vehicles throughout the state, which will further the SCAQMD's efforts to attain and maintain the applicable ambient air quality standards with a margin of safety for sensitive receptors.

Odors

The analysis in the previous Final EIR (SCAQMD, 2001f) indicated that no significant increase in odors was expected from the previously proposed project.

Fugitive emissions or leaks from project equipment could result in potential odor impacts. Fugitive emission components are under the purview of formal regulatory inspection and maintenance programs required under federal New Source Performance Standards and SCAQMD Rule 1173. These programs ensure correction of conditions that may cause odor events. The Refinery maintains a 24-hour environmental surveillance effort. This activity also has the effect of minimizing the frequency and magnitude of odor events. The use of BACT (e.g., leakless valves) also reduces the emissions of compounds that could produce odor impacts. The proposed project includes replacing certain existing storage tanks with new tanks that comply with the SCAQMD's BACT requirements. These new tanks will generate fewer VOC emissions that the existing tanks,

further reducing the potential for odors at the tank farms and marine terminal. Potential odor impacts from the proposed project are not expected to be significant.

Ambient Air Quality Modeling – Criteria Pollutants

Air quality modeling is required for permitted stationary sources pursuant to SCAQMD Rule 1303(b)(1) to assure that additional project emissions will not result in an increase in the ambient concentrations of criteria pollutants that could cause a violation or make significantly worse an existing violation of any ambient air quality standard at any receptor location in the district. The proposed project is not expected to result in new stationary sources of emissions that generate additional concentrations of CO, NOx or SOx sufficient to require modeling. Air quality modeling is not required for emissions of VOCs. Therefore, air quality modeling is not required for stationary sources.

Modeling is also not required for mobile sources unless significant concentrations of CO or CO hot spots are expected. As discussed above, no significant increase in CO is expected such that a hot spot or high concentration of CO would be created. Therefore, no additional air quality modeling is required for mobile sources.

The CARB Phase 3 Project will not increase the short-term (hourly or daily) emissions of any pollutants at the Marine Terminal. Vessels currently use the Marine Terminal and the Marine Terminal can accommodate only one vessel at a time. Therefore, the project cannot increase the maximum number of vessels per day, or the maximum daily emissions. The project will not affect hourly or daily concentrations of pollutants. The project will, however, increase the number of marine vessels that visit the terminal on a monthly and yearly basis. Thus, air quality modeling has been completed to determine if emissions from marine vessels associated with the proposed project could have a significant impact on the annual average concentrations of criteria pollutants.

Emissions from hotelling were calculated and summarized in Table 4-8 above. The emissions from hotelling are the only emissions considered applicable for modeling purposes because hotelling is the only activity that occurs while the tanker is stationary. Emissions generated from cruising and maneuvering would occur over a wide area, and would be dispersed before reaching sensitive populations. Detailed emission calculations for hotelling are shown in Appendix A.

Dispersion modeling was used to calculate ambient concentrations of pollutants to determine the potential for localized impacts. The emissions from marine vessels were modeled using the U.S. EPA SCREEN3 model as a stack source using the above emission rates and the following stack parameters:

Stack Height:	98 feet
Stack Temperature:	311 degrees
Stack Velocity:	20.34 feet/second
Stack Diameter:	6.5 feet

The SCREEN3 model is considered appropriate for air quality modeling purposes and provides conservative results since it uses worst-case meteorological data (CAPCOA Guidelines, 1993). Use of other more complex models such as the Industrial Source Complex (ISC3) model would result in more refined and possibly lower concentrations. The emission calculations and modeling results are provided in Appendix B. The model-predicted impacts on ambient air concentrations of NOx, CO, and PM10 are below the evaluation criteria for all pollutants. The project emissions from marine vessels would not exceed the significant change thresholds for CO, NOx or PM10 (see Appendix B). Therefore, no significant impacts on ambient concentrations of CO, NOx and PM10 are expected.

Toxic Air Contaminants

A health risk assessment (HRA) was performed to determine if emissions of toxic air contaminants generated by the proposed project (both the previously proposed project plus the currently proposed project) would exceed the SCAQMD thresholds of significance for cancer risk and is included as Volume II to this EIR. An HRA was prepared for the Refinery, Marine and Olympic Tank Farms and the Marine Terminal. The following section outlines the HRA for the modifications to the Refinery (only). A subsequent section provides an HRA for the Marine Tank Farm, Olympic Tank Farm, and Marine Terminal. The results of the HRA will be used to evaluate the impacts of toxic air contaminants from the proposed project.

Proposed Project HRA - Refinery

The following section outlines the HRA for the modifications to the Refinery (only). The HRA summarized herein for the proposed project evaluates the emission changes at the Ultramar Refinery associated with and described in the previous Final EIR, as well, as the emission changes associated with the currently proposed project (the addition of a gasoline storage tank). The HRA completed for the revised CARB Phase 3 project is discussed in the following sections.

HRA Methodology

The existing (or baseline) Refinery health impacts are based on the most recent AB2588 HRA prepared for and submitted to the SCAQMD (October 2000). The emissions of toxic air contaminants from the proposed project were calculated. The impact from the proposed project alone was determined in the same manner as the baseline HRA. The previous Final EIR (December 2001) proposed project included three new sources - the previously proposed truck loading rack, propylene bullets, and Mercaptan Treater. The Subsequent EIR is proposing to add two additional sources to the Refinery proposed project – one tank and fugitives emissions from pumps and fittings associated with that tank.

Hazard Identification

The list of potentially-emitted substances considered in the preparation of the HRA for the Refinery is contained in Appendix A-I of the CARB AB2588 requirements and by OEHHA. The AB2588 toxic air contaminants emitted from the proposed project at the

Refinery are shown in Table 4-10. A total of 72 toxic air contaminants were evaluated for inclusion in the Refinery HRA (see Table 4-10). Some of the pollutants were consolidated into one category, e.g., polycyclic aromatic hydrocarbons (PAHs) or were not detected at the Refinery. Health effects data are not available for all compounds. Therefore, a total of 39 toxic air pollutants were included in the air dispersion modeling. Of the 39 toxic air contaminants included in the HRA, only 17 will be emitted by the proposed project. For carcinogens, unit risk factors were used for computing cancer risk through inhalation. If the carcinogen is a multipathway pollutant, a potency slope was used for the estimation of risk from non-inhalation pathways. For non-cancer health effects, reference exposure limits (REL) and acceptable oral doses (for multipathway pollutants) were used. The non-carcinogenic hazard indices were computed for chronic and acute exposures with their respective toxicological endpoints shown.

TABLE 4-10

MAXIMUM REFINERY EMISSION RATES
TOXIC POLLUTANTS
PROPOSED PROJECT SCENARIO

CHEMICAL	CAS No.	Proposed Project	
		Emissions (lbs/hr)	Emissions (lbs/yr)
Ammonia	7664-41-7	-7.98E-05	-6.99E-01
Aniline	62-53-3	-6.82E-04	-5.98E+00
Benzene	71-43-2	1.01E-02	8.84E+01
1,3-Butadiene	106-99-0	2.53E-04	2.22E+00
Cresols	1319-77-3	-1.36E-03	-1.19E+01
1,2-Dibromo-3-chloropropane	96-12-8	-5.11E-08	-4.48E-04
Ethylbenzene	100-41-4	1.26E-03	1.10E+01
Hexane	110-54-3	7.64E-02	6.69E+02
Hydrogen Sulfide	7783-06-4	-8.04E-04	-7.04E+00
Methyl Ethyl Ketone (MEK)	78-93-3	1.01E-06	8.89E-03
Methyl Tert-Butyl Ether (MTBE)	1634-04-4	-6.57E-01	-6.11E+03
Naphthalene	91-20-3	2.42E-04	2.12E+00
PAHs	1-15-0	-2.78E-04	-2.43E+00
Propylene	115-07-1	3.66E-01	3.21E+03
Styrene	100-42-5	-9.01E-05	-7.89E-01
Toluene	108-88-3	1.54E-02	1.35E+02
Xylenes	1-21-0	5.43E-03	4.76E+01

A negative number denotes an emission reduction.

Emission Estimations and Sources

The estimated mass emissions of toxic air contaminants were based on a combination of the most recent AB2588 Air Toxics Inventory Report (ATIR) and engineering estimates that reflect operation of the proposed project.

VOC emission factors for fugitive components installed in conjunction with the reformulated fuels program were based on the SCAQMD's latest guidelines for fugitive components, assuming the use of BACT and an inspection and monitoring program (Jay Chen memo, SCAQMD, April 2, 1999). Speciation of VOC emissions were derived from factors based on the most recent ATIR (September 2000).

The proposed project is expected to result in increases in some toxic air contaminant emissions including benzene, 1,3-butadiene, ethyl benzene, proplyene, and xylenes. Toxic air contaminant reductions will also occur primarily as a result of commodity changes in the storage tanks. The total toxic air contaminants associated with the Refinery proposed project are listed in Table 4-10.

Proposed Project HRA Results - Carcinogenic Health Impacts

Maximum Exposed Individual Worker: The cancer risk estimates are shown in Table 4-11. Based on the air quality modeling and related assumptions, the cancer risk to the MEIW associated with the proposed CARB RFG Phase 3 project at the Refinery was calculated to be 0.22×10^{-6} or 0.22 in a million. This result does not exceed the cancer risk significance threshold identified in Table 4-1. The MEIW is based on a 46-year exposure period. The maximum value was multiplied by 0.15 to account for an occupational exposure period (five days per week, 50 weeks per year for 46 years). The project MEIW location is shown in Figure 4-1.

Maximum Exposed Individual Resident: The predicted maximum cancer risk at the MEIR area due to exposure to proposed project emissions was calculated to be 3.5×10^{-8} or 0.035 per million (see Table 4-11) which does not exceed the cancer risk significance threshold in Table 4-1. The location of the project MEIR is also shown in Figure 4-1.

Cancer Burden: The incremental impact of the proposed project on the total excess cancer burden is approximately 3.5×10^{-5} and 3.1×10^{-4} for the residential and occupational populations, respectively. (See Table 18 in Volume II for further details.) The cancer burdens for residential and occupational populations do not exceed the cancer burden significance threshold identified in Table 4-1.

Sensitive Receptors: The maximum cancer risk from the proposed project alone to a sensitive receptor was estimated to be 0.033×10^{-6} or approximately 0.03 per million at the Edison School. This risk estimate is overly conservative as it is based on a 70-year continuous exposure period. This risk does not exceed the cancer risk threshold identified in Table 4-1.

Figure 4-1 goes here

TABLE 4-11

SUMMARY OF PROPOSED PROJECT CANCER RISK FOR THE ULTRAMAR WILMINGTON REFINERY

EXPOSURE PATHWAY	Proposed Project	
	Maximum Exposed Individual Resident	Maximum Exposed Individual Worker
Inhalation	3.45E-08	2.23E-07
Dermal	0.00E+00	0.00E+00
Soil Ingestion	0.00E+00	0.00E+00
Water Ingestion	0.00E+00	0.00E+00
Ingestion of Home Grown Produce	0.00E+00	0.00E+00
Ingestion of Animal Products	0.00E+00	0.00E+00
Ingestion of Mother's Milk	0.00E+00	0.00E+00
Total Cancer Risk	**3.45E-08**	**2.23E-07**

Proposed Project HRA Results - Non-Carcinogenic Health Impacts

Chronic Hazard Index: The highest chronic hazard index for the proposed project is estimated to be 6.5×10^{-3} for the respiratory tract. This result does not exceed the chronic hazard index significance threshold identified in Table 4-1. The maximum chronic hazard index location is the same as the estimated project MEIW.

Acute Hazard Index: The highest acute hazard index for the proposed project is estimated to be 1.4×10^{-3} for the respiratory tract. The acute health effects are based on maximum hourly emissions of TAC that have acute target endpoints. The acute hazard index for the proposed project does not exceed the relevant significance threshold in Table 4-1. The maximum acute hazard index location is the same as the proposed project MEIW.

Tank Farms and Marine Terminal Proposed Project HRAs

The HRAs associated with the Marine and Olympic Tank Farms and the Marine Terminal proposed project modifications were completed following the same procedure as the Refinery Proposed Project HRA. The Marine Tank Farm proposed project had two sources – Tank 199-TK-301 and the fugitive emissions from pumps and fittings. The Olympic Tank Farm proposed project consists of modifications to the entire facility, which is comprised of 13 emission sources – 11 tanks, a pair of parallel diesel-fired internal combustion engines to run fire water pumps, and fugitive emissions from pumps and fittings. The Marine Terminal proposed project consists of modifications to one source – Tank 99-TK-21001. See Volume II Section VIII through XV for detailed information on emissions estimates and modeling results.

Figure 4-1 shows the locations of the proposed project MEIW and MEIR for the Marine and Olympic Tank Farms and the Marine Terminal. Based on the results of the HRA, the cancer risk associated with exposure to TAC emissions from the proposed project operations for the MEIW and MEIR at the Marine Tank Farm were estimated to be 1.06×10^{-6} (about one per million) and 0.42×10^{-6} (less than one per million), respectively (see Table 4-12). Based on the results of the HRA, the cancer risk associated with exposure to TAC emissions from the proposed project operations for the MEIW and MEIR at the Olympic Tank Farm were estimated to be 2.77×10^{-6} (about three per million) and 4.56×10^{-6} (about five per million), respectively (see Table 4-13). Based on the results of the HRA, the cancer risk associated with exposure to TAC emissions from the proposed project operations for the MEIW and MEIR at the Marine Terminal were estimated to be 0.35×10^{-6} (about one per million) and 0.02×10^{-6} (less than one per million), respectively (see Table 4-14). These results indicate that cancer risks from the Marine and Olympic Tank Farms and the Marine Terminal do not exceed the cancer risk significance threshold in Table 4-1.

TABLE 4-12

SUMMARY OF CANCER RISK
FOR THE MARINE TANK FARM

EXPOSURE PATHWAY	Maximum Exposed Individual Worker	Maximum Exposed Individual Resident
Inhalation	1.06E-06	4.24E-07
Dermal	0.00E+00	0.00E+00
Soil Ingestion	0.00E+00	0.00E+00
Water Ingestion	0.00E+00	0.00E+00
Ingestion of Home Grown Produce	0.00E+00	0.00E+00
Ingestion of Animal Products	0.00E+00	0.00E+00
Ingestion of Mother's Milk	0.00E+00	0.00E+00
Total Cancer Risk	**1.06E-06**	**4.24E-07**

TABLE 4-13

SUMMARY OF CANCER RISK
FOR THE OLYMPIC TANK FARM

EXPOSURE PATHWAY	Maximum Exposed Individual Worker	Maximum Exposed Individual Resident
Inhalation	2.77E-06	4.56E-06
Dermal	9.99E-12	2.24E-11
Soil Ingestion	1.68E-11	3.77E-11
Water Ingestion	0.00E+00	0.00E+00
Ingestion of Home Grown Produce	7.64E-11	1.71E-10
Ingestion of Animal Products	0.00E+00	0.00E+00
Ingestion of Mother's Milk	0.00E+00	0.00E+00
Total Cancer Risk	**2.77E-06**	**4.56E-06**

TABLE 4-14

SUMMARY OF CANCER RISK
FOR THE MARINE TERMINAL

EXPOSURE PATHWAY	Maximum Exposed Individual Worker	Maximum Exposed Individual Resident
Inhalation	3.53E-07	1.86E-08
Dermal	0.00E+00	0.00E+00
Soil Ingestion	0.00E+00	0.00E+00
Water Ingestion	0.00E+00	0.00E+00
Ingestion of Home Grown Produce	0.00E+00	0.00E+00
Ingestion of Animal Products	0.00E+00	0.00E+00
Ingestion of Mother's Milk	0.00E+00	0.00E+00
Total Cancer Risk	**3.53E-07**	**1.86E-08**

The peak risk from the Marine Tank Farm proposed project at a sensitive population was estimated to be 0.069×10^{-6} or less than 0.1 per million at the St. Peter – St. Paul School. The peak risk from the Olympic Tank Farm proposed project at a sensitive population was estimated to be 1.86×10^{-6} or about two per million at the Wilmington Park Elementary School. The peak risk from the Marine Terminal proposed project at a sensitive population was estimated to be 0.012×10^{-6} or less than 0.1 per million at the Robert A. Kennedy Federation of Pre-School and Community Education Center. These risk estimates, which are overly conservative as they are based on 70-year continuous exposure, do not exceed the cancer risk significance threshold in Table 4-1.

The excess cancer burden is calculated based on the census tract centroids with their respective populations contained within the one per million cancer risk isopleth. The total excess cancer burden within the area of influence for the Marine Tank Farm was predicted to be 0.0022 and 0.0016 for the residential and occupational populations, respectively. The total excess cancer burden within the area of influence for the Olympic Tank Farm was predicted to be 0.014 and 0.019 for the residential and occupational populations, respectively. The total excess cancer burden within the area of influence for the Marine Terminal was predicted to be 0.00018 and 0.00021 for the residential and occupational populations, respectively. Cancer burdens estimated for the Marine and Olympic Tank Farms and the Marine Terminal do not exceed the cancer burden threshold in Table 4-1.

The non-carcinogenic health affects were also included in the HRAs. The proposed project total maximum acute and chronic hazard indices for the Marine Tank Farm were estimated to be 0.0038 and 0.0054, respectively. The proposed project total maximum acute and chronic hazard indices for the Olympic Tank Farm were estimated to be 0.0058 and 0.033, respectively. The proposed project total maximum acute and chronic hazard indices for the Marine Terminal were estimated to be 0.0022 and 0.0049, respectively. The acute and chronic hazard indices for the Marine and Olympic Tank Farms and the Marine Terminal do not exceed the relevant significance threshold in Table 4-1.

The detailed HRA calculations and data are provided in Volume II of this Subsequent EIR.

The impacts associated with the proposed project would be below the significance criteria for cancer risk of 10×10^{-6} and below the significance criteria for hazard indices of 1.0 for non-cancer health effects. Therefore, the proposed project is not expected to have significant impacts due to toxic air contaminants.

Asbestos Emissions from Tank Demolition

Asbestos was used in the construction of older buildings and structures. The demolition of tanks at the Olympic tank farm could generate emissions of asbestos. Asbestos is a toxic air contaminant and regulated under SCAQMD Rule 1403, Asbestos Emissions from Demolition/Renovation Activities. Rule 1403 requires that the facility conduct a survey of the structures to be removed for the presence of friable asbestos-containing material, notify the SCAQMD of the intent to demolish or renovate the facilities, remove asbestos-containing material before activities begin that would break up, dislodge, or disturb the asbestos-containing material, and establishes procedures for the handling of and control of asbestos-containing material. Rule 1403 requires that asbestos-containing material be removed under isolation and using air pollution control equipment, such as HEPA filters. All tanks that will be demolished or renovated are located within heavy industrial areas and not located near residential areas. Compliance with SCAQMD Rule 1403 is expected to minimize asbestos emissions so that no significant impacts would be expected.

Marine Vessel Emissions HRA

The emissions of TAC associated with marine vessels can be derived using the SCAQMD emission factors for the combustion of distillate oil No. 2 (diesel fuel). The estimated fuel consumption for a vessel at berth engaged using auxiliary power (a.k.a., hotelling) is 50 gallons per hour. The fuel consumption rate is based on similar vessels as derived in the Mobil Torrance Refinery Reformulated Fuels Project, Volume VII, Final EIR (SCAQMD, 1998). The resulting annual TAC emissions are provided in Appendix B. The emissions from auxiliary power are the only emissions considered applicable for modeling purposes and health risk analyses because auxiliary power is the only activity that occurs with the vessel is stationary. Emissions generated from cruising and maneuvering would occur over a wide area, and would be dispersed before reaching populated areas.

The cancer risk associated with exposure to TAC emissions from the vessel auxiliary power was estimated using a similar procedure to that used for the Refinery. The exceptions to the procedure include identifying the maximum impact location irrespective of receptor type and using a Cartesian coordinate system. The maximum cancer risk, which occurs approximately 800 meters east of the vessel stack, was calculated to be 0.70×10^{-6} (about one per million) (see Table 4-15). Polycyclic aromatic hydrocarbons (PAHs) contribute approximately 88 percent of the cancer risk, followed by 1,3-butadiene (five percent) and hexavalent chromium (two percent). Cancer risk from marine vessel emissions does not exceed the cancer risk significance threshold in Table 4-1.

TABLE 4-15

SUMMARY OF CANCER RISK
FOR MARINE VESSEL AUXILIARY POWER

EXPOSURE PATHWAY	Maximum Exposed Individual
Inhalation	1.35E-07
Dermal	5.01E-08
Soil Ingestion	9.25E-08
Water Ingestion	0.00E+00
Ingestion of Home Grown Produce	4.21E-07
Ingestion of Animal Products	0.00E+00
Ingestion of Mother's Milk	0.00E+00
Total Cancer Risk	**7.04E-07**

Non-carcinogenic impacts were also assessed. The maximum acute health impact occurs at a distance of 1,167 meters northeast of the vessel stack (1,000 meters east and 600 meters north). The maximum acute hazard index was estimated to be 0.015 for the respiratory tract target endpoint. Acrolein emissions account for approximately 90 percent of the acute hazard index,

followed by formaldehyde at approximately nine percent. The maximum chronic hazard impact occurs at the same location as the maximum cancer risk. The maximum chronic hazard index was estimated to be 0.0013 for the respiratory track target endpoint. Formaldehyde and acetaldehyde account for approximately 82 percent (41 percent each) of the chronic hazard index. The modeling input and output files are included in Appendix B. Acute and chronic hazard index risks from marine vessels do not exceed the applicable significance thresholds in Table 4-1.

MITIGATION MEASURES

Mitigation measures are required to minimize the significant air quality impacts associated with the construction phase of the proposed project as the emissions of CO, VOC, NOx and PM10 exceed thresholds and are considered significant.

Construction Mitigation Measures

The following mitigation measures to reduce emissions associated with construction activities have been identified to control emissions from heavy construction equipment and worker travel. Most of the mitigation measures that follow were already required for the previous project since construction emissions were considered significant. The revised proposed project also is expected to have significant adverse air quality impacts during the construction phase. Therefore, the previously identified mitigation measures will also be applied to the revised proposed project. Further, an effort was made to identify additional mitigation measures. One additional mitigation measure (AQ-9) was identified and included in this Subsequent EIR and mitigation measure AQ-8 was expanded to include the potential use of PuriNOx (an alternative fuel). The following mitigation measures will be imposed on the revised proposed project:

On-Road Mobile Sources:

A-1 Develop a Construction Emission Management Plan for the proposed project. The Plan shall include measures to minimize emissions from vehicles including, but not limited to: scheduling truck deliveries to avoid peak hour traffic conditions, consolidating truck deliveries, and prohibiting truck idling in excess of 10 minutes.

Off-Road Mobile Sources:

A-2 Prohibit trucks from idling longer than 10 minutes at the Ultramar sites.

A-3 Use electricity or alternate fuels for on-site mobile equipment instead of diesel equipment to the extent feasible.

A-4 Maintain construction equipment tuned up and with two to four degree retard diesel engine timing.

A-5 Use electric welders instead of gas or diesel welders in portions of the Refinery, tank farms, and terminal where electricity is available.

A-6 Use on-site electricity rather than temporary power generators in portions of the Refinery, tank farms, and terminal where electricity is available.

A-7 Prior to construction, the project applicant will evaluate the feasibility of retrofitting the large off-road construction equipment that will be operating for significant periods. Retrofit technologies such as selective catalytic reduction, oxidation catalysts, air enhancement technologies, etc., will be evaluated. Such technologies will be required if they are commercially available and can feasibly be retrofitted onto construction equipment.

A-8 Prior to construction, the project applicant will evaluate the feasibility of using alternative fuels in large off-road construction equipment that will be operating for significant periods. Alternative fuels can include fuel additives or modified fuels, e.g., PuriNOx, that have been demonstrated by CARB to result in emission reductions. PuriNOx fuel is comprised of the PuriNOx additive package, purified water and diesel fuel. These components are mixed in a blending unit to produce a finished fuel. The water content promotes an atomization of the mixture during fuel injection and improves combustion, while lowering combustion temperatures, reducing NOx emissions.

Water emulsion diesel fuels (e.g., PuriNOx) have a much lower energy content than regular diesel fuels which typically translates into a significant loss in fuel economy. This is offset slightly by an increase in thermal efficiency. Lubrizol, the manufacturer of PuriNOx, indicates that its product, containing 20 percent water emulsions, results in a 13 percent reduction in fuel economy. Lubrizol also warns of a power loss when operating with its fuel stating that the equipment should be tolerant of up to a 20 percent loss in power.

Emulsion-based diesel products do not meet ASTM D-975 specifications for diesel fuel due to their water content. Most manufacturers of diesel engines specify use of a ASTM D-975 compliant fuel in their engine applications. A potential user of an emulsion-based diesel fuel should confirm the suitability of the fuel for use in their specific engine application and ensure that such use would not void any aspect of the engine warrantee.

PuriNOx can be used in direct injection heavy-duty compression ignition engines, including construction equipment. Lubrizol representatives indicate that a large-scale batch blending unit has been installed in southern California. The blending unit is estimated to have a throughput of 20 million gallons per year. PuriNOx is estimated to result in a 14 percent reduction in NOx and a 63 percent reduction in particulate matter in off-road engines.

The use of PuriNOx is considered to be a feasible mitigation measure when it becomes commercially available. It is recommended that PuriNOx should be used

in construction equipment, if the engine manufacturer indicates that the use of the fuel is compatible with the engine so that the engine warrantee is not voided.

A-9 Use low sulfur diesel (as defined in SCAQMD Rule 431.2) where feasible.

A-10 Use CARB certified construction equipment for all construction equipment that requires CARB certification.

A-11 Suspend use of all construction activities that generate air emissions during first stage smog alerts.

A-12 The engine size of construction equipment shall be the minimum practical size.

PM10 Emissions from Grading, Open Storage Piles, and Unpaved Roads:

A-13 Develop a fugitive dust emission control plan. Measures to be included in the plan include, but are not limited to the following: (1) water active construction sites three times per day, except during periods of rainfall. Watering construction sites two times per day complies with SCAQMD Rule 403 and provides about a 50 percent emission reduction. Watering construction sites three times per day will reduce PM10 emissions by an additional 18 percent (total control of 68 percent); (2) enclose, cover, water twice daily, or apply approved soil binders according to manufacturer's specifications to exposed piles (i.e., gravel, dirt and sand) with a five percent or greater silt content. Implementation of this mitigation measure would reduce PM10 emissions 30 to 74 percent (SCAQMD, 1993); (3) suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 mph. The emission reductions associated with this mitigation measure cannot be quantified (SCAQMD, 1993); (4) apply water three times daily, except during periods of rainfall, to all unpaved road surfaces. This mitigation measure would reduce PM10 emissions by a minimum of 45 percent (SCAQMD, 1993); and (5) limit traffic speeds on unpaved roads to 15 mph or less. The emission benefits of this mitigation measure are estimated to be 40 to 70 percent (SCAQMD, 1993). With the exception of watering the site three times, these control efficiencies were reflected in the project emission calculations so no further emission reduction credit has been taken into account herein.

Other Mitigation Measures

AQ-14 Ultramar shall investigate measures to reduce the VOC emissions associated with the use of paints for coating the new storage tanks. Ultramar shall require that the painting of storage tanks be completed prior to delivery to the site to minimize the amount of paint used at the site. Under this mitigation measure paint use is expected to be limited to about 10 gallons per day. Ultramar shall also investigate the use of paints with VOC contents less than 3.5 lbs/gallon.

Other mitigation measures were considered but were rejected because they would not further mitigate the potential significant impacts. These mitigation measures included: (1) provide temporary traffic control during all phases of construction activities (traffic safety hazards have not been identified); (2) implement a shuttle service to and from retail services during lunch hours (most workers eat lunch on-site and lunch trucks will visit the construction site); (3) use methanol, natural gas, propane or butane powered construction equipment (equipment is not CARB-certified or commercially available); and (4) pave unpaved roads (unpaved roads will be watered on a regular basis to reduce emissions).

Operational Mitigation Measures

The impacts associated with operation of the proposed project are expected to be significant for VOC, NOx, SOx, and PM10 emissions so feasible mitigation measures are required. The major source of VOC emissions are from storage tanks. The major sources of other emissions are marine vessel emissions associated with the transport of gasoline blending stocks into the Basin.

Two naphtha tanks at the Olympic Tank Farm (299-TK-1002 and 299-TK-501) are being constructed to replace tanks that were lost due to the reduction in size of the Marine Terminal and are not directly related to the CARB Phase 3 project. Therefore, pursuant to SCAQMD Rule 1303, offsets will be provided for the emission increases associated with these two tanks. The two tanks are expected to result in a maximum VOC emission of about 146 lbs/day. Therefore, 175 lbs/day of offsets will be required (i.e., 1.2 to 1 ratio).

The proposed project requires the installation of fugitive components (e.g., valves, flanges, and pumps) which are large sources of VOC emissions from the proposed project. VOC emissions from fugitive components are controlled through the use of BACT. VOC emissions from storage tanks have also been controlled by the use of BACT, i.e., domes on all new and modified external floating roof storage tanks. BACT, by definition, is control equipment with the lowest achievable emission rate. The use of BACT controls emissions to the greatest extent feasible for the new and modified emission sources. In addition, the fugitive components will be required to be included in an inspection and maintenance program, as required by SCAQMD Rule 1173, to ensure that the equipment is properly maintained. Therefore, additional VOC emission reductions (through mitigation measures) from fugitive components or storage tanks associated with the proposed project equipment are not feasible.

The major portion of the emissions from the proposed project is from marine vessels, primarily used to transport *gasoline blending stocks*. *The NOx, SOx, and PM10 emissions from marine vessels are expected to be significant. Therefore, additional review has been completed with respect to potentially feasible mitigation measures for marine vessels. The feasibility of these mitigation measures is addressed below.*

Marine diesel engines have the inherent characteristics of being able to burn low-cost residual fuel with high reliability. They also achieve an excellent efficiency by running at the highest cycle temperatures. While these two characteristics are beneficial economically, they present difficulties

when it comes to air quality. Nitrogen contained in the combustion air readily oxidizes at high temperatures, therefore, these engines produce relatively high levels of NOx (PLAX/PLB, 1994).

Most of the NOx control measures available for land-based sources are not applicable on board ships since the operation of a ship's engine(s) differs in many respects from land-based sources. Ships operate in different areas with varying conditions. In addition, the quality of fuels and output vary with location and conditions. Ships are more individual than on-road vehicles, locomotives, or stationary sources. The engine installation for ships is often tailor-made for a special trade as opposed to engine installation on an on-road vehicle (PLAX/PLB, 1994).

Since marine vessels are the largest contributor to significant air quality impacts the SCAQMD evaluated whether or not it had jurisdictional authority to regulate marine vessel emissions. CEQA Guidelines §15040(b) states, "CEQA does not grant an agency new powers independent of the powers granted to the agency by other laws." As indicated in the following discussions, due to state and federal regulations, the SCAQMD has little or no authority to regulate marine vessel emissions.

a. Regulation of Marine Vessels

The regulation of oceangoing marine vessels registered in the United States has been traditionally undertaken by the United States Coast Guard (USCG) and the International Maritime Organization (IMO) for ships registered outside the United States. The Clean Air Act refers to the regulation of marine vessels under Sections 209 and 213 which indicate that the U. S. EPA can establish controls for non-road engines which includes marine vessels. However, the U.S. EPA has not yet developed such controls and has acknowledged the international implications of a regulatory program.

Under court order, the U.S. EPA proposed a draft federal implementation plan (FIP) to achieve the federal amibient air quality standards in the South Coast Air Basin. The preamble of the proposed FIP explored ways to reduce emissions from marine vessels, among other types of mobile sources, but acknowledged the national and international constraints on regulating ships. "International trade may be significantly harmed by unilateral and contradictory actions taken by various countries around the world mandating different control methods and technologies for vessels engaged in international trade" (59 Federal Register 23378, preamble to the federal implementation plan).

International regulations are the most appropriate method for controlling both ship engines and ship fuels since approximately 80 percent of ships calling at the San Pedro Bay ports are registered in foreign countires and all ship engine manufacturers are foreign (PLAX/PLB, 1994). A detailed discussion of the emission limits that have been developed on an international level is provided below under "Emission Limits on Marine Vessels." Over time these international standards will reduce emissions associated with marine vessel visits for the proposed project. However, due to the long lead time and difficulties in quantification, these standards are not quantified here as project mitigation.

b. Federal Preemption

The Ports and Waterways Safety Act (PWSA) was passed by the U.S. Congress in 1972 and among the matters it regulates is tanker design and construction. Title II of the PWSA indicates that the protection of life, property and the marine environment from harm requires the promulgation of regulations for the design, construction, alteration, repair, maintenance, and operation of vessels carrying certain cargoes in bulk, primarily oil and fuel tankers (46 U.S.C. Section 3703, formerly 46 U.S.C. Section 391a(1)). To implement the two goals of providing for vessel safety and protecting the marine environment, it is provided that the Secretary of the Department in which the Coast Guard is located "shall prescribe" such rules and regulations as may be necessary with respect to the design, construction, and operation of, among other things, the "propulsion machinery, auxiliary machinery, and boilers" on the covered vessels (46 U.S.C. Section 3703, formerly 46 U.S.C. Section 391a(1)). In prescribing regulations, the Secretary must consult with numerous federal departments, state, and local governments, port and harbor authorities and representatives of environmental groups (46 U.S.C. Section 3703(c)).

The PWSA preempts state regulation regarding the design, construction and operation of ships to the extent that such regulation would interfere with the dual goals of vessel safety and protecting the marine environment. Mitigation measures that would affect the design of the engine or require modification to the engine in a manner inconsistent with the PWSA are considered to be infeasible. However, the SCAQMD is not preempted through Section 209(e) of the Clean Air Act from mitigation measures that are considered to be "in use" measures, i.e., mitigation measures that do not involve design changes or modifications to the engines.

Section 209(e) of the federal Clean Air Act (42 U.S.C. Section 7543(e)(2)) preempts the SCAQMD from developing and imposing emissions limits on a class of marine engines at this time. Under Section 209(e) of the Act (42 U.S.C. Section 7543(e)(2)), U.S. EPA may authorize California (and thus the local air districts) to adopt and enforce emission standards for certain non-road engines only after the adoption of U.S. EPA regulations, notice and opportunity for pubic comment, and presentation of information and data supporting certain findings. Marine diesel engines are internal combustion engines which fall within the definition of non-road engines. Thus, California and the local air districts may not adopt emission standards for marine diesel engines unless the requirements of Section 209(e) are met. At this time U.S. EPA has not authorized California or its local air districts to adopt emission standards for this class of marine diesel engines. For this reason, any emission limit based on design or retrofit of marine diesel engines is legally infeasible under the federal Clean Air Act.

c. Use Steamships in Place of Diesel Ships

Requiring the use of steamships in lieu of diesel ships was evaluated to determine if such a measure would reduce NOx emissions. Changing from diesel ships to steamships would not necessarily be desirable, however, since it would increase emissions of other pollutants. In addition, limits on vessel availability and Ultramar's lack of control over vessel charters makes a steamship mandate infeasible as a CEQA mitigation measure.

Steamships can require almost twice the fuel to operate compared to diesel ships (Acurex, 1996 and CARB, 1991). A 102,800 to 143,600 deadweight ton diesel tanker is estimated to consume about 515 gallons of fuel per hour. The same size steamship is estimated to consume about 1,112 gallons of fuel per hour (Acurex, 1996). In part because of the higher fuel requirements, as well as the ability of the boiler plants to accept lower grade fuels, steamships can produce greater emissions of certain pollutants, including SOx and PM10, than their diesel counterparts. Steamships generally have lower emission factors for NOx, VOCs, and CO than diesel ships during cruising and maneuvering activities. However, steamships have higher emission factors of NOx, PM10, and SOx than diesel ships during hotelling activities (Acurex, 1996). This is largely because steamships still use their main boilers, although at reduced power, while at berth. Diesel-powered vessels are equipped with smaller auxiliary engines that are used at berth. The use of steamships would result in higher hotelling emissions of all pollutants because larger amounts of fuel are required and the emission factors for steamships are higher (Acurex, 1996). Therefore, the use of steamships is expected to generate more emissions while the vessel is at berth than diesel ships, impacting populated areas, whereas emissions generated from cruising and maneuvering would occur over a wide area, and would be dispersed before reaching populated areas. Based on this information, requiring the use of steamships would not be an effective mitigation measure for the proposed project.

Data collected by the U.S. EPA indicates that only 14 percent of the total ship calls within the Ports of Los Angeles and Long Beach are steamships. The U.S. EPA estimates that steamships declined to 11 percent of the total ship calls in 2000 and are estimated to be five percent of the ships calls in 2010 (U.S. EPA, 1997). Due to their much higher fuel consumption, steamships are declining as a percentage of the world-wide fleet. The population of steamships also is aging. Moreover, the decline in population of steam powered tankers is expected to accelerate. The Oil Pollution Control Act of 1990 requires the use of double hulls on all tank vessels by the year 2015 (33 U.S.C. Section 2713). Double hulled tankers also tend to be newer tankers, and newer tankers generally are diesel powered. Hence, the lack of availability of steamships currently makes this mitigation measure impractical and increasingly infeasible.

Finally, as described above, Ultramar does not own or control the vessels that will deliver gasoline blend stocks to the marine terminal. Ultramar will contract with a supplier for a delivered price and the supplier retains all responsibility and liability associated with shipment of the material. Ultramar cannot control the type of vessel that is used to deliver gasoline blending stocks. For all these reasons, mandating the use of steamships in lieu of diesel ships is considered to be infeasible.

d. Emission Limits on Marine Vessels

There are a limited number of methods that a vessel owner or operator might be able to use to comply with an emission limit, whether it be stated as a maximum pollutant concentration or mass limit on emissions per day, per visit, or per year. This section discusses compliance through engine retrofits and engine design. The succeeding sections discuss other methods, including reducing engine speed, limiting the hours of use per day, cold ironing, fuel specifications, and engine timing and tuning.

As previously discussed, Section 209(e) of the federal Clean Air Act preempts the SCAQMD from developing and imposing emission limits on diesel engines. The preemption in Section 209(e) does not extend to steamships. However, for both steamships and diesel ships, to the extent that an emission limit would have to be achieved through retrofits of existing engines or the design of new engines, the limit implicates preemption under the PWSA.

Retrofit of existing engines is not considered an effective mitigation measure because it is not expected to result in sustained emission reductions at Ultramar's marine terminal. The transport of gasoline blending stocks is arranged by the suppliers in the context of the international shipping market. The suppliers contract for qualified marine vessels available at the time to carry the cargo to the Port of Los Angeles. Few vessels are expected to make repeat visits to the marine terminal. Therefore, even a substantial investment in the retrofit of a single vessel or a few vessels would not result in sustained emission reductions from marine transport associated with the proposed project. Further, the costs to retrofit marine vessels are expected to be prohibitive to comply with the requirements at one marine terminal only. Even if the SCAQMD had the authority to regulate marine vessel emissions, because of the prohibitively expensive costs involved, the net effect would most likely be a ban on additional vessels visiting Ultramar's marine terminal. As a result, retrofitting existing marine vessel engines is not considered a feasible mitigation measure because of the high costs involved.

In addition, as recognized in the Preamble to the draft FIP, U.S. EPA questioned the reasonableness of requiring retrofits, in light of both the cost involved and the effectiveness of retrofits in reducing emissions (59 Federal Register, 23380-23381). Regarding NOx control techniques in particular, U.S. EPA stated:

> *"Retrofitting ships with after treatment technologies is very difficult because of on board space limitations. Building upwards (where space is available) can raise the center of gravity. If the center of gravity is above the center of buoyancy, the ship will be destablized." (59 Federal Register 23377).*

U.S. EPA concluded that NOx control techniques which may be cost-effective to incorporate on new engines "are generally expensive and often difficult to retrofit on older vessels." (59 Federal Register 23377).

Regulation of new vessel engines, as agreed to on the international level, will eventually reduce the marine vessel emissions associated with this project. The United States is a signatory to the International Convention for the Prevention of Pollution from Ships. The original 1973 treaty, together with an important protocol added in 1978, are referred to as "MARPOL 73/78". MARPOL 73/78 attempts to achieve the elimination of international pollution of the marine environment by oil and other harmful substances from marine vessels. Annexes I through IV of the treaty establish specific standards for the discharge of oil, hazardous substances and sewage into the water.

Under the auspices of the IMO, an agency of the United Nations, the signatory countries adopted Annex VI to MARPOL 73/78 on September 26, 1997 to reduce worldwide NOx emissions from

ships by about 30 percent, as well as additional reductions in SOx emissions. Annex VI established the Technical Code on Emission of Nitrogen Oxides from Marine Diesel Engines. This resolution requires that marine diesel engines to which the regulation applies, must comply with the NOx limitations developed by the Technical Code. The Technical Code established mandatory procedures for the testing, survey, and certification of marine diesel engines which will enable engine manufacturers, ship owners and administrations to ensure that all applicable marine diesel engines comply with the relevant emission limits for NOx. SOx emissions will be reduced by limiting the sulfur content in fuels. This regulation applies to diesel engines with a power output of more than 130 kilowatts (kW) manufactured after January 1, 2000. Only Congress or the U.S. EPA has the authority to implement the international emissions standards through new laws or regulations.

Therefore, emission controls and emission reductions are expected to occur in the long term through international agreements. The U.S. EPA has estimated that the total reduction of NOx emissions from the main engines of vessels associated with implementation of the IMO standards is estimated to be about 2,200 pounds per day in the South Coast Air Basin by 2010. Additional reductions from the effect of IMO standards on the NOx emissions from auxiliary engines are expected to be about 2,400 pounds per day by 2010 (U.S. EPA, 1997). The control of emissions through international agreements is the only mechanism available that will efficiently and effectively control emissions from marine vessels especially since about 80 percent of the vessels that arrive at the Ports of Los Angeles/Long Beach are foreign-owned. Over time these international standards will reduce emissions associated with all affected project-related marine vessels that visit the Port of Los Angeles. However, due to the long lead time and difficulties in quantification, these standards are not quantified here as project mitigation.

e. Limitations on Hours of Use or Number of Engines

If a limit is imposed on the number of hours a ship can unload in a day, the unloading operation must be spread over a greater number of days. During the periods the ship could not unload, it would remain docked at the terminal, continuing to operate its engines, consume fuel, and emit pollutants. This measure is considered infeasible because it would increase total emissions rather than mitigate (decrease) emissions from vessels.

Limiting the number of engines while under way would not be feasible because of safety concerns. Additionally, diesel vessels at berth generally operate auxiliary engines and not the main engine(s), i.e., they do not use full power. Reducing the number of engines in use at berth even further is not feasible because: (1) the ships are already operating under reduced power consumption; (2) power is still required to operate the pumps and unload the material in the ship; and (3) minimum power requirements are required to be maintained due to Coast Guard regulations that require ships to have the ability to move away from the dock within only a 30-minute period.

Limiting the marine vessel engines use also could be accomplished through "cold-ironing," i.e, providing on-shore electricity, which is discussed below.

f. On-Shore Electrical/"Cold Ironing"

While at berth (i.e., hotelling), electrical requirements of vessels are normally met by the use of auxiliary engines operated by the ships, thus generating emissions. When shore-side electrification is provided instead, marine vessels may shut down their engines and/or generators at berth and use shore-side electrical power for the ship's electrical needs. In order to keep the engine block warm and provide hot water, however, some heat source, such as an auxiliary boiler, may be run on the vessel, even if shore-side electric power is used. Most U.S. naval ships are built with shore-side power connections since military vessels generally spend long periods at berth. Commercial vessels generally are not built with shore power features.

In a report prepared for U.S. EPA during the time the draft FIP was under development, the Marine Research Institute (MRI) concluded:

> *"Cold ironing . . . is not feasible for tanker motorships, all steamships, and at hazardous terminals. Tanker motorships contain flammable cargo and may require steam heating prior to and during unloading. Because of the need for cold boiler start-up, steamships would not be able to meet the U.S. Coast Guard (USCG) requirement that all ships must be able to get underway in less than 30 minutes. Also, supplying steam from shore facilities is impractical." (MRI Report for U.S. EPA, 1993).*

In addition to the Coast Guard requirement cited by MRI, the California State Lands Commission also requires (with limited exceptions) that vessels at terminals have the capability to move away from the berth within 30 minutes under their own power (Title 2, California Code of Regulations, Section 2340(c)(28)).

On an individual basis, cold-ironing could be feasible for one vessel or one terminal. This measure could be feasible for Ultramar if there was a dedicated ship or ships that delivered gasoline blending stocks to the facility. Sufficient electrical supply does not currently exist at the marine terminal to implement this mitigation measure, and so additional construction of electrical equipment (powerlines, transformers, etc.) would be required. Even if this construction were completed, however, it is doubtful that the marine terminal could be designed to handle the electrical requirements of the many different types of vessels that could visit the terminal since the fleet of vessels is not defined. Ultramar does not own the vessels and could not require the owners to retrofit the vessels. It is doubtful that the different vessel owners would modify the vessels to be in compliance with a set of regulations applicable to only one marine terminal. For the above reasons, the use of "cold ironing" is not feasible at this time.

The use of cold-ironing for the ports was determined to be infeasible because: there are too many different types of ships with too many different electricity requirements; the shore-side infrastructure to support electrical needs for marine vessels is not available on a port-wide basis; few commercial vessels are equipped for cold ironing; and it is unlikely for a vessel that will only visit a terminal once or twice that the owner of a marine vessel would incur the substantial costs of retrofitting a ship for cold ironing to accommodate a single marine terminal.

g. Prohibit Tanker Visits During First or Second Stage Smog Alerts

A prohibition on tanker visits during first or second stage smog alerts would not mitigate impacts and could be counterproductive. It would force vessels to linger outside the District's boundaries three miles offshore or at other marine terminals until they could visit Ultramar's marine terminal to unload. "CARB has suggested that emissions from up to 100 miles out from the coastline have a significant impact on ozone concentration in the California coastal air basins." (59 Federal Register 23382). Other studies have indicated that emissions 25 miles from the coastline would have little impact on air quality in the Basin (CARB, 1991). Nonetheless, by increasing the time a tanker is in the vicinity of the marine terminal, this measure would increase total emissions per tanker visit.

A prohibition of marine vessels at the Ultramar marine terminal during first and second stage smog alerts is considered infeasible for the following reasons: (1) the ships are not owned or controlled by Ultramar; (2) the ships would still be expected to arrive at the Ports of Los Angeles and Long Beach during this period because they could still deliver product to other terminals or wait until it was allowed to visit the Ultramar terminal; and (3) during the period the ship could not deliver material to Ultramar, it would remain docked at another terminal or anchored offshore, continuing to operate its engines, consume fuel, and emit pollutants.

h. Fuel Specifications

Another mitigation measure which has been evaluated is establishing special fuel specifications for ships delivering products to Ultramar's marine terminal. The sulfur content of fuel used by vessels, based on data collected for other studies, is assumed to be 2.3 percent (Acurex, 1996). Fuel specifications are regulated on a state-wide basis and only impact fuel purchased in California. It is difficult if not impossible to regulate the fuel specifications of vessels traveling from other countries and does not make sense to require vessels to unload fuel purchased elsewhere. A proliferation of fuel specifications imposed by various ports or imposed on a project-by-project basis would impose an undue burden on interstate and international commerce. It would present significant practical problems, as a ship would require multiple, segregated fuel storage facilities.

The regulation of fuel specifications for the group of vessels that use the Ultramar marine terminal is not possible because Ultramar does not own the vessels nor control where the fuel is purchased. Further, the identity of the vessels is not known to Ultramar prior to arrival at the port.

The sulfur content of marine fuels, and thus the sulfur emissions from marine vessels, is expected to be reduced in the future. Fuel specifications are being regulated by international agreements (see above). Adopted IMO agreements will limit the sulfur content of fuels used in all marine vessels and not only those that visit the Ultramar terminal. The sulfur content of any fuel will be limited to five percent by weight. The sulfur content of fuel oil used on board ships in a "SOx Emission Control Area" must not exceed 1.5 percent by weight. "SOx Emission Control Areas" include the Baltic Sea and any other port where the need to prevent, reduce and control air pollution from SOx emissions from ships has been designated. The South Coast Air Basin will be eligible for designation as a SOx Emission Control Area; however, the designation will need to be approved by the IMO.

SCAQMD Rule 431.2 - Sulfur Content of Liquid Fuels establishes a more stringent sulfur limit for certain fuels but it does not apply to the marine vessel visits associated with this proposed project. Rule 431.2 limits the sulfur content of any liquid fuel used in the Basin to 0.05 percent by weight. Rule 431.2 does not apply to "liquid fuels to propel or test any vehicle, aircraft, aircraft engine, locomotive, boat or ship." Therefore, SCAQMD Rule 431.2 is not applicable to marine vessels. Moreover, the Health and Safety Code (Section 40447.6) establishes requirements the SCAQMD would have to meet before it could adopt regulations relating to the composition of diesel fuel sold in the South Coast Air Basin.

The imposition of additional fuel specifications on vessels that visit the Ultramar marine terminal only is not feasible for the following reasons: (1) the ships are not owned or controlled by Ultramar; (2) the SCAQMD is not currently authorized to impose requirements on vessels that are foreign-owned; (3) this measure would most likely result in merely a ban on vessels traveling to the Ultramar marine terminal since it is doubtful that vessels would make the changes to the fuel storage tanks required to implement this measure to comply with regulations at one terminal; and (4) it is doubtful that this measure would have any real air quality benefit since the marine vessels that bring in gasoline blending stocks would still be expected to arrive in the Port area and deliver the material to the other marine terminals.

i. Engine Timing Retard

Retarding the injection of fuel into the cylinder has been shown to reduce levels of NOx emissions in diesel engines. An engine's fuel injection is normally tuned for optimum efficiency and longevity. Retarding the fuel injection timing essentially detunes the engine, decreasing the peak temperature and pressure in the cylinder during the combustion process. This has the effect of reducing the thermal disassociation of atmospheric nitrogen and the subsequent formation of NOx, thereby reducing NOx emissions. Since injection timing retard results in the combustion process occurring at a lower temperature all of the fuel may not be burned resulting in an increase in VOC, particulate, and smoke emissions.

The potential NOx control efficiency of injection timing retard of diesel internal combustion engines is generally listed as between 25 and 30 percent. However, very large marine diesel engines are not expected to achieve this high of a reduction. The control system on large slow speed engines typically limit retardation to less than a degree or two to avoid destabilizing the engine and related safety and reliability problems. As a result, NOx reductions due to retardation are relatively small on ship engines. Sulzer, a ship engine manufacturer, estimates that the use of engine timing retard may reduce NOx emissions by up to 15 percent (PLAX/PLB, 1994).

A complication with injection timing retard on slow speed marine diesel engines is that timing retardation may affect the reversing of the engine direction, resulting in the possible loss of power. A loss of power while maneuvering in a constrained area such as a busy port would create a substantial safety hazard and may lead to damage of land-side infrastructure. Therefore, this control method may not be practical for marine vessels operating at low speeds. In addition, timing retardation results in decreased engine efficiency, decreased power, a two to five percent

increase in fuel consumption, increased engine wear and maintenance requirements, and may also make the engine more difficult to start.

Ultrmar does not own the vessels that deliver materials to the marine terminal. There is no specific vessel or fleet of vessels that deliver gasoline blending stocks to the Ultramar marine terminal and the vessels that deliver material to the terminal is expected to vary. This mitigation measure would be difficult to implement and would likely require changes to multiple ships in order to be effective. Ship owners would not have any incentive to implement these costly changes to deliver material to one terminal.

The use of engine timing retard on marine vessels that visit the Ultramar marine terminal is considered infeasible for the following reasons: (1) the ships are not owned or controlled by Ultramar; (2) the use of engine timing retard for the control of NOx emissions on marine vessels has not been demonstrated to be effective; (3) additional research on timing retard is required to address the loss of power that may occur at slow speeds and the related safety concerns; (4) there are no specified ships that visit the marine terminal so there are no specific ships identified to which modifications could be made; (5) the SCAQMD does not currently have the authority to require the modification to marine diesel engines; and (6) a regulation requiring engine timing retard would unduly burden interstate commerce and, if the requirement applied only to ships visiting Ultramarl's marine terminal, it would impact the uniformity of maritime law.

j. Engine Fine Tuning

A slow speed marine diesel engine when optimally tuned is efficient with regard to fuel consumption and produces little carbon monoxide and unburned hydrocarbons. High internal cylinder temperatures and pressures are reached during combustion when in tune. The thermal disassociation of atmospheric nitrogen and production of NOx occurs at these high temperatures and pressures. Further, fine tuning the engine with the engine's installed control system will have little effect on the levels of NOx produced (PLAX/PLB, 1994).

One engine retrofit option for the future is the use of a high pressure fuel injection system of 100,000 pounds per square inch (psi). This system uses high pressure to vaporize the fuel to create earlier fuel ignition and a longer, cooler and more complete combustion process. The high temperatures at which NOx is formed are reduced, thus reducing NOx emissions. This option is in the developmental stage and is not readily available commercially.

Upgrade, conversion, and retrofit requirements for ships are best approached on an international basis. All ship engines are made by foreign manufacturers. In addition, 80 percent of the vessels calling at the San Pedro Bay Ports are foreign flag vessels. These vessels are maintained in countries other than the United States (PLAX/PLB, 1994).

Further, Ultramar does not own the vessels that deliver materials to the marine terminal. This mitigation measure would be difficult to implement and would likely require changes to multiple ships in order to be effective. Ship owners would not have any incentive to implement these costly changes to deliver materials to one terminal only.

Engine tuning of marine vessels that visit the Ultramar marine terminal is considered infeasible for the following reasons: (1) the ships are not owned or controlled by Ultramar; (2) the control of NOx emissions from engine tuning on marine vessels has not been demonstrated to be effective; (3) additional research on engine tuning is required to determine the effectiveness of this measure; (4) the use of this technology is probably more efficient on new engines than as a retrofit for old engines; (5) there are no specific ships identified which routinely call on Ultramar to which modifications could be made; (6) the SCAQMD does not currently have the authority to require the modification to marine diesel engines; and (7) a regulation requiring engine fine tuning would unduly burden interstate commerce and, if the requirement applied only to ships visiting Ultramar's marine terminal, it would impact the uniformity of maritime law.

k. Offsets

The use of offsets has been evaluated as mitigation for all or a portion of the emissions from the proposed project. The SCAQMD has evaluated this potential mitigation measure and determined that it is not feasible for a number of reasons. As explained in the following subsections, requiring offsets for Ultramar's project is prohibited by State law. The proposed project also is exempt from offsets according to the SCAQMD's rules. Requiring offsets as CEQA mitigation (outside the context of air quality permit requirements) is not consistent with the SCAQMD's long-standing practice. Adopted rules and established practice reflect the SCAQMD's thoughtful consideration and planning in the development of its regulatory programs, and it would not be reasonable or advisable to revise existing rules or alter or diverge from established practice solely policy for Ultramar's CARB Phase 3 Project. Finally, the cost of offsetting project emissions is substantial and it would not be reasonable to impose these costs on Ultramar under the circumstances of this proposed project. These reasons are discussed further in the succeeding paragraphs.

(i) Health & Safety Code 42301.2

First, requiring offsets for Ultramar's CARB Phase 3 Proposed Project is infeasible because it is prohibited by State law. Health and Safety Code Section 42301.2 states in part: "A district shall not require emission offsets for any emission increase at a source that results from the installation, operation, or other implementation of any emission control device or technique used to comply with a district, state, or federal emission control requirement . . . unless there is a modification that results in an increase in capacity of the unit being controlled." This statute became effective January 1, 1997, and currently applies to all districts in the State of California.

Ultramar's CARB Phase 3 proposed project is being implemented for the sole purpose of complying with state and federal reformulated gasoline specifications, specifically, the requirement to alter the composition of fuels to eliminate MTBE and comply with new state gasoline requirements. The modifications to equipment and changes in operations -- including increased marine vessel transportation of gasoline blending stocks necessary to manufacture reformulated gasoline meeting the federal and state requirements -- constitute "implementation of . . . [a] technique used to comply with a . . . state or federal emission control requirement". The proposed project will result in emission increases from a variety of stationary and mobile "sources." Health

and Safety Code Section 42301.2 does not distinguish between mobile and stationary sources or direct or indirect sources, and the SCAQMD has concluded that emission increases from all types of sources are covered by the offsets prohibition, provided they meet the other criteria set forth in the statute. Finally, Ultramar's CARB Phase 3 proposed project does not result in an increase in the capacity of any "unit" being controlled. Therefore, Section 42301.2 prohibits the SCAQMD from requiring emission offsets for Ultramar's proposed project, and requiring such offsets as CEQA mitigation is legally infeasible. The prohibition applies to emission increases of any and all pollutants from any and all types of sources associated with the proposed project. Please note that the construction and operation of two naphtha storage tanks at the Olympic Tank Farm (299-TK-1002 and 299-TK-501) are being constructed to replace tanks that were lost due to the reduction in size of the Marine Terminal and are not directly related to the CARB Phase 3 proposed project. Therefore, pursuant to SCAQMD Rule 1303, offsets will be provided for the emission increases associated with these two tanks.

(ii) SCAQMD Offset Exemptions

Second, offsets are infeasible because Ultramar's proposed project is exempt from offsets under SCAQMD rules. Rule 1304(c) provides in part: "Upon approval by the Executive Officer or designee, an exemption from the offset requirement of Rule 1303(b)(2) shall be allowed for the following sources: . . . (4) Regulatory Compliance -- The source is installed or modified solely to comply with District, state, or federal air pollution control laws, rules, regulations or orders, as approved by the Executive Officer or designee, and provided there is no increase in maximum rating." (This provision was previously designated (b)(4) and later (e)(4).) In adopting the exemption, the SCAQMD recognized that rules aimed at reducing one pollutant or source of pollutants may increase another pollutant or source. These tradeoffs are considered in the environmental review of a proposed rule before it is adopted, and the control requirement is imposed only if the agency determines that on balance the proposed reductions provide sufficient benefit to outweigh any resulting emission increases. Accordingly, the regulatory compliance exemption provides fairness by ensuring that equipment owners and operators who are compelled to incur significant costs to control or reduce emissions of one pollutant do not also become subject to offsets for related emission increases, which would impose additional costs not considered in the rule development process. The regulatory compliance exemption itself was adopted only after preparation of an environmental assessment under CEQA, Public Resources Section 21080.5 (see Final Environmental Assessment, SCAQMD No. 900502SS).

The SCAQMD has consistently interpreted Rule 1304(c)(4) and its predecessors to require the Executive Officer to approve the exemption provided the applicant could demonstrate that its project qualified, that is, that the project was necessary to comply with air pollution control laws, and would not result in an increase in maximum rating. Regarding reformulated gasoline projects in particular, on October 9, 1992, the Executive Officer announced to all refinery managers in Southern California that the offset exemption for regulatory compliance projects (then numbered section (b)(4)) would apply to projects required to meet the new federal and state fuel specifications. The Executive Officer wrote: "We believe it was the District Governing Board's clear intent to grant the . . . offset exemption to refinery constructions and modifications undertaken solely to meet state and federal mandates for clean gasoline." In a challenge to the

EIR prepared for Union Oil Company's reformulated gasoline project, the California Court of Appeal agreed with the Executive Officer's implementation of the offset exemption for regulatory compliance projects. Thompson v. South Coast Air Quality Management District, 2nd Civ. No. B090696 (filed July 5, 1995).

The SCAQMD has consistently applied the Rule 1304 offset exemption for regulatory compliance projects to all aspects of the refineries' CARB Phase2 and CARB Phase 3 reformulated gasoline projects, including ancillary, necessary equipment and activities which occur within the Basin although not at the refinery sites.

In its decision filed June 12, 1997 in Leto v. South Coast Air Quality Management District, 2nd Civ. No. B100873, the Court of Appeal stated that it understood the Thompson case to involve only emissions from Unocal's refinery. However, the SCAQMD's records and the EIR for the project show that all emissions from Unocal's project, including indirect and mobile sources, were considered exempt from offsets.

Consistent with the current language of Rule 1304(c)(4) and the Executive Officer's implementation and interpretation of prior Rules 1304(b)(4) and (e)(4), the Executive Officer has determined that Ultramar's CARB Phase 3 proposed project qualifies for the offset exemption for regulatory compliance projects. Ultramar's CARB Phase 3 proposed project does not result in an increase in the maximum rating of the refinery, in that it will not increase the crude throughput capacity of the refinery. Therefore, emission increases associated with Ultramar's proposed project are exempt from any offsets which might otherwise be required under Rule 1304(b)(2). Specifically, the offset exemption applies to emission increases of all pollutants from non-RECLAIM sources, and emission increases of all pollutants other than NOx and SOx from RECLAIM sources. To the extent that emissions from indirect or mobile sources are attributed to a related stationary source in the permitting process, such emissions are also exempt from offsets under Rule 1304(c)(4).

Regarding emissions increases of NOx and SOx at RECLAIM facilities such as Ultramar's Wilmington Refinery, requiring offsets would conflict with the provisions of SCAQMD Rule 2002(c)(12). SCAQMD Rule 2005(b)(2) generally requires a RECLAIM facility to demonstrate that it holds sufficient RECLAIM trading credits to "offset" NOx and SOx increases. However, Rule 2002(c)(12) provides that a refiner who is required to make modifications to comply with State and federal reformulated gasoline requirements may have its allocation of RECLAIM trading credits adjusted upward by the SCAQMD in the amount of the additional emissions, thus relieving such refiners of the need to procure additional RECLAIM trading credits. Requiring offsets under such circumstances would be inconsistent with Rule 2005(c)(12). It also would be inconsistent with the SCAQMD's treatment of the other CARB Phase 2 reformulated gasoline projects and CARB Phase 3 projects, all of which were treated as exempt from any offset requirement for NOx and SOx increases at RECLAIM facilities.

Finally, mobile sources such as marine vessels also are exempt from offsets by virtue of the SCAQMD rule which exempts them from the requirement to obtain permits to construct or operate. The SCAQMD requires offsets as a part of its permitting program for new or modified sources

(SCAQMD Rules 1303(b)(2) and 2005(b)(2).) However, Rule 219(a)(2) exempts marine vessels from the requirement to obtain a permit to construct or operate; therefore, marine vessels also are exempt from offsets.

(iii) SCAQMD Practice on Offsets as CEQA Mitigation

Historically, the SCAQMD, as a lead agency under CEQA, has followed a practice of not allowing purchased emission reduction credits (ERCs) to be used as a mitigation measure for reducing potential adverse air quality impacts identified in its CEQA documents. This practice is based on the SCAQMD's interpretation of CEQA and CEQA case law as explained in the following paragraphs.

First, ERCs are derived from over-control of stationary sources or equipment shutdown and, as such, may occur anywhere within the area of the SCAQMD's jurisdiction. Further, an ERC can be generated and then "banked" or saved for use at a later time, sometimes years later. Based on these characteristics of purchased ERCs, the SCAQMD has been concerned that application of purchased ERCs as mitigation would not actually mitigate localized air quality impacts to individuals in the immediate vicinity of the proposed project because the purchased ERCs could have been generated miles away or several years prior. Further, the SCAQMD assumed that any project that exceeded the mass daily significance thresholds established for criteria pollutants and VOCs, would have significant adverse localized air quality impacts unless demonstrated otherwise. Thus, it was felt that application of purchased ERCs as a means of mitigating air quality impacts would not be consistent with CEQA's definition of mitigation, which includes in part, "Minimizing impacts by limiting the degree or magnitude of the action and its implementation." (CEQA Guidelines §15370[b]).

The second reason SCAQMD has not used ERCs as CEQA mitigation is the concept under CEQA that agencies should be careful to ensure that mitigation measures actually relate to impacts caused by the project in question. Further, agencies should forego the temptation to try to force an applicant to provide a generalized public benefit unrelated to those impacts or that would do more than fully mitigate the impacts (Remy, et al., 1996).

In Nollan v. California Coastal Commission (1987) 483 U.S. 825, 834-837 [107 S.Ct. 3141], the U.S. Supreme Court declared invalid a condition, consisting of a land use dedication, that the California Coastal Commission required of a property owner because in order for such permit conditions to be valid, a "nexus" must exist between the conditions and the purpose that would justify a denial of the permit, i.e., the conditions must be addressed to the same harm that would justify denial. Because of the characteristics of ERCs as described above, SCAQMD concluded that purchased ERCs do not qualify as CEQA mitigation because there is no nexus between purchased ERCs generated, in the case of the proposed project, from stationary sources within the district and potential localized air quality impacts generated by ship emissions at the Ports of Los Angeles/Long Beach from Ultramar's CARB Phase 3 Proposed Project.

Alternatively, the SCAQMD has encouraged using ERCs to mitigate significant adverse air quality impacts only if the ERCs were generated on-site and they were generated contemporaneously with

project construction or operations. Unlike purchased ERCs, on-site, contemporaneous ERCs mitigate air quality impacts at the site, therefore, reducing exposure to adverse air quality impacts to individuals located in the vicinity of the project. There is also a nexus between contemporaneous ERCs generated on-site and increased emissions from a project at that site. For both of these reasons, on-site, contemporaneous ERCs qualify as mitigation under both CEQA and CEQA case law.

In 1994, the SCAQMD modified its practice of not allowing purchased ERCs to serve as CEQA mitigation. The SCAQMD began allowing VOC ERCs to be used as CEQA mitigation as long as none of the VOCs to be mitigated were considered to be air toxics, i.e., contributed to localized impacts. The rationale for this change in practice was that VOCs contribute to ozone formation which is a pollutant of regional concern. VOC ERCs generated anywhere in the Basin (within the constraints of the trading zone requirements in Rules 1303(b)(3) and 2005(e)) would be expected to produce regional ozone benefits. As a result, VOC ERCs qualify as CEQA mitigation because they minimize the regional impacts generated by a project, which also demonstrates a nexus between the measure and the impact it is mitigating.

Although NOx emissions are a precursor to ozone formation, NOx emissions may also create localized impacts. NOx emissions are comprised primarily of nitrogen dioxide (NO_2) and nitric oxide (NO), which is rapidly converted to NO_2. NO_2 is a criteria pollutant and can contribute to significant localized air quality impacts. It is for this reason that the SCAQMD has not historically extended the practice of allowing NOx ERCs to qualify as CEQA mitigation.

(iv) NOx Offsets Are Not Reasonably Available

The SCAQMD maintains an emission reduction credit (ERC) "bank" to fund the operation of new and modified stationary sources. The SCAQMD NSR program also includes a Priority Reserve which provides free offsets for essential public services. The funding of these offset banks is based on previous history of unclaimed credits from stationary sources ceasing operations (i.e., "orphan shutdowns") and reductions from BACT discounting upon issuance of ERCs. The 1990 amendments to Regulation XIII also reduced existing ERCs and "negative NSR balances" (i.e., existing emission reduction credits) by 80 percent to generate emission reductions to fund the offset bank and Priority Reserve.

The availability of creditable offsets is integral to meeting the requirements of federal and state NSR. A shortfall of ERCs can jeopardize the permitting of new or modified stationary sources and compliance with federal and state law.

Based on historical data and future projections, the long-term demand for NOx ERCs from new and modified stationary sources is likely to be greater than current funding can supply. The current and projected amount of ERCs available to new and modified stationary sources precludes the use of this source of credits as mitigation for the mobile source (i.e., marine vessel) emissions associated with the Ultarmar CARB Phase 3 Proposed Project or as CEQA mitigation for other projects. Thus, the use of ERCs to offset mobile source emission impacts from the Ultramar CARB Phase 3 Proposed Project is infeasible.

(v) Citizen's of Goleta Valley v. Board of Supervisors

In 1990, the California Supreme Court decided Citizens of Goleta Valley v. Board of Supervisors of Santa Barbara County, 52 Cal.3d 553. The case concerned the scope of the alternatives analysis required under CEQA and the feasibility of specific alternatives for a hotel project. The Supreme Court found that the County's reliance on the planning and policy decisions embodied in its previously-adopted local coastal plan was acceptable under CEQA. State law mandated the development of local coastal plans, including periodic revisions by the County and review and approval of the plan by a state agency. The Court explained that the plan development process required the County to address the same issues which were raised by the alternatives analysis in the EIR, and to consider those issues in a process "structured to transcend the provincial." The Supreme Court concluded that ordinarily an EIR should not be an occasion to reconsider or overhaul the fundamental policies embodied in the plan, and that case-by-case reconsideration of the policies in the context of project-specific EIRs would undermine the comprehensive planning process and its related goal of consistency.

The offset exemptions in the SCAQMD's rules and its practice of not applying offsets as CEQA mitigation embody the agency's fundamental policy decisions that guide growth and development in the Basin with respect to air quality. State law requires the SCAQMD to develop an air quality management plan (including rules and regulations). Health & Safety Code Sections 40001, 40460, 40702, 40911. The plan and the SCAQMD's rules are reviewed and approved by the CARB. Health & Safety Code Sections 40460, 40466, 40469, 40704, 41500. Periodic reviews are required (Health & Safety Code Sections 40463, 40466), thus ensuring that the policies embodied in the plan continue to be appropriate. In adopting its rules the SCAQMD has confronted issues relating to the emissions inventory (including stationary and mobile sources and the expected increases from additional growth), and has designed a program with consideration of competing environmental, economic and social interests. Moreover, this has been done in the context of a process which "transcends the provincial." State law prescribes the procedures applicable to the development of the SCAQMD's plans and rules, and also establishes substantive standards. E.g., Health & Safety Code Sections 40440.5, 40440.7, 40440.8, 40466, 40703, 40725, 40726, 40727, 40728.5, 40922, 40923. Therefore, the SCAQMD relies on its existing rules and policies (including exemptions) in determining that offsets are not reasonable or feasible for Ultramar's proposed project.

(vi) Offsets Are Not Economically Feasible

The cost of providing offsets also was considered in determining whether offsets are feasible mitigation. The estimated cost of offsets to reduce the proposed project's off-site and indirect emissions of all pollutants and refinery emissions of non-RECLAIM pollutants to the CEQA significance thresholds is over $53 million (see Appendix D). The cost of offsets is substantial.

It would not be reasonable to impose the substantial additional cost of offsets on any CARB Phase 3 project, including Ultramar's CARB Phase 3 Proposed Project. The sole purpose of the refineries' CARB Phase 3 projects is to produce fuels meeting federal and state requirements designed to eliminate MTBE and further reduce emissions from automobiles. No other refinery in

the South Coast Air Basin was required to provide offsets for emissions increases associated with the CARB Phase 3 projects. To impose the substantial additional costs of offsets on Ultramar alone would create an unfair economic advantage for other refiners.

Together, these factors render offsets economically infeasible as mitigation.

l. BACT for Marine Vessels

In issuing pre-construction or operating permits for major and non-major stationary sources, the SCAQMD's Executive Officer is charged:

- *under Regulations XIII, XVII, and XX, to use Best Available Control Technology (BACT)*[2] *for any construction of a new or relocated source, or modification of an existing source which results in increased emissions of any nonattainment air contaminants, ozone depleting compounds, or ammonia;*

- *under Regulation XIII, to periodically publish BACT for commonly permitted classes or categories of sources; and*

- *to ensure that every permit subject to Regulations XIII, XVII, or XX complies with the federal Lowest Achievable Emission Rate (LAER)*[3] *and state BACT [Health and Safety Code, section 40440(b)(1)].*

The federal Clean Air Act (CAA), section 173(a)(2) [42 U.S.C. section 7503(a)(2)] requires LAER to be applied, at a minimum, to new and modified major sources in non-attainment areas. In implementing this requirement, the U.S. EPA has a standing policy to essentially not consider cost

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[2] *BACT is defined in Rule 1302(f), Rule 1702 (e), and Rule 2000(c)(8) as the most stringent emission limitation or control technology which: (1) has been achieved in practice for such category or class of source; or (2) is contained in any SIP approved by the U.S. EPA for such category or class of source - specific limitation or control technique shall not apply if the owner or operator of the proposed source demonstrates to the satisfaction of the Executive Officer or designee that such limitation or control technique is not presently achievable; or (3) is any other emission limitation or control technique, found by the Executive Officer or designee to be technologically feasible for such class or category of sources or for a specific source, and cost-effective as compared to measures as listed in the AQMP or rules adopted by the District Governing Board.*

[3] *LAER is defined in Title 40 of the Code of Federal Regulations, section 51.165(a)(1)(xiii) as the more stringent rate of emission between (1) the most stringent emission limitation which is contained in the implementation plan of any state for such class or category of stationary source, unless the owner or operator of the proposed stationary source demonstrates that such limitations are not achievable, and (2) the most stringent emission limitation which is achieved in practice by such class or category of stationary sources. The most stringent of these definitions governs. See Clean Air Act Section 171(3)(B).*

of control technology, energy, or other environmental factors in establishing LAER when achieved in practice.

The State of California requires BACT to be used for new and modified sources in the Basin [Health and Safety Code section 40440(b)(1)]. The California Health and Safety Code Section 40405 defines BACT as "an emission limitation that will achieve the lowest achievable emission rate for the source to which it is applied." The same section defines lowest achievable emission rate as "the most stringent of the following: (1) The most stringent emission limitation that is contained in the state implementation plan for the particular class or category of source, unless the owner or operator of the source demonstrates that the limitation is not achievable. (2) The most stringent emission limitation that is achieved in practice by that class or category of source." Thus, the State of California's definition of BACT is essentially the same as U.S. EPA's definition of LAER. Like federal LAER, the SCAQMD implements this requirement in Regulations XIII, XVII, and XX.

It has been suggested that the air quality impacts of the additional marine vessel visits might be mitigated through the use of BACT. The SCAQMD has considered whether to require an emission limit designated as BACT on the additional vessel visits associated with the proposed project, and has determined that it is preempted for diesel ships and infeasible or ineffective mitigation for impacts from steamship visits.

As defined in Health and Safety Code Section 40405, BACT is an emission limit or emission rate. Section 209(e) of the federal Clean Air Act preempts the SCAQMD from developing and imposing emission limits on marine diesel engines at this time. (See Sections "b" and "d" above.) Therefore, it is legally infeasible for the SCAQMD to identify an emission rate as BACT for ship engines and impose that emission rate as an emission limitation on ships visiting Ultramar's marine terminal. In addition, some steamships use diesel-powered auxiliary engines. At this time, Section 209(e) also preempts the SCAQMD from developing and imposing emission limits on the diesel-powered auxiliary engines onboard steamships. Section 209(e) of the Clean Air Act does not preempt the SCAQMD from establishing emission limits for the boilers used for propulsion of steamships.

Health and Safety Code Section 40440 requires the SCAQMD to adopt a rule requiring BACT for new and modified sources of emissions. The SCAQMD has adopted rules requiring BACT for new or modified equipment for which permits are required under the SCAQMD's new source review program, Regulation XIII; its prevention of significant deterioration regulation, Regulation XVII; and RECLAIM (Regulation XX) Rule 2005. Under SCAQMD Rule 219 Section (a)(2), the additional marine vessel visits associated with Ultramar's Proposed Project do not require permits under either Regulation XIII, XVII or XX. This Subsequent EIR, however, does not consider whether BACT can be required for purposes other than those set out in adopted rules nor does it consider whether the SCAQMD must revise its rules relating to BACT for purposes of this proposed project because the SCAQMD has not identified any emission limit meeting the definition of BACT which would be feasible CEQA mitigation for the additional vessel visits associated with this proposed project.

The SCAQMD implements federal LAER and the state BACT by requiring BACT under Regulations XIII, XVII, and XX. Under these regulations, the SCAQMD BACT may be equivalent or more stringent than LAER. Regulation XIII also extends the applicability of LAER in Rule 1303 to all stationary sources in the Basin. To facilitate the BACT determination during the permitting processes proscribed in Regulations XIII, XVII and XX, the SCAQMD establishes BACT for common equipment through its BACT Guidelines, which are developed through a public process involving public workshops and public comment on proposed BACT standards. However, BACT has not been established for marine vessels (either steamships or diesel ships) in that this equipment is not listed in the BACT Guidelines. Under such circumstances, the BACT Guidelines provide that BACT be determined on a case-by-case basis, applying the standards in the Health and Safety Code and SCAQMD rules.

Under the definition in Section 40405 of the Health and Safety Code, the first step in determining BACT is to review the state implementation plan for emission limits for the particular class or category of source involved as discussed below.

In its 1994 Air Quality Management Plan (which becomes part of the SIP upon approval by the California Air Resources Board), the SCAQMD suggested a number of potential control strategies which might be used to reduce emissions from marine vessels, including: "reduce cruising speeds; moving shipping lanes off-shore; engine modification; clean fuels for shore-side equipment; port infrastructure improvements; and emission standards for marine vessel engines" (1994 AQMP, Appendix IV-B, p. MOF-5). Most of these control measures do not meet the definition of BACT in that they are not emission rates or limits; nonetheless, they are discussed under separate headings in this EIR. (Port infrastructure is discussed under the heading "On-shore Electrical/Cold Ironing.") The only measure which is not discussed under a separate heading in this EIR is clean fuels for shore-side equipment; however that measure is not relevant because this proposed project does not involve shore-side combustion equipment. With respect to emission standards for marine diesel engines, the AQMP did not establish any particular emission rate or limit. Rather, the SCAQMD stated: "Implementation of this strategy could be accomplished through international, national and state regulations. However, these standards are expected to apply only to new engines. The U.S. EPA should aggressively pursue all approaches in achieving the long-term emission reduction objectives. The U.S. EPA could also consider the development of stringent emission standards for both new and in-use engines (main and auxiliary) on a national basis or through the International Maritime Organization (IMO) process." Thus, the 1994 AQMP does not establish any emission rate or limit for marine vessels.

Moreover, CARB removed the discussion of marine vessel control strategies from the document before approving it as part of the SIP. Instead, CARB inserted into the state-wide portion of the SIP a discussion of marine vessel emissions and potential control strategies. Regarding the status quo, CARB stated: "[CARB] and U.S. EPA currently have no emission standards . . . for these sources . . ." (CARB, November 1994, Vol. II, p. B-16.) (CARB generally referenced "operational control strategies", but these would be the various other strategies discussed under separate headings elsewhere in this EIR.) For the future, CARB proposed to rely on standards to be promulgated by U.S. EPA and the IMO, because "many ocean-going vessels are registered in foreign countries, and most use engines produced outside the U.S." CARB estimated that these

national and international standards will reduce NOx emissions from marine vessels by approximately 10 percent by 2010. (CARB 1994, Vol. II, p. B-17.) For now, however, there is no emission limitation in the State Implementation Plan for marine vessels.

In 1997, the SCAQMD revised its AQMP consistent with CARB's 1994 approval. The 1997 AQMP states: "[CARB] and EPA currently have no emission standards . . . for these sources . . ." The 1997 AQMP observes that many of the ocean-going vessels are registered in foreign countries, and most use engines produced outside the United States. The AQMP concludes: "Emissions from new engines used in these vessels can be most effectively reduced by establishing international emission standards, and the U.S. EPA and the International Maritime Organization have begun to address appropriate requirements" (1997 AQMP, p. IV-4-13). The SIP portions of the 1997 AQMP was approved by CARB in January 1997.

Since there is no emission limit or rate for marine vessels generally (or steamships in particular) in the State Implementation Plan, the next step is to determine the lowest emission rate which has been achieved in practice for the class or category of equipment. The Acurex Report (Acurex 1996) contains the most comprehensive information available regarding emission rates from marine tanker vessels, and these are the data used in preparation of the revised EIR. Because Ultramar does not own, operate or contract for the vessels delivering project-related materials, and the specific vessels rarely make multiple visits to Ultramar's marine terminal, it is not feasible to test each vessel to confirm that its emissions are consistent with the Acurex emission reactors. There is no reason, however, to believe that vessels visiting Ultramar's terminal would have emissions substantially different than reported in the Acurex Report.

The SCAQMD has considered imposing a condition limiting steamship emissions to the rates established in the Acurex Report (1996); however it has determined that this would not be an effective or feasible mitigation measure. There is no regulatory requirement that ships test their emissions. Since the specific vessels rarely make multiple visits to Ultramar's marine terminal, there would be little incentive for an individual vessel to perform an emission test in order to make a single delivery to Ultramar's marine terminal. Imposing and enforcing an emission limit on steamships in this context would most likely result in no steamships delivering project-related cargos to Ultramar's marine terminal. Given the emissions tradeoff between steamships and diesel ships (EIR Vol. VII, p. 28-29; Acurex, 1996), there would be little or no measurable air quality benefit from eliminating steamships delivering project-related cargos to Ultramar's marine terminal (see Section "c"). In addition, even if they do not stop at Ultramar's terminal, the same small number of steamships may continue to arrive within the Basin to deliver gasoline blending stocks to other terminals, in which case this mitigation measure would have no effect whatsoever on air quality.

Finally, in determining what constitutes the lowest achievable emission limit for purposes of establishing BACT, the SCAQMD considers emission rates of the specific basic equipment, control equipment or techniques, or combinations thereof. This Subsequent EIR reviews several control strategies that have the potential for establishing BACT at a level lower than the emission rates described in the Acurex Report (see Sections "d," "f," "h," "i," and "j"). The Subsequent EIR

concluded, however, that none of these strategies constituted feasible mitigation for the additional vessel visits associated with Ultramar's proposed project.

m. 25 Mile Off-Shore Shipping Lane

In another context, the concept of moving ships further off-shore to reduce on-shore air quality impacts in the Ventura area has been evaluated (Acurex, 1996). Similarly, ship emissions within the South Coast Air Basin can be reduced by requiring ships to travel a distance of 25 miles off-shore.

This measure is not relevant to the Ultramar CARB Phase 3 Proposed Project, however, because of the ports of origin and direction of travel of the vessels associated with the proposed project. The ships transporting gasoline blending stocks are expected to be sent from foreign sources (CEC, 2002) and proceed directly into the Port, i.e., do not traverse north/south along the coast of California. Therefore, this measure would not reduce emissions associated with ships traveling to and from the Ultramar terminal. Further, the ships are not owned or controlled by Ultramar so that, even if it were relevant, enforcing this mitigation measure would be difficult.

n. Reducing Ship Cruising Speed

The 1994 California Ozone State Implementation Plan (SIP) included a control measure which incorporated the reduction of ship speeds as a method of reducing ship emissions. The U.S. EPA has concluded that speed reduction is one of the most promising operational modifications for reducing ship emissions (U.S. EPA, 1997). Speed reduction, for the same conditions of wind, seas, and current, will reduce NOx emissions. Engine loading or power output is proportional to the cube of the vessel's speed, therefore a comparatively small drop in speed will be reflected in a larger drop in power. The reduced power has the benefit of reducing fuel consumption and the corresponding combustion of NOx, SOx, VOCs, and CO per mile traveled. The SCAQMD estimates that a 15 percent reduction in throttle setting would reduce NOx emissions by 45 percent per nautical mile.

Limiting ship speed to 15 knots is recommended to reduce NOx emissions because it would be very difficult to enforce a 15 percent throttle reduction rule. A speed limit of 15 knots within a 10 mile radius of the ports is estimated to reduce ship emissions by about one percent. Currently, however, all tankers generally are limited to maximum cruising speeds of 14 knots, due to the gross weight of cargo relative to safety issues associated with maneuverability. In addition, since March 1994, all ships entering the Port are limited to a maximum speed of 12 knots by the Marine Exchange and Vessel Traffic Service upon entering the precautionary area which extends up to eight miles outside the breakwater. Because of safety issues associated with maneuverability, tankers generally limit their speeds to less than 12 knots in the precautionary area (personal communication, Marine Exchange, 1998).

The U.S. EPA has completed a more detailed evaluation of this measure and has determined that the 2010 NOx reductions from speed reduction alone were estimated to range from 2,400 pounds per day (a speed limit of 18 knots for all ship types beginning 15 miles from the precautionary area) to 11,800 pounds per day (a speed limit of 12 knots for bulk carriers and tankers and a speed limit of 15 knots for all other ships, applied everywhere in South Coast waters outside of the precautionary area) (U.S. EPA, 1997).

While the various agencies may determine that speed reduction is a feasible mitigation measure in general, implementation of this mitigation measure would not reduce NOx emissions from the vast majority of ship visits associated with the proposed project. Because of the location of the Ultramar marine terminal within the Port, by the time the terminal is contacted the vessel already has reached the Port and reduced its speed. The speed of marine tankers already is 12 knots or less in the vicinity of the port areas. Vessels are assisted by tug boats as soon as they reach the outer harbor area. Therefore, the speed of marine vessels within the port is less than 12 knots, closer to about five knots. A further reduction in speed could impact the delivery of materials, result in delays and increased delivery costs with little environmental benefit. Finally, Ultramar does not own or control the ships that visit the marine terminal. This, coupled with the fact that there are multiple deliveries, make this mitigation virtually impossible to enforce. Additional information regarding ship cruising speed is given in the following paragraphs.

Ships enter or exit the South Coast waters in cruise mode. Cruise mode is associated with ship service speed (usually about 15 to 23 knots) and an engine load of about 80 percent of the maximum continuous rating (MCR). The ships remain in cruise mode until they near the precautionary area within which ship speeds are required to be no more than 12 knots. The precautionary area extends up to eight miles outside the Port's breakwater. About one mile from the breakwater, the ships typically slow to about five knots to take on a pilot and to obtain assistance from tugboats, which help further reduce the cruising speed and maneuver the vessels into berth (Acurex, 1996). Cruising refers to the movement of ships into and out of the Port area. Once inside the Port, the ships are no longer considered to be cruising, they are considered to be maneuvering. Maneuvering refers to all movement of a ship inside the breakwater. The difference between cruising and maneuvering is that cruising speeds are faster than maneuvering speeds. As a result the fuel consumption for ship cruising is different than it is for maneuvering.

A further reduction in vessel speed within the Port as a mitigation measure is not considered feasible, nor would it provide additional environmental benefits. Vessel speeds within the Port are controlled by the harbor pilot, vary from ship to ship, and are determined by what is considered safe for the ship. The speed that is considered safe within the Port can vary depending on the type of ship, the weight of the ship, tides, winds, currents, traffic conditions, and so forth. Ships maneuvering within the Port are required to have their engines on but are often in idle mode and are being assisted and maneuvered by tug boats. Further, most large ships have difficulty monitoring slow speeds and may be required to increase and decrease the throttle sporadically to maintain slower speeds. Maneuvering speeds within the Port are assumed to be about five knots. The harbor pilot enforces a maximum speed limit of six knots. As discussed below, ship speeds below five knots are not expected to provide further NOx emission reductions.

The major reductions in NOx emissions are associated with the reduction in cruising speeds from 18 knots or more to 12 to 15 knots. The MCR of tanker engines at 12 knots is about 38 percent. The MCR of tanker engines at five knots is about 20 percent. The emission factors for a cruising speed of 12 knots are the same as a maneuvering speed of five knots (Acurex, 1996). Therefore, a further reduction in maneuvering speed below 5 knots is not expected to provide additional emission reductions. The fuel economy is assumed to be constant down to about 20 percent MCR (5 knots for tankers). Below 20 percent MCR (five knots for tankers), there is a degradation in fuel economy at very low speeds. In fact, as the engine load becomes lower, NOx emission rates can become higher, generating even greater NOx emissions (Acurex, 1996). Further at low main engine loads, the auxiliary power requirements can become significant compared with main engine power (Acurex, 1996).

Based on the above, the NOx emission reductions for ship cruising are most effective when ships reduce from the higher speeds (above 18 knots) to 12 to 15 knots. NOx emission reductions for ship speeds below five knots are not expected and NOx emissions may be higher at the lower speeds. Since this mitigation measure is not technically feasible and provides little environmental benefit, there is no need to provide further information with respect to the enforceability of this mitigation measure.

The issue of multiple deliveries also renders this mitigation measure infeasible. The Ultramar marine terminal would not be notified of ship visits until the ship is coming into its terminal. Therefore, if a ship visits another terminal first, Ultramar would not be notified of the ship until it was transferring to the Ultramar marine terminal from another terminal. The ship would be under no obligation to reduce speeds, assuming there was a need to, until it delivered material to Ultramar.

o. Increasing the Amount of Material Delivered Per Trip

One major difference between ships and land side cargo transportation modes is that the size of a ship is not limited in the same way as a land vehicle. The more cargo a ship can carry, the better the energy efficiency of the transport. An increase in ship size does not lead to an increase in emissions proportional to the increase of goods. Thus ship emissions can be reduced by increasing the cargo capacity of ships and providing the infrastructure to accommodate those larger ships (PLAX/PLB, 1994).

Air emissions may decrease if the same amount of gasoline blending stocks could be delivered with fewer ship visits to the marine terminal. One way to decrease ship visits, would be to increase the capacity of the ships that visit the marine terminal. One large ship could deliver more material thus decreasing the number of ship visits required on an annual basis. In general, the more cargo a ship can carry, the better the energy efficiency of the transport. An increase in ship size does not lead to an increase in emissions in proportion to the increase of goods or passenger flow. Ship emissions on an annual basis can be reduced by increasing the cargo capacity of ships and providing the infrastructure to accommodate those large ships (PLAX/PLB, 1994).

The size of vessel that can be received at the Ultramar marine terminal is limited by the physical dimensions of the berth. Ultramar Berth 164 in the Port of Los Angeles is capable of handling a maximum tanker size of 82,000 deadweight tons (DWT). The main limiting factor with respect to vessel size is the draft limitation. While there is some correlation between draft and vessel size, draft is dependent on the overall design of the vessel including length, width, capacity, and so forth. There is a lot of variability in the draft and configuration of the vessels. A larger vessel with a deep draft may be able to fit at the berth if it were only half full. The Ultramar marine terminal would not be able to handle certain larger vessels than it currently does and it is constrained by other factors. Ultramar does not own or control the vessels that deliver materials to the terminal. Further, the amount of material delivered to the terminal is constrained by the available storage capacity.

In order to avoid serious disruption to gasoline blending in the event a ship is delayed or other unforeseen event, it is Ultramar's practice is to maintain at least some excess blending stocks. The amount of gasoline blending stocks to be delivered on each occasion depends on a complex set of parameters, such as the anticipated storage capacity at the time of delivery, refinery production demands relative to the anticipated inventory, and the scheduled delivery date relative to supplier obligations/needs at other marine terminals. These parameters dominate shipment delivery scheduling between Ultramar and suppliers and are critical in ensuring optimum inventory is maintained in order to avoid production need shortages, or shipment quantities exceeding

available storage capacity. As a result, the amount of gasoline blending stocks delivered per visit is expected to vary. Additional storage tanks could be constructed but would result in additional air emissions. The emissions from storage tanks containing gasoline blending stocks is between 11 lbs/day and about 45 lbs/day depending on the size of the tanks and the throughput (see Appendix A).

Another way to increase the amount delivered per vessel visit would be to increase the percentage of the cargo delivered to Ultramar. Vessels that deliver gasoline blending stocks to Ultramar also are expected to deliver product to other marine terminals in the Ports of Los Angeles and Long Beach. Vessels delivering gasoline blending stocks to Ultramar and other marine terminals are likely to come from foreign sources (CEC, 2002). It is assumed that vessels delivering material to the Ports of Los Angeles/Long Beach are fully or near fully loaded to maximize efficiency and minimize transportation costs. Increasing the amount of material transported to Ultramar per ship visit may not decrease the number of vessel visits to the Ports of Long Beach/Los Angeles. A certain amount of product must be delivered to each marine terminal. Maximizing the amount of gasoline blending stocks accepted by the Ultramar marine terminal may require dedicated vessels for Ultramar and additional vessels to deliver sufficient supplies of product to all other facilities in the Ports of Los Angeles/Long Beach.

This mitigation measure is not feasible because: (1) Ultramar does not own or control the ships delivering materials that visit the marine terminal; (2) the ships are expected to deliver product to other terminals in the Ports so that increasing the amount of product delivered to Ultramar on each visit may increase the number of ships required to deliver gasoline blending stocks to the Ports of Los Angeles/Long Beach as a whole; and (3) increasing the amount of materials delivered is constrained by a number of physical parameters including storage capacity, berth depth, and operational parameters including production schedule.

p. Local Sources of Gasoline Blending Stocks

Ship visits could be reduced if local sources of gasoline blending stocks were available. Alternatives to the transport of gasoline blending components are evaluated as an alternative to the proposed project (see Chapter 6, page 6-5 herein). Gasoline blending components generally include alkylate and isooctane. All refineries are making modifications to produce more alkylate or transport more alkylate for use in the manufacture of CARB Phase 3 fuels. It is expected that each oil company will use all of the alkylate and isooctane manufactured within the state to produce CARB Phase 3 compliant gasoline and avoid a loss in volume associated with the elimination of MTBE from gasoline. Therefore, no local sources of additional alkylate are expected to be available. Ultramar would either have to expand its alkylation capabilities or purchase additional quantities of alkylate/isooctane. The emissions associated with the installation of a new alkylation unit would be greater than the proposed project (see Table 6-1) because additional stationary sources would be constructed. The additional supplies of alkylate/isooctane are expected to come from foreign sources since virtually all of California's imports of gasoline have been met by foreign imports rather than imports from other U.S. markets (CEC, 2002). This mitigation measure is expected to be infeasible since local sources of gasoline blending components are not available.

There are some local marine vessels that have been voluntarily repowered. The SCAQMD has developed a protocol for obtaining NOx credits for repowering or retrofitting marine vessels (Rule 1631 – Pilot Credit Generation Program for Marine Vessels). Marine retrofit or repowering projects, however, are all voluntary projects to generate NOx credits applicable to the RECLAIM program. Based on the above, the SCAQMD does not have authority to directly regulate marine vessel emissions and the SCAQMD cannot require retrofitting, repowering or controlling emissions from marine vessels unrelated to stationary source equipment.

The U.S. EPA has established emission standards for NOx, VOCs, CO, particulate matter, and smoke for newly manufactured and remanufactured diesel-powered locomotives and locomotive engines which have been previously unregulated. Three separate sets of emission standards have been adopted, with applicability of the standards dependent on the date a locomotive is first manufactured. The first set of standards (Tier 0) apply to locomotives and locomotive engines manufactured from 1973 through 2001. The second set of standards (Tier 1) applies to locomotives and locomotive engines manufactured from 2002 through 2004. The final set of standards (Tier 2) apply to locomotives and locomotive engines originally manufactured in 2005 and later (U.S. EPA, 1997). With the new national emission standards for both newly manufactured and remanufactured locomotives originally built after 1972, future locomotive emission rates are projected to be much lower than the current emission rates. The U.S. EPA estimates that the NOx emissions will be reduced by about 62 percent from their current levels for locomotives manufactured after 2004 (U.S. EPA, 1997). This would reduce project-related NOx emissions from railcars from 84 lbs/day to about 32 lbs/day. The actual emission reductions are a function of the date that new locomotives come into service and are used to transport materials to/from the terminals. Since the date at which this conversion actually happens is uncertain and not guaranteed, the NOx emissions from project-related railcars are expected to remain significant. Neither the SCAQMD nor Ultramar own and control off road locomotive sources, the SCAQMD cannot require these sources be retrofitted or their engines replaced.

The SCAQMD has very limited authority over truck emissions. The U.S. EPA and the CARB have established regulations for on-road diesel engines and are expected to control emissions from trucks in the near future (beginning October 2002). As a result, the SCAQMD has no authority to require a mitigation measure to control emissions from these sources.

Based on the above there are no other feasible mitigation measures to minimize or eliminate the significant emissions from mobile sources related to the proposed project.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Construction

Construction emissions for the revised proposed project for CO, VOCs, and NOx are expected to remain significant following mitigation (see Table 4-16). The construction emissions associated with SOx and PM10 are expected to be less than significant. Additional emissions reductions may occur associated with some of the mitigation measures, even if some of the emission reductions cannot be quantified. The emission benefits associated with the mitigation measures are based on

estimates provided in Table A11-1 of the SCAQMD CEQA Air Quality Handbook (SCAQMD, 1993). Construction emissions are expected to be short-term and they will be eliminated following completion of the construction phase.

TABLE 4-16

PEAK DAY CONSTRUCTION EMISSIONS FOLLOWING MITIGATION (lbs/day)

ACTIVITY	CO	VOC	NOx	SOx	PM10
Unmitigated Emissions[1]	894	743	634	106	416
SCAQMD Threshold Level	550	75	100	150	100
SIGNIFICANT?	**YES**	**YES**	**YES**	**NO**	**YES**
Amount Needed to Reduce Emissions Below Significance Level	343	668	534	--	316
MITIGATION MEASURES[2]					
Use Electric Welders	-7	-1	-11	-1	-1
Water Active Construction Sites[3]	--	--	--	--	-90
Maintain Engines in Proper Tune	-35	-14	-30	-5	-2
Use of PuriNOx	--	--	-83	--	-35
Use of Electricity Instead of Generators	-385	-14	-1	--	--
Require Tanks be Pre-painted	--	-315	--	--	--
Total Emission Reductions	-427	-344	-125	-6	-128
Total Emissions After Mitigation	467	399	509	100	288
SIGNIFICANT AFTER MITIGATION?	**NO**	**YES**	**YES**	**NO**	**YES**

(1) See Table 4-5.
(2) Emission reductions were estimated from the SCAQMD (1993) CEQA Handbook.
(3) A 50 percent emission reduction for the standard practice of watering active construction sites was included in the project emission calculations. These emission calculations assume an additional 18 percent emission reduction associated with the mitigation measure of watering the site three times per day (instead of two times per day).

Operation

Operation emissions, adjusted for the expected emission reductions associated with the mitigation measures are shown in Table 4-17. The project emissions are expected to remain significant for VOC, NOx, SOx and PM10. *Emissions of CO are expected to be less than significant.* Additionally, long-term air quality benefits are expected to occur due to the implementation of the CARB Phase 3 regulations (see Chapter 5).

The proposed project's impacts on toxic air contaminants (as well as the emissions from all other sources at the Refinery) are expected to be less than significant. The carcinogenic health impacts to

the MEIR, MEIW, all sensitive populations and all other receptors are expected to be less than 10 per million and, therefore, less than significant.

The proposed project's impacts associated with exposure to non-carcinogenic compounds are expected to be less than significant. The chronic hazard index and the acute hazard index are both below 1.0. Therefore, no significant non-carcinogenic health impacts are expected.

TABLE 4-17

PEAK DAY OPERATIONAL EMISSIONS FOLLOWING MITIGATION (lbs/day)

ACTIVITY	CO	VOC	NOx	SOx	PM10
Unmitigated Emissions(1)	*514*	*321*	*2,164*	2,678	*437*
SCAQMD Threshold Level	550	55	55	150	150
SIGNIFICANT?	**NO**	**YES**	**YES**	**YES**	**YES**
Amount Needed to Reduce Emissions Below Significance Level	*0*	*266*	*2,109*	*2,528*	*287*
MITIGATION MEASURES(2)					
Use of Offsets	--	175	--	--	--
Total Emission Reductions	0	175	0	0	0
Total Emissions After Mitigation	*514*	*146*	*2,164*	2,678	*437*
SIGNIFICANT AFTER MITIGATION?	***NO***	**YES**	**YES**	**YES**	**YES**

(1) See Table 4-9.

B. GEOLOGY/SOILS

SIGNIFICANCE CRITERIA

The impacts on geology/soils will be considered significant if any of the following criteria apply:

Topographic alterations would result in significant changes, disruptions, displacement, excavation, compaction or over covering of large amounts of soil.

Substantial alteration of topography can result in changes, which would accelerate wind or water erosion of soils.

Unique geological resources (paleontological resources or unique outcrops) are present that could be disturbed by the construction of the proposed project.

Generate soil contamination due to site activities, which may cause significant health impacts or which will not be handled in accordance with applicable regulations.

Exposure of people or structures to major geologic hazards such as earthquake surface rupture, ground shaking, seiche or tsunami.

Secondary seismic effects could occur which could damage facility structures, e.g., liquefaction.
Other geological hazards exist which could adversely affect the facility, e.g., landslides, mudslides.

PROPOSED PROJECT IMPACTS

CONSTRUCTION IMPACTS

1. Previous Final EIR

No significant topographic changes are expected to the Refinery site, based on the analysis of the proposed CARB Phase 3 project in the previously prepared 2001 Final EIR. The Refinery and the location of the pipeline routes had already been graded as part of existing industrial operations. The Refinery is essentially flat so that grading will be limited to that required to construct building pads, foundations, and underground utilities. The pipeline route also is essentially flat, and the only grading will be to develop the trench for the pipeline. However, once the pipeline has been constructed, the sites along the pipeline route will be returned to the same conditions as currently exist. Therefore, the topographic changes are expected to be less than significant.

Soil erosion from wind or water could occur during construction as a result of earthmoving activities. As already noted, active grading will be limited to sites for building pads, foundations, and underground utilities, so the potential for wind or water erosion will be relatively limited. As part of the previously proposed project, standard construction practices will be employed to minimize water erosion. Construction sites will be watered three times daily (except during periods of rain) to further minimize the potential for wind erosion. Water erosion at the site would be limited to periods of rain. Therefore, water erosion that could occur during construction activities will be controlled through the existing Storm Water Pollution Prevention Plan. Storm water is controlled, collected, treated if necessary, and discharged under the existing NPDES permit. In addition, a seven-foot high wall exists on the western boundary of the Refinery which provides a barrier to prevent water from the site migrating into the Dominguez Channel. The implementation of these practices is expected to prevent the previously proposed project from generating significant impacts due to wind or water erosion. Significant water erosion is not expected as the site is flat which limits the potential for erosion due to water runoff. Construction mitigation measures for potential air quality impacts due to soil erosion are identified in Chapter 4, Air Quality.

Pipeline construction will require excavation, backfilling and repaving. Excavation will be limited to segments of the pipeline trench so that only small portions of the trench would be exposed at any

given time. At the end of the day the trench will be plated and covered to prevent accidental entry into the trench. Further, pipeline construction activities would not occur during periods of rainfall so that no significant water erosion due to pipeline construction is expected.

No unique geological resources (rock formations, hillsides, mountains, etc.) are present at the Refinery site, so no significant project impacts, based on the previous EIR, were expected.

Construction of the proposed pipeline will require excavation, temporary displacement and recompaction of soil during construction. The volume of soil disturbed during pipeline construction was estimated assuming that the pipeline length was about 19,500 feet long (about 3.7 miles) and the pipe trench would be three feet by five feet for a total estimated soil removal volume of about 10,800 cubic yards of soil. There is a possibility that contaminated soil will be encountered during construction of the pipeline since there has been a significant amount of industrial development in the vicinity of the pipeline route. Soil samples will be screened during trenching activities along the pipeline route to detect contamination.

In addition to pipeline construction, about 7,565 cubic yards of grading is expected to be required for the proposed project as described in the previous Final EIR. Assuming that about 10 percent of the soil from grading is contaminated, approximately 1,840 cubic yards of soil may be contaminated. Soil which is found to be contaminated will be analyzed by a state certified laboratory to determine the concentration and type of contamination. To the extent feasible, all excavated non-contaminated soil will be used for backfill and/or grading at the project site. Contaminated soils or water may require remediation (cleanup and safe removal and disposal) if detected above certain concentrations during construction on other portions of the Refinery. Even if soils or ground water at a contaminated area do not have the characteristics required to be defined as hazardous wastes, remediation of the area may be required by regulatory agencies. Excavated soil determined to contain contamination will be disposed of at an approved facility or as otherwise allowed under state and federal regulations. Contaminated soil may be treated on-site, as required, or taken to an approved off-site treatment/disposal facility.

It was concluded that no significant impacts were expected as a result of the potential for contaminated soils to be excavated during construction of the proposed project as described in the previously prepared 2001 Final EIR since there are numerous local, state (Title 22 of the California Code of Regulations) and federal rules which regulate the handling, transportation, and ultimate disposition of these soils. Existing laws and regulations address the discovery and remediation of contaminated sites, including the discovery of such sites during construction activities.

There are plugged and abandoned wells located within the Refinery boundaries. These plugged and abandoned wells may be located at or near areas where new structures are proposed and, thus, impacted during project construction. Sufficient data are not available to determine the precise location of construction activities with respect to all abandoned wells. If during construction it is determined that development is proposed directly over or within 10 feet of an abandoned/re-abandoned well, then the existing regulations will require an approved well-vent system designed to vent natural gases to the atmosphere. All accessible abandoned wells within 10 feet of construction activities will be tested for gas leakage and inspected for oil leakage. If there is any

indication of oil or gas leakage, the well shall be re-abandoned, as required by the Department of Conservation. If during the construction process, any previously unknown well is discovered, the Department of Conservation Division of Oil, Gas and Geothermal Resources must be notified immediately, so plugging and abandonment requirements can be determined.

2. Storage Tank Farms and Marine Terminal Modifications

The geological impacts associated with that portion of the revised project within the confines of the Refinery will be essentially the same as those evaluated in the previously prepared 2001 Final EIR. The construction of the new storage tank at the Refinery is expected to require about 3,600 cubic yards of grading to develop building pads. This grading will occur within the existing Refinery tank farm and within areas that are already graded and developed so no substantial topographic changes are expected.

No significant topographic changes are expected to the Marine Tank Farm or the Olympic Tank Farm. These Tank Farms have been graded as part of existing industrial operations. The Tank Farms are essentially flat so that grading will be limited to that required to construct building pads, foundations, and underground utilities. No substantial topographic changes are proposed for the Tank Farms. No grading is expected to be required at the Marine Terminal because the proposed project will only require a change of tank service and the construction of a dome. Therefore, the topographic changes are expected to be less than significant.

Soil erosion from wind or water could occur during construction as a result of earthmoving activities. As part of the proposed project, standard construction practices will be employed to minimize water erosion. Construction sites will be watered three times daily (except during periods of rain) to minimize the potential for wind erosion. Water erosion at the site would be limited to periods of rain. Therefore, water erosion that could occur during construction activities will be controlled through the existing Storm Water Pollution Prevention Plans. Storm water at the Tank Farms is controlled, collected, treated if necessary, and discharged under the existing NPDES permits. The implementation of these practices is expected to prevent the proposed project from generating significant impacts due to wind or water erosion. Significant water erosion is not expected as the site is flat which limits the potential for erosion due to water runoff.

No unique geological resources (rock formations, hillsides, mountains, etc.) are present at the Marine Tank Farm, Olympic Tank Farm or the Marine Terminal, so no significant project impacts are expected.

Construction activities at the Tank Farms could uncover contaminated soils since petroleum products have been stored at the sites for many years. The volume of soil that may be disturbed at the Tank Farms is about 22,222 cubic yards and 33 cubic yards at the Olympic Tank Farm and the Marine Tank Farm, respectively. Therefore, most of the grading would be required at the Olympic Tank Farm for the construction of new tanks. There is a possibility that contaminated soil will be encountered during construction. Soil samples will be screened during grading activities for tank construction to detect contamination.

Assuming that about 10 percent of the soil from grading is contaminated, an estimated 2,600 cubic yards of soil is expected to be contaminated. Soil which is found to be contaminated will be analyzed by a state certified laboratory to determine the concentration and type of contamination. To the extent feasible, all excavated non-contaminated soil will be used for backfill and/or grading at the project site. Contaminated soils or water may require remediation (cleanup and safe removal and disposal) if detected above certain concentrations during construction on other portions of the Refinery. Even if soils or ground water at a contaminated area do not have the characteristics required to be defined as hazardous wastes, remediation of the area may be required by regulatory agencies. Excavated soil determined to contain contamination will be disposed of at an approved facility or as otherwise allowed under state and federal regulations. Contaminated soil may be treated on-site, as required, or taken to an approved off-site treatment/disposal facility.

Excavated soils which contain concentrations of certain substances including heavy metals and hydrocarbons generally are regulated under California hazardous waste regulations. No significant impacts are expected as a result of the potential for contaminated soils to be excavated during construction of the proposed project since there are numerous local, state (Title 22 of the California Code of Regulations) and federal rules which regulate the handling, transportation, and ultimate disposition of these soils. Existing laws and regulations address the discovery and remediation of contaminated sites, including the discovery of such sites during construction activities. Existing laws require health and safety plans, worker training, and various other activities which serve to protection workers from exposure to contamination, including 29 CFR Part 1910.120, Hazardous Waste Operations and Emergency Response (Fed-OSHA, HAZWOPER); CCR 5192, Hazardous Waste Operations and Emergency Response (Cal-OSHA, HAZWOPER); and SCAQMD Rule 1166 - Volatile Organic Compound (VOC) Emissions from Decontamination of Soil. These regulations establish many requirements for hazardous waste handling, transport and disposal including requirements to use approved disposal/treatment facilities, use certified hazardous waste transporters, and use manifests to track hazardous materials, among many other requirements. However, under a "worst-case" scenario, remediation would require the removal and truck transport of the contaminated soils to an off-site treatment facility, thus generating short-term additional truck traffic. Numerous state and federal rules and regulations govern the discovery, testing, and ultimate fate of hazardous materials so that compliance with these requirements is expected to minimize the potential for significant impacts.

In compliance with these and other regulations, Ultramar has developed a Hazardous Waste Operations and Emergency Response program and guidelines, which apply to its own and to contractor employees. This program establishes personnel requirements, employee training requirements, procedures for soil remediation operations, requirements for site specific health and safety plans, procedures for exposure monitoring, requirements for the use of appropriate personal protective equipment, requirements for medical surveillance programs, requirements for contingency plans, requirements for decontamination measures and recordkeeping requirements. Rule 1166 requires routine monitoring for VOC contaminated soil and requires that mitigation actions be taken when VOC emissions measure 50 ppmv at a distance of no more than three inches above excavated and exposed soil. All these regulations, programs and plans, collectively, minimize the potential for worker exposure.

3. Revised Project Construction Summary

The revised project impacts on Geology/Soils are similar to that of the original proposed project. The total volume of soil that is expected to be graded is about 44,220 of about which 10 percent (4,422) may be contaminated. As described above, compliance with existing rules and regulations are expected to minimize project impacts to less than significant. The impacts for the revised project on Geology/Soils during construction activities are the same as described above.

OPERATIONAL IMPACTS

1. Previous Final EIR

The project described in the previous EIR was not expected to adversely affect the existing geologic environment or expose the site to any new geologic hazards. New structures are required to be designed to comply with the Uniform Building Code Zone 4 requirements which is expected to minimize the potential impacts of an earthquake on new facilities.

The proposed pipeline, evaluated in the previous 2001 Final EIR, must be designed in compliance with the U.S. Department of Transportation 49 CFR §195.242 pipeline safety regulations, and the California Pipeline Safety Act (CPSA). These regulations establish requirements to minimize impacts to the pipelines in the event of an earthquake.

There is the potential for liquefaction induced impacts at the project sites since the appropriate parameters for liquefaction exist at the Refinery and along the pipeline routes, including unconsolidated granular soils and a high water table. The Uniform Building Code requirements consider liquefaction potential and establish more stringent requirements for building foundations in areas potentially subject to liquefaction. Therefore, compliance with the Uniform Building Code requirements should minimize the potential impacts associated with liquefaction. The issuance of building permits from the City of Los Angeles and the City of Carson (for portions of the pipeline) will assure compliance with the Uniform Building Code requirements. Therefore, no significant impacts from liquefaction are expected.

2. Storage Tank Farms and Marine Terminal Modifications

No faults or fault-related features are known to exist within the confines of the Marine or Olympic Tank Farms or the Marine Terminal. The Tank Farms are not located in any Alquist-Priolo Earthquake fault zone and are not expected to be subject to significant surface fault displacement. Therefore, no significant impacts to the proposed facilities are expected from seismically induced ground rupture.

Based on the historical record, it is highly probable that the Los Angeles region will be affected by future earthquakes. Research shows that damaging earthquakes will be likely to occur on or near recognized faults showing evidence of recent geologic activity. The proximity of major faults to the Refinery and pipeline route increases the probability that an earthquake may affect the proposed project. There is the potential for damage to the new structures in the event of an earthquake. The

impacts of an earthquake on the project sites are considered to be greater than the current conditions since additional structures will be constructed, although replacement structures will be more structurally sound as they will comply with the most current Uniform Building Code requirements. Impacts of an earthquake could include structural failure, spill, etc. The hazards of a release during an earthquake are addressed in Chapter 4, Section C, Hazards and Hazardous Materials.

New structures must be designed to comply with the Uniform Building Code Zone 4 requirements since the proposed project is located in a seismically active area. The City of Los Angeles is responsible for assuring that the proposed project complies with the Uniform Building Code as part of the issuance of the building permits and conducts inspections to ensure compliance. The Uniform Building Code is considered to be a standard safeguard against major structural failures and loss of life. The goal of the code is to provide structures that will: (1) resist minor earthquakes without damage; (2) resist moderate earthquakes without structural damage, but with some non-structural damage; and (3) resist major earthquakes without collapse, but with some structural and non-structural damage.

The Uniform Building Code basis seismic design on minimum lateral seismic forces ("ground shaking"). The Uniform Building Code requirements operate on the principle that providing appropriate foundations, among other aspects, helps to protect buildings from failure during earthquakes. The basic formulas used for the Uniform Building Code seismic design require determination of the seismic zone and site coefficient, which represent the foundation conditions at the site.

Ultramar shall obtain building permits, as applicable, for all new proposed project structures. Ultramar shall submit building plans to the City of Los Angeles (or Port of Los Angeles for the Marine Terminal) for review. Ultramar must receive approval of all building plans and building permits to assure compliance with the latest Building Code prior to commencing construction activities.

The Tank Farms and Marine Terminal are located within an area where there has been historic occurrence of liquefaction or existing conditions indicate a potential for liquefaction (California Division of Mines and Geology, 1999). Therefore, there is the potential for liquefaction induced impacts at the project sites since the appropriate parameters for liquefaction exist at the site, including unconsolidated granular soils and a high water table. The Uniform Building Code requirements consider liquefaction potential and establish more stringent requirements for building foundations in areas potentially subject to liquefaction. Therefore, compliance with the Uniform Building Code requirements should minimize the potential impacts associated with liquefaction. The issuance of building permits from the City or Port of Los Angeles will assure compliance with the Uniform Building Code requirements. Therefore, no significant impacts from liquefaction are expected.

There are no other known geological hazards (e.g., landslide, mudflow, seiche, tsunami or volcanic hazards) at the Refinery, Tank Farm sites or Marine Terminal site so that no other significant geological impacts are expected.

MITIGATION MEASURES

No significant impacts on geology/soil resources have been identified so that no mitigation measures are required.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

The proposed project impacts on geology/soils are less than significant and, therefore, mitigation measures are not required.

C. HAZARDS & HAZARDOUS MATERIALS

SIGNIFICANCE CRITERIA

The impacts associated with hazards and hazardous materials will be considered significant if any of the following occur:

Non-compliance with any applicable design code or regulation.

Non-conformance to National Fire Protection Association standards.

Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.

Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.

PROPOSED PROJECT IMPACTS

1. Previous Final EIR

A hazard analysis was conducted for the proposed new and modified units (see Table 4-18). The details of the analysis are included in Volume III.

Table 4-18 lists the potential hazards (fires, explosions or release of hydrogen sulfide from the new or modified units) associated with the proposed project and the results of the modeling for these hazards. Most of the proposed modifications do not affect the size of the refinery's largest potential release. In other words, most of the potential releases, which would result in the largest hazard zones, already exist at the site. However, modifications to three units at the Refinery have

TABLE 4-18

MAXIMUM HAZARD DISTANCES

PROCESS UNIT/RELEASE		Status of Potential Hazard	Maximum Distance (ft) from Center of Unit to			
			Flash Fire	Explosion Overpressure (1.0 psig)	Pool/Torch Fire Thermal Radiation (1,600 Btu/hr-ft^2)	H_2S Gas Concentration (30 ppm for 60 min.)
FCCU	Rupture of reactor feed line	Existing	155	125	125	-
		Modified	90	60	125	-
	Rupture of liquid line leaving main column overhead accumulator	Existing	935	790	375	-
		Modified	855	730	345	-
GCU/ SHU	Rupture of liquid line leaving high pressure separator.	Existing	1,300	1,090	810	980
		Modified	1,295	1,090	810	980
	Rupture of liquid lie leaving debutanizer overhead accumulator.	Existing	1,000	895	530	725
		Modified	1,095	960	585	800
	Rupture of liquid line leaving stripper.	Existing	930	850	605	-
		Modified	850	820	595	-
	Rupture of liquid line leaving depentanizer overhead accumulator	New	940	765	485	-
NHT	Rupture of reactor effluent line.	Existing	250	175	380	1,300
		Modified	260	185	400	945
	Rupture of liquids line leaving stripper	Existing	870	795	650	-
		Modified	830	830	585	-
	Rupture of liquids line leaving naphtha splitter column	Existing	930	870	715	-
		Modified	950	865	730	-
	Rupture of liquids line leaving splitter overhead accumulator	Existing	1,235	1,010	535	-
		Modified	1,125	905	555	-
	Rupture of sour gas line leaving stripper overhead accumulator	Existing	185	130	120	985
		Modified	185	125	100	885
	Rupture of liquid line leaving debutanizer overhead accumulator	New	830	690	360	1,465*
OLEFIN	Rupture of reactor effluent line	Existing	280	320	380	-
		Modified	190	135	290	-
	Rupture of liquid line leaving stripper	Existing	660	665	530	-
		Modified	710	685	550	-
	Rupture of liquid line leaving products separator	Existing	845	870	660	-
		Modified	470	490	345	-

TABLE 4-18 (concluded)

PROCESS UNIT/RELEASE		Status of Potential Hazard	Maximum Distance (ft) from Center of Unit to			
			Flash Fire	Explosion Overpressure (1.0 psig)	Pool/Torch Fire Thermal Radiation (1,600 Btu/hr-ft^2)	H_2S Gas Concentration (30 ppm for 60 min.)
LER1	Rupture of sour gas line leaving absorber	Existing	95	70	115	910
		Modified	100	70	110	755
	Rupture of sour gasoline leaving depropanizer overhead accumulator	Existing	85	60	75	820
		Modified	100	75	70	395
	Rupture of liquid line leaving depropanizer	Existing	520	525	325	-
		Modified	530	545	360	-
LER2	Rupture of sour gas line leaving absorber	Existing	95	70	115	900
		Modified	100	75	110	760
	Rupture of sour gas line leaving detutanizer overhead accumulator	Existing	100	75	90	815
		Modified	135	95	110	1,120*
	Rupture of liquid line leaving debutanizer	Existing	690	705	585	-
		Modified	695	765	630	-
MEROX	Rupture of fuel gas line through Merox Unit	Existing	115	130	120	-
		New	115	130	120	-
PROPANE	Boiling Liquid Expanding Vapor Explosion (BLEVE)	Existing	-	-	1,605	-
		New	-	-	1,960*	-

psig = pounds per square inch gravity.
* These hazards have the potential to migrate off-site and would be considered potentially significant.

the potential for increased hazards associated with the proposed project including the Naphtha Hydrotreater, Light Ends Recovery Unit No. 2, and the propane/propylene bullets. The addition of equipment in the Naphtha Hydrotreater could result in an H_2S toxicity hazard that extends further off-site (about 150 feet greater distance) than existing accident scenarios. The area impacted by a rupture of the liquid line leaving the debutanizer overhead accumulator (a "worst-case" event) can impact industrial areas to the north and west of the Refinery, if the wind carries the H_2S gas in that direction. The predominant wind direction is to the east, which would limit the release to the Refinery boundaries. The land uses north and west of the Refinery include a hydrogen plant, Henry Ford Avenue, the Dominguez Channel, and metal recycling facilities so that few individuals are expected to be exposed. However, the potential for off-site impacts could result in an exposure to a hazardous chemical in concentrations equal to or greater than the ERPG 2 levels; therefore, the proposed project has the potential for significant impacts.

Hazard distances associated with releases from modified equipment in the Light Ends Recovery Unit No. 2 are greater (about 300 feet greater) than distances to releases from the existing equipment. Off-site impacts are limited to industrial areas west of the facility.

The addition of two larger propane/propylene bullets in the existing propane storage area has the potential to create larger BLEVE hazard zones than the existing bullets. Although there is an increase in the maximum hazard distance (about 300 feet greater) in the event a BLEVE occurs in one of the bullets, the affected off-site areas are industrial areas to the south and east of the facility.

None of the modified or new units creates a hazard that could extend into residential areas; all off-site hazards are confined to heavy industrial areas surrounding the facility. Releases from new or modified equipment that result in an increase in the potential off-site exposure (based on the consequence modeling and the given hazard endpoints), do so only under "worst-case" conditions. For this type of scenario, the accident can only occur if the following conditions occur:

- full rupture of the line occurs;
- release does not ignite within minutes of the rupture;
- wind speed is low (less than three miles per hour); and
- atmosphere is calm

The sequence of events for a "worst-case" release is highly unlikely and only results in an off-site hazard (toxic or flammable vapor dispersion) for a limited number of potential releases. The other hazard that was found to be larger after the proposed additions and modifications was a BLEVE of one of the new propane/propylene bullets. This event, which does not require the occurrence of the previously described sequence of events, is also very rare. For all hazard types, the potentially affected areas surrounding the facility are industrial. Nonetheless, the potential hazard impacts associated with the proposed project as described in the previously prepared 2001 Final EIR are considered to be significant because there is the potential for some individuals to be exposed to the potential hazards that exceed the ERPG 2 levels.

The proposed project is expected to comply with applicable design codes and regulations, with National Fire Protection Association Standards, and with generally accepted industry practices. The proposed project impacts as described in the previously prepared 2001 Final EIR are expected to be less than significant for transportation hazards, pipeline hazards, and water quality hazards (accidental releases of hazardous materials to bodies of water).

The transportation of hazardous materials also can result in offsite releases through accidents or equipment failure. The proposed project will increase the amount of hazardous materials transported to the Refinery. The impacts due to transportation of hazardous materials are addressed in this section.

Ethanol/MTBE

The proposed project would eliminate the use of MTBE and would eliminate the transport of MTBE to the Marine Terminal and Refinery via marine vessel. Ethanol, instead of

MTBE, would be transported into the area via railcars. The use of ethanol is expected to provide an environmental benefit over the use of MTBE. In the event of a leak or spill, while ethanol is more soluble than MTBE, ethanol is expected to present less of a risk of ground water contamination since it breaks down in the environment more rapidly than MTBE. Also, the health impacts related to ethanol exposure are limited (CARB, 1999).

The proposed project will increase the truck transport of ethanol by about 30 trucks per day. The distance traveled by all ethanol trucks per day was estimated to be about 960 miles per day. The estimated accidental release rate for all ethanol truck deliveries is about 0.1 accident per year or about one accident in 10 years. Ethanol is not an acutely hazardous material and the hazards related to the transport of ethanol are expected to be less than those associated with the transport of MTBE and less than significant, as discussed below.

The overall hazards associated with the handling and transport of ethanol are expected to be less than those associated with MTBE. Ethanol has a lower vapor pressure than MTBE (49-56.5 mmHg for ethanol as compared to 245-256 mmHg for MTBE) (API, 2000). Therefore, a release of ethanol would travel a smaller distance than a release of MTBE, given the same conditions. In addition, the toxicity of ethanol is less than the toxicity of MTBE as shown in Table 4-19 below. Therefore, the health impacts in the event of a release of ethanol also are expected to be less than the health impacts associated with an MTBE release.

TABLE 4-19

HEALTH ASSESSMENT VALUES AND HEALTH PROTECTIVE CONCENTRATIONS

	Non-Cancer		***Cancer***
	1-Hour (ug/m^3)	***Annual Average*** (ug/m^3)	***Unit Risk Factor*** $(ug/m^3)^{-1}$
Ethanol	*100,000 (53,000 ppb)*	*100,000 (53,000 ppb)*	*No evidence of carcinogencity by inhalation.*
MTBE	*25,000 (7,000 ppb)*	*3000 (800 ppb)*	2.6×10^{-7} $(9.3 \times 10^{-7}\ ppb^{-1})$

Source: OEHHA, 2000.

The proposed project is expected to require the delivery of ethanol via railcars. A maximum of about nine railcars per day may be required to deliver ethanol. These railcars are expected to arrive on one train per day. The proposed project is not expected to change the probability of a train accident, derailment, or potential release of material in the event of an accident. Rail accidents are generally weather or mechanical-related. The proposed project will not change the average number of railcars that would derail and/or rupture in the event of an accident. Further, in the event of an ethanol release, the health effects are expected to be less than significant. The overall hazards associated with the handling and

transport of ethanol are expected to be less than those associated with MTBE. Therefore, a release of ethanol would travel a smaller distance, persist in the environment for less time, and result in fewer health impacts than a release of MTBE, given the same conditions. The hazards related to the transport of ethanol instead of MTBE are expected to be less than significant.

2. Storage Tank Farms and Marine Terminal Modifications

Table 4-20 lists the potential releases as a result of the modifications to the storage tank farms and the marine terminal. Most of the proposed modifications do not affect the size of the largest potential release. In other words, most of the potential releases, which would result in the largest hazard zones, already exist at the site.

Modifications to most of the storage tanks would not result in a substantial change to the hazard footprint in the event of a fire associated with the proposed new/modified tanks. The changes to several of the storage tanks at the Olympic Tank Farm have the potential to extend off-site (a maximum of about 60 feet). Few individuals are expected to be exposed since the hazard zone would only extend to adjacent industrial areas. However, the potential for off-site impacts could result in an exposure to fire radiation equal to or greater than the threshold level; therefore, the proposed project has the potential for significant adverse hazard impacts.

None of the modified or new units creates a hazard that could extend into residential areas; all off-site hazards are confined to heavy industrial areas surrounding the facility. Releases from new or modified equipment that result in an increase in the potential off-site exposure (based on the consequence modeling and the given hazard endpoints), do so only under "worst-case" conditions.

Marine terminals that can be used by Ultramar are located within the Ports of Long Beach or Los Angeles and subjected to review under the risk management portion of the Port's Master Plan. This Plan identifies hazards within each port, provides land use goals, and identifies emergency response procedures for facilities within the port. The Plan contains policies to guide the future development of the ports in an effort to eliminate the danger of accidents to vulnerable resources. This will be achieved mainly through physical separation, as well as through facility design factors, fire protection, and other risk mitigation measures. The Marine Terminal Operations Manual, in compliance with Coast Guard requirements, details procedures for preventing and controlling drips and spills during marine activities including ship offloading.

In addition, the California State Lands Commission has adopted the Marine Oil Terminal Physical Security Program (2 CCR §2351) on March 7, 2002 in response to recent terrorist attacks. The regulations require that each terminal prepares a Marine Oil Terminal Security Plan (MOTSP) and submits it to the California State Lands Commission (CSLC) for review and approval. The MOTSPs are designed to: (1) provide for the safety and security of persons, property and equipment on the terminal and along the dockside of vessels moored at the terminal; (2) prevent and deter the carrying of any weapon, incendiary, or explosive on or about any person inside the terminal, including within his or her personal articles; (3) prevent and deter the introduction of any weapon, incendiary, or explosive in stores or carried by persons onto the terminal or to the

TABLE 4-20

MAXIMUM HAZARD DISTANCES FOR MODIFICATIONS TO THE STORAGE TANK FARMS AND THE MARINE TERMINAL

Tank Number	Status of Potential Hazard	Tank Contents	Distance (ft) from Tank Center to Pool/Torch Fire Thermal Radiation (1,600 Btu/hr-ft^2)
TANK AT THE ULTRAMAR REFINERY			
82-TK-11	New	Gasoline/gasoline blending components	346
TANK AT THE MARINE TANK FARM			
199-TK-301	Existing	Fuel oil/water	206
	Modified	Organic liquid/naptha	151
TANKS AT THE OLYMPIC TANK FARM			
299-TK-1501	Existing	Fuel oil/water	285
	New	Gasoline/gasoline blending components	346
299-TK-1502	Existing	Fuel oil/water	285
	New	Gasoline/gasoline blending components	346
299-TK-1503	New	Gasoline/gasoline blending components	346
299-TK-1504	Existing	Fuel oil/water	286
	New*	Gasoline/gasoline blending components	346
299-TK-501	Existing	Fuel oil/water	255
	Modified	Organic liquid/naphtha	195
299-TK-1003	Existing	Fuel oil/water	286
	New*	Gasoline/gasoline blending components	321
299-TK-1004	Existing	Fuel oil/water	286
	New*	Gasoline/gasoline blending components	321
299-TK-1002	Existing	Fuel oil/water	286
	New*	Organic liquid/naphtha	321
299-TK-1001	Existing	Fuel oil/water	286
	Modified	Gasoline/gasoline blending components	321
299-TK-721	Existing	Fuel oil/water	294
	Modified	Gasoline/gasoline blending components	294
299-TK-722	Existing	Fuel oil/water	294
	Modified	Gasoline/gasoline blending components	294
TANK AT THE MARINE TERMINAL			
99-TK-21001	Existing	HTGO	110
	Modified	Gasoline	170

* These hazards have the potential to migrate off-site and would be considered potentially significant.

dockside of vessels moored at the terminal; and (4) prevent or deter unauthorized access to the terminal and to the dockside of vessels moored at the terminal (2 CCR §2351(b)(1-4)). Ultramar has prepared a MOTSP, which is currently under review by the CSLC.

The Refinery has spill containment systems in place to reduce the impacts of spills of petroleum products. The marine terminals generally use a water collection and treatment system to prevent discharges of petroleum products to the port. Drip pans and funnels drain to collection areas to contain leaks. Ship washings and ballast water are stored in two tanks for further treatment and disposal. Spills that would reach the water are controlled by deploying the oil booms. Additional spill equipment is available through commercial contracts with suppliers that specialize in spill cleanup. Commercial contractors that specialize in oil cleanup are employed to place any additional booms or equipment, and to remove oil from the water and adjacent areas.

The Ultramar Refinery has a Spill Prevention Containment and Countermeasures (SPCC) Plan per the requirements of 40 CFR, Section 112. The SPCC is designed to prevent spills from on-site facilities and includes requirements for secondary containment, emergency response procedures, training requirements, and so forth.

High Octane Blending Components

The proposed project is expected to result in the delivery of additional high octane blending components (e.g., alkylate and isooctane) to a marine terminal and elimination of MTBE deliveries via marine vessel. It is expected that the increase in the transport of high octane blending components of about 97 per year will be offset by a decrease in MTBE delivered by about 32 vessels per year. Therefore, the overall revised proposed project is expected to result in an increase of about 65 marine vessels per year (97 – 32 = 65) over current conditions.

The proposed project would increase the delivery of high octane blending components. Alkylate and isooctane are currently shipped and stored at local marine terminals. Ultramar will use third party marine terminals and the construction of new storage tanks or loading/unloading facilities are not expected to be required. Therefore, no new hazards or increased risk will be introduced to the Port area.

Compliance Issues

The proposed project modifications will require compliance with various regulations, including OSHA regulations (29 CFR Part 1910) that require the preparation of a fire prevention plan, and 20 CFR Part 1910 and Title 8 of California Code of Regulations that require prevention programs to protect workers that handle toxic, flammable, reactive, or explosive materials.

Section 112 (r) of the Clean Air Act Amendments of 1990 [42 U.S.C. 7401 et. Seq.] and Article 2, Chapter 6.95 of the California Health and Safety Code require facilities that handle listed regulated substances to develop Risk Management Programs (RMPs) to prevent accidental releases of these substances. The Refinery has prepared an RMP for the existing Refinery which may need to be

revised to incorporate the changes associated with the proposed project. The Hazardous Materials Transportation Act is the federal legislation that regulates transportation of hazardous materials.

The Ultramar facilities will comply with all applicable design codes and regulations, conform to National Fire Protection Association standards, and conform to policies and procedures concerning leak detection containment and fire protection. Therefore, no significant adverse compliance impacts are expected.

Impacts on Water Quality

A spill of any of the hazardous materials (generally petroleum products and by-products from the refining process) used and stored at the Refinery, tank farms and marine terminal could occur under upset conditions, e.g., earthquake, tank rupture, and tank overflow. Spills also could occur from corrosion of containers, piping and process equipment; and leaks from seals or gaskets at pumps and flanges. A major earthquake would be a potential cause of a large spill. Other causes could include human or mechanical error. Construction of the vessels, and foundations in accordance with the Uniform Building Code Zone 4 requirements helps structures to resist major earthquakes without collapse, but result in some structural and non-structural damage following a major earthquake. Ultramar has emergency spill containment equipment and would implement the spill control measures in the event of an earthquake. Storage tanks have secondary containment capable of containing 110 percent of the contents of the storage tanks. Therefore, the rupture of a tank would be collected within the containment system and pumped to an appropriate leakless tank for storage.

Spills at the Ultramar facilities would generally be collected within containment facilities. Large spills outside of containment areas at the Refinery are expected to be captured by the process water system where it could be controlled. Spilled material would be collected and pumped to an appropriate tank, or sent off-site if the materials cannot be used on-site. Because of the containment system, spills are not expected to migrate from the facility and potential adverse water quality hazard impacts are considered to be less than significant.

3. Revised Project Impact Summary

The revised project is expected to have significant adverse impacts associated with hazards from the Naphtha Hydrotreater, Light Ends Recovery Unit No. 2, and the propane/propylene bullets at the Refinery and from storage tank modifications to the Olympic Tank Farm. The remainder of the project modifications are expected to be less than significant.

MITIGATION MEASURES

The mitigation measures that follow were already required for the previous project since potential hazard impacts were considered significant. The revised proposed project also is expected to have significant adverse hazard impacts. Therefore, the previously identified mitigation measures will also be applied to the revised proposed project. Further, an effort was made to identify additional mitigation measures, but no other mitigation measures were identified.

The proposed project could result in significant impacts associated with "worst-case" hazards in the Naphtha Hydrotreater, Light Ends Recovery Unit No.2, the new propane/propylene storage bullets, and storage tank modifications at the Olympic Tank Farm. Therefore, pursuant to CEQA Guidelines §15126.4, this Subsequent EIR describes "feasible measures which could minimize significant adverse impacts . . ."

There are a number of rules, regulations, and laws that Ultramar has complied or must comply with that serve to minimize the potential adverse impacts associated with hazards at the facility. Under federal OSHA, regulations have been promulgated that require the preparation and implementation of a PSM Program (40 CFR Part 1910, Section 119, and Title 8 of the California Code of Regulations, Section 5189). Risk Management Programs are covered under the California Health and Safety Code Section 25534 and 40 CFR Part 68, and Section 112r, by the Clean Air Act.

A PSM that meets the requirements of the regulations and is appropriately implemented is intended to prevent or minimize the consequences of a release involving a toxic, reactive, flammable, or explosive chemical. A PSM review will be required as part of the proposed project. The primary components of a PSM include the following components.

- Compilation of written process safety information to enable the employer and employees to identify and understand the hazards posed by the process;

- Performance of a process safety analysis to determine and evaluate the hazard of the process being analyzed;

- Development of operating procedures that provide clear instructions for safely conducting activities involved in each process identified for analysis;

- Training in the overview of the process and in the operating procedures is required for facility personnel and contractors. The training should emphasize the specific safety and health hazards, procedures, and safe practices; and

- A pre-start up safety review for new facilities and for modified facilities where a change is made in the process safety information.

An RMP is required for certain chemicals at the Refinery. The RMP consists of four main parts: hazard assessment that includes an off-site consequence analysis, five-year accident history, prevention program, and emergency response program. The Refinery's existing RMP will need to be reviewed and revised to include the propane/propylene storage vessels.

No additional feasible mitigation measures have been identified, over and above the extensive safety regulations that currently apply to the Ultramar Facilities.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

The impacts of the proposed project on hazards are expected to be significant prior to mitigation. Compliance with existing regulations and implementation of the recommended safety measures would further minimize the potential impacts associated with a release, but are not expected to eliminate the potential hazard impacts. No additional feasible mitigation measures were identified to further reduce significant adverse hazard impacts. Therefore, the impacts of the proposed project on hazards and hazardous materials are expected to remain significant.

D. HYDROLOGY/WATER QUALITY

SIGNIFICANCE CRITERIA

Potential impacts on hydrology/water quality will be considered significant if any of the following criteria apply:

Water Quality:

The project will cause degradation or depletion of ground water resources substantially affecting current or future uses.

The project will cause the degradation of surface water substantially affecting current or future uses.

The project will result in a violation of NPDES permit requirements.

The project creates a substantial increase in mass inflow to public wastewater treatment facilities.

The project results in substantial increases in the area of impervious surfaces, such that interference with groundwater recharge efforts occurs.

Water Demand:

The existing water supply does not have the capacity to meet the increased demands of the project, or the project would use a substantial amount of potable water, greater than or equal to five million gallons per day.

The capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system are not sufficient to meet the needs of the project.

CONSTRUCTION IMPACTS

1. Previous Final EIR

The proposed project impacts as described in the previously prepared 2001 Final EIR on ground water resources, surface water, wastewater and water demand were concluded to be less than significant.

It is estimated that a maximum of 2,000 gallons of water per day would be required during grading activities, which are expected to last a maximum of about two weeks for the previously proposed project. Additional water will be required for pressure testing the new storage vessels and pipelines, and for dust control during grading activities. The potential for hydrology and water quality impacts associated with the construction of the previously proposed project was concluded to be insignificant.

Storm water runoff from the construction areas, within the confines of the existing Refinery, will be collected, treated by the existing Refinery's storm water and/or wastewater treatment system, and discharged under existing permits so no significant adverse impacts were expected associated with the previously proposed project.

During pipeline construction, the surface along the pipeline route will be temporarily disturbed and broken pavement and excavated soil will be removed and disposed of at an approved facility. During the short period where the pipeline trench is open, drainage patterns could be altered in the event of a major rain storm. However, this disturbance will only be temporary and after the pipe trench has been backfilled, area drainage will be returned to its pre-construction patterns, so no significant adverse impacts associated with the previously proposed project are expected.

2. Storage Tank Farms and Marine Terminal Modifications

The potential for hydrology and water quality impacts associated with the construction of the currently proposed project is expected to be minimal. Additional water will be required for pressure testing the new storage vessels and for dust control during grading activities.

Water is typically used for dust suppression pursuant to SCAQMD and/or local permitting requirements. It is estimated that a maximum of 2,000 gallons per day of water would be required during the first three months when grading activities occur. Water for dust suppression would only be required during grading activities and no water use is expected to be required once grading activities cease.

Additional water demand will be required to pressure test the new storage tanks, which is expected to occur during the last month of the construction period. The pressure test is required to assure that the tanks and lines are appropriately sealed so that Ultramar can be assured that petroleum products will not leak once the equipment is put into operation. The pressure tests will only be conducted once when construction is completed and prior to operation of the equipment. At the Olympic Tank Farm, about 6.3 million gallons of water would be required for pressure testing

which would be a one-time water demand requirement. Water would be used for the pressure testing of one tank. That water would then be recycled and reused to pressure test the other tanks at the Olympic Tank Farm. Thus, 6.3 million gallons of water would be required once during the last month of the construction phase. The water would be discharged under the conditions of the NPDES permit. Water demand impacts are not expected to be significant since the total construction-related water demand will not exceed five million gallons per day but would be about 6.3 million gallons over the total construction phase.

About 6.3 million gallons of water will also be required for pressure testing of the new tank at the Refinery. It is expected that recycled or treated wastewater would be used for pressure testing at the Refinery so no increase in water demand is expected at the Refinery. The water from pressure testing would be discharged under the conditions of the Industrial Wastewater Discharge Permit. Water demand impacts from the proposed project are not expected to be significant since the total construction-related water demand will not exceed five million gallons per day.

The water from pressure testing will be directed to the wastewater treatment system, as necessary, for treatment and discharge, as appropriate. Any oil, solids, grease or other materials contained in the wastewater will be recovered for reuse or discharge in accordance with existing permits. Construction activities would generate a small intermittent wastewater stream from pressure testing that could be handled in the existing wastewater treatment system. Therefore, no significant adverse impacts associated with wastewater generation from construction of the proposed project are expected.

Sanitary wastes from construction workers will be collected in portable chemical toilets. These wastes will be removed by a private contractor and disposed of off-site. Effluents from the portable chemical toilets are discharged to the municipal sewer. Sanitary wastes will be minimal and would not create a significant adverse impact to existing sanitary sewer systems.
Storm water runoff from the construction areas, within the confines of the existing Refinery, tank farms, and terminals will be collected and treated by the existing storm water and/or wastewater treatment system. Storm water and wastewater discharges are discharged under the limitations of industrial wastewater discharge permits and/or the NPDES permit. Storm water discharges during the construction period are expected to be approximately the same as the existing discharges; therefore, no significant adverse impacts are expected from storm water discharges during construction.

3. Revised Project Impact Summary

Water will be used during the construction phase for control of fugitive dust emissions. Water used for dust control is not expected to exceed 4,000 gallons per day and is not expected to result in significant adverse surface water runoff impacts.

Storm water runoff from the construction areas will be collected and treated by the existing storm water and/or wastewater treatment systems. Storm water and wastewater discharges are discharged under the limitations of existing wastewater discharge permits and/or NPDES permits. Storm water discharges during the construction period are expected to be approximately the same as

existing discharges (i.e., the discharges in the existing environmental setting); therefore, no significant impacts are expected from storm water discharges during project construction.

OPERATIONAL IMPACTS

1. Previous Final EIR

It was concluded in the previously prepared 2001 Final EIR that the previously proposed project was not expected to significantly adversely affect the quantity or quality of ground water in the Wilmington area as there is no beneficial use of ground water in the project area since all aquifers in this area are in hydraulic continuity with San Pedro Bay. New above ground storage vessels will be constructed using double bottoms and leak detection systems. Storage tanks at the Refinery will no longer store MTBE and MTBE will no longer be blended into gasoline. The purpose of removing MTBE from gasoline was to provide environmental benefits by reducing the potential impacts to ground water contamination in the event of a gasoline leak (CARB, 1999).

It was concluded in the 2001 Final EIR that the previously proposed project was not expected to substantially increase the paved areas associated with the Refinery, or increase the surface water runoff managed in the Refinery's oily water system and sent to the wastewater treatment system prior to discharge to the LACSD system. No change in the character of the water runoff was expected and it was not expected to change Ultramar's ability to comply with the pretreatment standards in its LACSD permit.

It was concluded in the 2001 Final EIR that the previously proposed project was not expected to result in an increase in water demand or wastewater generated, so no significant adverse impacts to these environmental areas were expected.

2. Storage Tank Farms and Marine Terminal Modifications

Groundwater: The proposed project is not expected to significantly adversely affect the quantity or quality of ground water in the area of the Tank Farms or Marine Terminal. There is no beneficial use of ground water in the modified project areas since all aquifers in this area are in hydraulic continuity with San Pedro Bay, i.e., sea water has intruded into and contaminated the ground water in the area. The proposed project would not interfere with the operation of ground water monitoring wells maintained by the Los Angeles County Department of Public Works for the West Coast Basin Barrier Project which were installed to prevent further sea water intrusion of the ground water in the Southern California area (see Chapter 3, Section D, Hydrology/Water Quality for a further discussion).

No underground storage tanks will be constructed as part of the proposed project. New above ground storage vessels will be constructed using double bottoms and leak detection systems which should minimize the potential for leaks.

Wastewater: The proposed project is not expected to result in an increase in wastewater discharged from the Refinery, Marine Tank Farm or Olympic Tank Farm since there are no new

units that would generate additional wastewater discharge. Wastewater generated by the Refinery will continue to be collected and treated in the Refinery's wastewater treatment system or in compliance with wastewater discharge permits. Process water streams will be piped to the sour or oily water treatment facilities. The Marine Tank Farm is also permitted to discharge wastewater to the City of Los Angeles' sewer system. No wastewater discharge occurs from the Olympic Tank Farm, Marine Tank Farm, or the Marine Terminal. The proposed project is not expected to generate additional wastewater and no changes are expected to be required to the LACSD permits. The wastewater discharges are not expected to exceed the maximum allowable wastewater flow or the wastewater quality requirements of the LACSD. Further, Ultramar does not routinely accept ship washing or ballast water at the marine terminal and the proposed project is not expected to result in an increase in the amount of ballast received at the marine terminal. Therefore, the proposed project impacts on wastewater are considered to be less than significant.

Surface/Storm Water Runoff: The proposed project is not expected to increase the overall surface water runoff from areas outside the process units. There will be minor changes to the Refinery's rainwater collection system (NPDES) system to include the new storage tank. Storm water at the Refinery will continue to be contained in retention basins, treated in a water treatment system owned and operated by the Port of Long Beach, and discharged in accordance with the NPDES permit for this system.

Because the discharge of storm water runoff to either the LACSD system, the ocean or the Dominguez Channel is controlled by permits with enforceable conditions, no significant adverse impacts are expected to result from storm water runoff associated with operation of the proposed project.

No increase in stormwater is expected to be generated at the Marine Tank Farm as the site is currently paved. Stormwater is contained in retention basins, treated in an oily water separator and discharged to the Los Angeles Harbor in accordance with an existing NPDES permit.

No increase in stormwater is expected to be generated at the Olympic Tank Farm as the site is currently paved. Stormwater will continue to be contained in retention basins. However, the site will be reconfigured so that the number of tanks and location of retention basins will change, therefore, the NPDES permit will need to be modified to include the new and modified tanks. Ultramar may be required to submit a new NPDES permit application to the Regional Water Control Board for review and approval. Stormwater will continue to be collected and treated in an oily water separator, prior to discharge to the Dominguez Channel. No significant impacts are expected as stormwater will be discharged under the requirements of an NPDES permit.

No increase in stormwater is expected to be generated at the Marine Terminal as the site is currently paved. Further, the proposed project will only result in the change of service in one storage tank. Stormwater is contained in retention basins, treated in an oily water separator and discharged to the Los Angeles Harbor in accordance with an existing NPDES permit.

Water Demand: The proposed project is not expected to require any additional water for operation since there are no proposed new units that would require additional water. Therefore, the impacts of the proposed project on water demand are expected to be less than significant.

Spill Control and Containment: The Ultramar Refinery, Marine Tank Farm, Olympic Tank Farm and Marine Terminal have Spill Prevention, Control and Countermeasure (SPCC) Plans, as required by 40 CFR Part 112. These plans establish the management systems to deal with potential releases at each facility. The purpose of these plans is to prevent the discharge of materials into navigable waters and to contain such discharge should it occur. The SPCC describes the spill prevention and containment methods implemented at each facility. The SPCC plans provide for spill prevention systems, on-site and off-site containment measures, the procedures to contain and cleanup a spill once it has occurred, personnel training, public notification of a spill, and other measures. These plans must be amended within six months of the completion of project construction to include the new facilities and related project modifications.

Primary spill prevention methods implemented by Ultramar include automatic tank gauging devices that monitor the level in storage tanks; double bottom tanks; diking around all tanks to contain leaks or spills; spill containment facilities along the Dominguez Channel; and integrity testing. Ultramar also has maintenance crews, vacuum trucks, pumps, and outside contractors readily available to respond to a spill of any magnitude. Containment facilities will be required around the proposed new tanks which should minimize the potential impacts in the event of a spill so that no significant adverse impacts are expected.

3. Revised Project Operational Summary

The CARB Phase 3 Project as a whole is not expected to result in significant impacts to groundwater, surface water, water demand or wastewater generation for the reasons described above.

MITIGATION MEASURES

No significant impacts on hydrology/water quality have been identified so no mitigation measures are required.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

The proposed project impacts on hydrology/water quality are less than significant prior to mitigation.

E. LAND USE/PLANNING

SIGNIFICANCE CRITERIA

Land use and planning impacts will be considered significant if the project conflicts with the land use and zoning designations established by the City of Los Angeles in the local Community Plan and the General Plan, as well as the County, regional, and state plans and policies.

PROPOSED PROJECT IMPACTS

1. Previous Final EIR

The previously proposed modifications to the Refinery were expected to be constructed within the confines of the existing Refinery. The Refinery is within and adjacent to heavy industrial areas that are zoned QM3-1VL. Therefore, the previously proposed project conformed to the land use and zoning designation of the general area. The previously proposed project was consistent with the goals, policies, and implementation measures contained in the Wilmington-Harbor City Community Plan. Therefore, it was concluded in the 2001 Final EIR that the previously proposed project was not expected to have significant adverse impacts with respect to altering the land use or changing the intensity of the land use at or in the vicinity of the Refinery.

It was concluded in the 2001 Final EIR that the previously proposed pipelines were expected to comply with the land use designations along the routes. The previously proposed pipeline route was located in industrial areas which are zoned M3-1 within the City of Los Angeles and MH in the City of Carson. The construction of the pipelines was expected to be compatible with the existing land use and zoning. Therefore, construction of the new pipelines is not expected to result in significant land use impacts.

It was concluded in the 2001 Final EIR that the previously proposed project was expected to comply with the Cities of Los Angeles and Carson land zoning ordinances and land use designations, and be compatible with the surrounding land uses. Therefore no significant adverse impacts on land use were expected.

2. Storage Tank Farms and Marine Terminal Modifications

Portions of the modified CARB Phase 3 project will be constructed within the confines of the existing Refinery. The Refinery is within and adjacent to heavy industrial areas that are zoned M3-1. Therefore, the proposed project generally conforms to the land use and zoning designation of the general area. The proposed project is consistent with the goals, policies, and implementation measures contained in the Wilmington-Harbor City Community Plan (see Chapter 3, Section E – Land Use). Construction of the proposed project would increase the intensity of industrial development within an existing industrial area. This is not expected to be a significant adverse impact because the areas surrounding the proposed project site are also heavy industrial. Heavy industrial uses would be the only use compatible with the surrounding areas. The views of the

Refinery would essentially remain unchanged as no new tall structures are being constructed that will be visible to the general public. Therefore, the proposed project is not expected to have significant adverse impacts with respect to altering the land use or changing the intensity of the land use.

The proposed modifications at the Refinery is expected to require the issuance of a Coastal Development Permit or de minimus waiver to assure that the project will comply with the coastal protection requirements of the California Coastal Act. The California Coastal Commission in the past has reviewed development at the Ultramar Refinery and has issued 11 coastal development permits and five de minimus waivers (minor development projects which did not require a Coastal Development Permit). For each Coastal Development Permit at the Refinery, the Commission found the proposed Refinery development to be consistent with the goals and policies of the California Coastal Act. The development in the proposed project is similar to the development that the California Coastal Commissions has approved in previous permit actions. The proposed Refinery and pipeline development will not impede or otherwise impact recreation or other coastal uses. The heavily industrial character of the general area and the extensive port development has eliminated or greatly reduced most traditional coastal recreation opportunities. Therefore, the proposed project is consistent with current Port activities and development, so its is consistent with the goals and policies of the California Coastal Act for the Port area and is not expected to have significant adverse impacts on coastal resources.

The modifications to the Marine and Olympic Tank Farms and the Marine Terminal will be made within the confines of the existing tank farms/terminal. The tank farms and terminal are zoned for industrial land uses, which allows for the continued storage of petroleum products. Although construction of the proposed project would increase the intensity of industrial development within the existing industrial area, this is not expected to be a significant adverse impact because the areas surrounding the Tank Farms sites are also heavy industrial. Heavy industrial uses would be the only use compatible with the surrounding areas. The views of the Marine Tank Farm would essentially remain unchanged as only one tank is being modified at the site. The views of the Olympic Tank Farm will be similar to their current views. In generally, most of the tanks will be demolished and replaced so the site will still have views of storage tanks but they will be new storage tanks instead of old ones. These tanks will be visible to the general public but will have essentially the same views as the current views. Therefore, the proposed project is not expected to have significant impacts with respect to altering the land use or changing the intensity of the land use.

The size of the Ultramar Marine Terminal will be substantially reduced in size due to lease negotiations with the Port of Los Angeles. A large portion of the marine terminal will be returned to the port for other port-related uses (i.e., also heavy industrial land uses). Therefore, the views of the Marine Terminal will change with much fewer storage tanks in the area. The proposed project will result in the change of service and the installation of a dome on one tank which is not expected to change the view of this portion of the Marine Terminal.

MITIGATION MEASURES

No significant adverse impacts associated with land use are expected from the proposed project so that no mitigation measures are required.

LEVEL OF SIGNIFICANCE

The proposed project is expected to comply with the Cities of Los Angeles (for the Refinery, Olympic Tank Farm, Marine Tank Farm, and Marine Terminal) and Carson (for portions of the previously proposed pipeline route) land zoning ordinances and land use designations, and be compatible with the surrounding land uses. Therefore no significant adverse impacts on land use are expected.

F. NOISE

SIGNIFICANCE CRITERIA

Noise impacts will be considered significant if:

> Construction noise levels exceed the City of Los Angeles' noise ordinance (see Table 3-18); or if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three dBA at the site boundary.
>
> Construction activities would exceed the ambient noise level by three dBA at a noise sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. Saturday, or anytime on Sunday.
>
> The project operational noise levels exceed the local noise ordinance at the site boundary; or if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three dBA at the site boundary.

CONSTRUCTION IMPACTS

1. Previous Final EIR

The summary of the estimated construction noise levels from the previously prepared 2001 Final EIR is provided in Table 4-21.

TABLE 4-21

PREVIOUSLY PROPOSED PROJECT CONSTRUCTION NOISE LEVELS

Location[(1)]	Baseline Noise Levels (dBA)[(2)]	Distance to Noise Sampling Location from Construction Activities (feet)	Construction Sound Level at Noise Sampling Location (dBA)	Total Sound Level at Noise Sampling Location (dBA)[(3)]	Increased Noise Levels at Noise Sampling Locations due to Construction Activities (dBA)
1	71.7	1,200	58	71.8	0.1
2	68.7	1,200	58	69.1	0.4
3	67.3	1,000	60	68.0	0.7
4	67.1	900	60	67.9	0.8
5	66.2	1,200	58	66.8	0.6
6	61.8	3,000	49	62.0	0.2

(1) Refers to the sampling locations identified in Figure 3-5.
(2) Includes all ambient noise sources. Noise levels are from Table 3-17.
(3) The total sound level was calculated using the following formula: $T_{sl}=10\log_{10}(10^{Bsl/10} + 10^{Csl/10})$ where T_{sl} = the total sound level (dBA); B_{sl} = baseline sound level (dBA); and C_{sl} = construction sound level (dBA)

The noise levels from the construction equipment at the Refinery were expected to be within the allowable noise levels established by the City of Los Angeles noise ordinance (see Table 3-18). It was concluded in the 2001 Final EIR that the previously proposed project was not expected to increase the noise levels at residential areas. The noise level at the closest residential area was expected to be 62 dBA (Location 6), which is within the normally acceptable noise range (see Figure 3-6). The noise levels at the other noise monitoring locations were expected to be within industrial areas and no significant adverse (audible) increase in noise levels was expected. Therefore, the previously proposed project noise impacts during the construction phase are expected to be less than significant.

The construction of the pipelines was expected to take place during normal working hours, minimizing impacts during the more sensitive nighttime hours. The pipeline construction noise levels at 500 feet were expected to be about 70 dBA. Construction may generate noise levels of 60 dBA or greater at a distance of up to about 1,400 feet, disregarding any attenuation for buildings, fences, etc. The noise levels may increase along portions of the pipeline route during construction activities; however, noise from other refineries, other industrial sources, and major arterials (e.g., Alameda Street) will continue to be a major source of noise along the pipeline route. In some areas with heavy traffic (e.g., where the pipeline crosses Anaheim Boulevard or Alameda Street), it may be preferable to work during the evening or nighttime to minimize traffic impacts. Nighttime construction activities are generally not allowed by City noise ordinances, unless variances are

obtained for extenuating circumstances (e.g., high traffic areas). These areas are in industrial/commercial areas so that noise impacts are not expected to impact more sensitive populations such as residential areas. Therefore, no significant adverse noise impacts were expected due to construction of the pipelines.

2. Storage Tank Farms and Marine Terminal Modifications

Heavy construction equipment is required during construction activities associated with the storage tanks and related facilities modifications. The highest noise impacts from construction will be during equipment installation. Examples of noise levels from construction equipment are presented in Table 4-22. These noise sources will operate primarily during daylight hours and will be a temporary noise source over the approximately one-year construction period.

TABLE 4-22

CONSTRUCTION NOISE SOURCES

EQUIPMENT	TYPICAL RANGE (decibels)[1]	ANALYSIS VALUE (decibels)[2]
Truck	82-95	82
Front Loader	73-86	82
Backhoe	73-95	80
Vibrator	68-82	80
Air Compressor	85-91	85
Saws	72-82	80
Jackhammers	81-98	85
Pumps	68-72	70
Generators	71-83	85
Compressors	75-87	85
Concrete Mixers	75-88	75
Concrete Pumps	81-85	85
Pile Driving (peaks)	95-107	95
Tractor	77-98	85
Scrapers, Graders	80-93	80
Pavers	85-88	75
Cranes	75-89	85

(1) City of Los Angeles, 1998. Levels are in dBA at 50-foot reference distance. These values are based on a range of equipment and operating conditions.

(2) Analysis values are intended to reflect noise levels from equipment in good conditions, with appropriate mufflers, air intake silencers, etc. In addition, these values assume averaging of sound level over all directions from the listed piece of equipment.

The estimated noise level during equipment installation at the Marine Tank Farm is expected to be an average of about 80 dBA at 50 feet from the center of construction activity. Minimal construction activities are expected at this site as only one small tank will be replaced at this site.

Using an estimated six dBA reduction for every doubling of distance, the noise levels at the closest residential area is about 47 dBA. The estimated noise level during equipment installation at the Olympic Tank Farm is expected to be an average of about 85 dBA at 50 feet from the center of construction activity. Using an estimated six dBA reduction for every doubling of distance, the noise levels at the closest residential area is about 70 dBA. The neighborhood near the Olympic Tank Farm is located adjacent to Alameda Street, the Alameda Corridor, and the railroad tracks. Therefore, this neighborhood is already impacted by a number of noise sources. Most of the construction noise sources will be located near ground level, so the construction noise levels are expected to attenuate to a greater extent than analyzed herein as a result of existing structures. Noise attenuation due to existing structures has not been included in the analysis and, therefore, provides a more conservative noise analysis.

The estimated noise level during equipment installation at the Marine Terminal is expected to be an average of about 80 dBA at 50 feet from the center of construction activity. Minimal construction activities are expected at this site as only a change in service and the construction of an external floating roof are proposed. Using an estimated six dBA reduction for every doubling of distance, the noise levels at the closest residential area is less than 30 dBA.

The construction activities at the Tank Farms and Marine Terminal will normally be carried out during daytime from Monday to Friday, or as permitted by the City of Los Angeles. Because of the nature of the construction activities, the types, number, operation time and loudness of construction equipment will vary throughout the construction period. As a result, the sound level associated with construction will change as construction progresses. Construction noise sources will be temporary and will cease following construction activities. Noise levels at the closest residential areas are not expected to noticeably increase during construction activities.

The noise levels from the construction equipment at the Ultramar facilities are expected to be within the allowable noise levels established by the City of Los Angeles noise ordinance. The project is not expected to increase the noise levels at residential areas. The noise levels at the closest residential areas are not expected to significantly increase. The noise levels at the other locations are within industrial areas and no significant (audible) increase in noise levels is expected. As a result, no significant adverse noise impacts related to project construction are expected. Therefore, the proposed project noise impacts during the construction phase are expected to be less than significant.

Workers exposed to noise sources in excess of 90 dBA for an eight-hour period will be required to wear hearing protection devices that conform to Occupational Safety and Health Administration/National Institute for Occupational Safety and Health (NIOSH) standards. Since the maximum noise levels during construction activities are expected to be 85 decibels or less, no significant adverse impacts to workers during construction activities is expected.

3. Revised Project Construction Summary

The revised project impacts on noise during the construction period are no different than those described above because the project analyzed in the Previous Final EIR included primarily construction impacts at the Refinery and along the pipeline route. The construction activities

associated with the Storage Tank Farms and Marine Terminal Modifications are primarily at the Olympic Tank Farm so that the construction noise is not expected to overlap between the various facilities.

OPERATIONAL IMPACTS

1. Previous Final EIR

The summary of the estimated operational noise levels from the previous Final EIR are provided in Table 4-23.

TABLE 4-23

PREVIOUSLY PROPOSED PROJECT OPERATION NOISE LEVELS

Location[3]	Baseline Noise Levels (dBA)[2]	Distance from New Units to Noise Sampling Locations (feet)	Operation Sound Level at Noise Sampling Locations (dBA)	Total Sound Level at Noise Sampling Location (dBA)[3]	Increased Noise Levels due to Operation at Noise Sampling Locations (dBA)
1	71.7	1,200	39	71.7	<1
2	68.7	1,200	39	68.7	<1
3	67.3	2,400	33	67.3	<1
4	67.1	1,200	39	67.1	<1
5	66.2	1,000	40	66.2	<1
6	61.8	3,000	31	61.8	<1

(1) Refers to the sampling locations identified in Figure 3-5.
(2) Includes all predicted noise sources. Noise levels are from Table 3-17.
(3) The total sound level was calculated using the following formula: $T_{sl}=10\log_{10}(10^{Bsl/10} + 10^{Osl/10})$ where T_{sl} = the total sound level (dBA); B_{sl} = baseline sound level (dBA); and O_{sl} = operational construction sound level (dBA)

The overall noise impact on residential areas is expected to be minimal since the nearest residential areas are located approximately one-half mile west of the major new Refinery noise-generating equipment, just northwest of the Anaheim Boulevard/Alameda Street intersection. A school is also located within this residential area. The estimated noise level at the closest residential area is 61.8 dBA (Location 6), of which the Refinery is a minor contributor. The Refinery operations are not expected to change or increase the noise level at the closest residential areas. The noise levels within residential areas are expected to be within the allowable range established by the noise ordinance.

2. Storage Tank Farms and Marine Terminal Modifications

The storage tank modifications at the Refinery are not expected to add any substantial noise sources. The proposed project would include the construction of a new storage tank, some piping modifications, and new blending pumps. The blending pumps are the only new noise source associated with the proposed project. The maximum noise level of new equipment added to the Refinery is expected to be limited to 85 dBA at three feet in order to comply with OSHA and City noise standards. These noise specifications will be enforced and included as part of the equipment purchase agreement for all new and modified equipment. Given the 85 dBA criteria for refinery equipment, it is expected that the maximum noise level from several pieces of equipment operating concurrently would be about 90 dBA. The estimated maximum noise level expected for the proposed project at the Refinery is not expected to increase over the estimated 90 dBA. Therefore the noise estimates for the revised project at the Refinery are expected to be the same as those estimated in Table 4-23. Therefore, no significant adverse impacts related to the project operation at the Refinery are expected.

The modifications to the Marine Tank Farm will include the modifications of one existing storage tank and new pipeline pumps. The pipeline pumps are estimated to be a maximum of 80 dBA. Assuming an operational "worst-case" noise level of 80 dBA and a six dBA noise attenuation, noise levels would drop off to 60 dBA or less at about 100 feet from the sources. Noise generated by project equipment, therefore, would not increase the overall noise levels near the Terminal. The noise levels in the area are expected to comply with the City of Los Angeles' Noise Ordinance.

The modifications to the Olympic Tank Farm will include the modifications to existing storage tanks, new pipeline pumps, new firewater pumps, and piping modifications. The pipeline pumps are estimated to be a maximum of 80 dBA. Assuming an operational "worst-case" noise level of 80 dBA and a six dBA noise attenuation, noise levels would drop off to 60 dBA or less at about 100 feet from the sources. Noise generated by project equipment, therefore, would not increase the overall noise levels near the Terminal. The noise levels in the area are expected to comply with the City of Los Angeles' Noise Ordinance.

The modifications to the Marine Terminal will include the change of service of a storage tank and the construction of an external floating roof. No new operational noise impacts are expected at the Marine Terminal. Noise generated by project equipment, therefore, would not increase the overall noise levels near the Terminal. The noise levels in the area are expected to comply with the City of Los Angeles' Noise Ordinance.

Noise generated by project equipment, therefore, would not increase the overall noise levels at the Refinery or terminals (when compared to baseline conditions). Therefore, no significant adverse noise impacts related to project operation are expected. The noise levels in the area are expected to comply with the City's Noise Ordinance. In general, the noise levels in the Wilmington area near the Ultramar Refinery, Marine Tank Farm, and Olympic Tank Farm are compatible with the industrial nature of the immediately surrounding area with noise levels of about or less than 70 decibels.

3. Revised Project Operational Summary

The revised project noise impacts during project operation are essentially no different than those described above because the project analyzed in the previous 2001 Final EIR included the major noise sources associated with the Refinery. The revised project at the Refinery will only add a pump which is not expected to increase the noise levels above those analyzed in the previous Final EIR. The modifications at the Marine and Olympic Tank Farms include the installation of several pumps, which are the only noise source related to the operation of the proposed project. The pumps are not expected to result in a significant increase in noise levels in the area surrounding the tank farms. No additional noise sources are expected at the Marine Terminal. Therefore, no significant adverse noise impacts are expected associated with the revised CARB Phase 3 proposed project.

MITIGATION MEASURES

No significant adverse impacts associated with noise are expected from the proposed project so that no mitigation measures are required.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

The proposed project is expected to comply with the City of Los Angeles (Refinery, Olympic and Marine Tank Farms, and the Marine Terminal sites) and Carson (during pipeline construction) noise ordinances, so that no significant impacts on noise are expected.

G. SOLID/HAZARDOUS WASTE

SIGNIFICANCE CRITERIA

The proposed project impacts on solid/hazardous waste will be considered significant if the following occurs:

> The generation and disposal of hazardous and non-hazardous waste exceeds the capacity of designated landfills.

CONSTRUCTION IMPACTS

1. Previous Final EIR

It was estimated in the previous 2001 Final EIR that the demolition wastes would be about 70 tons, disposed of over a 1.5-year period. This represents a small portion (less than one percent, assuming all 70 tons is disposed on in one day) of the daily total solid waste received at Puente Hills and Bradley West Class III landfills (a total of 16,769 tons per day). The actual disposal of demolition waste is expected to be spread throughout the first three months of the construction period. Therefore, it was concluded that no significant adverse impacts are expected to the existing landfill capacity due to the proposed project.

The preparation of the site and construction related to the previously proposed project, including excavation and grading, and demolition of existing structures, has the potential to generate hazardous materials and wastes. About 18,400 cubic yards of grading is expected to be required for the proposed project (includes construction at the Refinery and associated with the pipelines). Assuming that about 10 percent of the soil from grading is contaminated, an estimated 1,840 cubic yards of soil may be contaminated. If hazardous materials were encountered during demolition or excavation activities, it would be treated on-site or disposed of off-site at an approved facility. Options available for off-site disposal included non-hazardous and hazardous landfills. If hydrocarbons are encountered during installation of piping, process units, or pipeline construction at the Refinery they would be recovered and processed in existing Refinery units for conversion into petroleum products.

The disposal of demolition waste and contaminated soils would contribute to the diminishing availability of landfill capacity. However, sufficient landfill capacity currently exists to handle these materials (see Chapter 3). Therefore the construction impacts of the prevously proposed project on solid/hazardous wastes were concluded to be less than significant.

2. Storage Tank Farms and Marine Terminal Modifications

The demolition of existing storage tanks during construction of the proposed project would result in the generation of solid waste. Much of this material would be salvaged or recycled. Material that cannot be salvaged would be taken to a landfill for disposal and contribute to the ongoing reduction of available landfill volumes. It is estimated that the demolition wastes would be about 140 tons, disposed of over about a one-year period. This represents a small portion (less than one percent, assuming all 140 tons is disposed of in one day) of the daily total solid waste received at Puente Hills and Bradley West Class III landfills (a total of 16,769 tons per day). The actual disposal of demolition waste is expected to be distributed throughout the first three months of the construction period. Further, a portion of the estimated 140 tons of demolition wastes is expected to be salvaged for metal content. Therefore, no significant adverse impacts are expected to the existing landfill capacity due to the proposed project.

The preparation of the site and construction related to the Storage Tank Farms and Marine Terminal Modifications, including excavation and grading, and demolition of existing structures, have the potential to generate hazardous materials and wastes. The preparation of the site and construction of the proposed pipelines, including excavation and grading, and demolition of existing structures, have the potential to generate hazardous materials and wastes. An estimated 2,600 cubic yards of soil may be contaminated. If hydrocarbon materials were encountered during demolition or excavation activities, they could be recovered and processed in existing Refinery units for conversion into petroleum products. Alternatively, if other hazardous materials were encountered during construction activities, they could be disposed of off-site at an approved facility. Options available for off-site disposal include non-hazardous and hazardous landfills.

3. Revised Project Construction Summary

The demolition activities during construction of the revised proposed project would result in the generation of solid waste. Much of this material would be salvaged or recycled. Material that cannot be salvaged would be taken to a landfill for disposal and contribute to the ongoing reduction of available landfill volumes. It is estimated that the demolition wastes would be about 210 tons, disposed of over about a one and one-half year period. This represents a small portion (less than one percent) of the daily total solid waste received at Puente Hills and Bradley West Class III landfills (a total of 16,769 tons per day, assuming all 210 tons of wastes were disposed on in one day). The actual disposal of demolition waste is expected to be distributed throughout the first three months of the construction period. Further, a portion of the estimated 210 tons of demolition wastes is expected to be salvaged for metal content. Therefore, no significant adverse impacts are expected to the existing landfill capacity due to the proposed project.

The preparation of the site and construction related to the revised proposed project, including excavation and grading, and demolition of existing structures, has the potential to generate hazardous materials and wastes. The preparation of the site and construction of the proposed pipelines, including excavation and grading, and demolition of existing structures, has the potential to generate hazardous materials and wastes. An estimated 4,440 cubic yards of soil may be contaminated. If hazardous materials were encountered during demolition or excavation activities, it would be treated on-site or disposed of off-site at an approved facility. Options available for off-site disposal include non-hazardous and hazardous landfills. If hydrocarbons are encountered during installation of project-related equipment, they would be recovered and processed in existing Refinery units for conversion into products.

OPERATIONAL IMPACTS

The following summarizes the operational solid/hazardous waste impacts associated with the previous 2001 Final EIR, the proposed Storage Tank Farms and Marine Terminal Modifications, and the Revised Project.

Solid waste generated at the Refinery, Tank Farms, and Marine Terminal are generally from administrative offices. The proposed project is expected to result in an increase in administrative staff of eight workers at the Refinery and eight workers at the Tank Farms (four at each Tank Farm) which is not expected to substantially increase the amount of solid waste generated by the proposed project. Therefore, no significant adverse solid waste impacts are expected.

The proposed project is not expected to increase the hazardous waste generated by the Refinery processing, Tank Farm or Marine Terminal activities. The proposed project is not expected to change the refining process and only minor changes to refinery units are expected. The waste streams generated by the Refinery, Tank Farms, and Marine Terminal are not expected to be affected. Therefore, the proposed project is not expected to adversely affect the capacity of hazardous waste landfills or facilities. Therefore, the impact of the proposed project on hazardous waste facilities is expected to be less than significant.

MITIGATION MEASURES

No significant adverse impacts associated with solid/hazardous waste are expected from the proposed project so no mitigation measures are required.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

The proposed project impacts on solid/hazardous waste are less than significant so mitigation measures are not required.

H. TRANSPORTATION/TRAFFIC

SIGNIFICANCE CRITERIA

The impacts on transportation and traffic will be considered significant if any of the following criteria apply:

Peak period levels on major arterials within the vicinity of the proposed project site are disrupted to a point where intersections with a LOS of C or worse are reduced to the next lower LOS, as a result of the project for more than one month.

An intersection's volume to capacity ratio increases by 0.02 (two percent) or more when the LOS is already D, E or F for more than one month.

A major roadway is closed to all through traffic, and no alternate route is available.

There is an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system.

The demand for parking facilities is substantially increased.

Substantial alterations to current circulation or movement patterns of people and goods are induced.

Water borne, rail car or air traffic is substantially altered.

Traffic hazards to motor vehicles, bicyclists or pedestrians are substantially increased.

CONSTRUCTION IMPACTS

The following evaluates the total construction traffic impacts associated with the previous 2001 Final EIR, the proposed Storage Tank Farms and Marine Terminal Modifications, and the Revised Project. The LOS analysis was revised to include construction traffic associated with the previous 2001 EIR, as well as the construction traffic associated with the currently proposed project.

Therefore, the following discussion on construction traffic impacts includes traffic associated with the total revised CARB Phase 3 proposed project.

Construction and modification of the proposed project at the Refinery, Marine Tank Farm and Olympic Tank Farm is expected to take about 21 months. During that time, the LOS analysis assumes 350 construction workers will be commuting to the Refinery, during peak construction activities. All construction workers will be directed to the Refinery for parking since sufficient parking is available at the Refinery. Of the 350 total construction workers, about 150 construction workers will be bused to the Olympic Tank Farm and the Marine Tank Farm. Since the major portion of the construction activities are at the Olympic Tank Farm, most of the workers will be bused to the Olympic Tank Farm.

It is estimated that a maximum of 12 construction trucks will travel to the site during the peak construction day to transport the construction equipment, process equipment, and construction materials to the site. It is anticipated that project construction include eight-hour shifts per day for five days per week, Monday through Friday, with shifts running from 7:00 am to 5:30 p.m. The LOS for the construction traffic impacts did not include the a.m. peak hour because construction activities are scheduled to begin prior to the a.m. peak hour. The a.m. peak hour runs from about 7:00 to 9:00 a.m. Construction workers are expected to arrive at the site by 6:30 a.m. Therefore, the construction traffic associated with the Refinery modifications will avoid the peak hour traffic conditions minimizing the potential for traffic impacts during the morning. Construction traffic is expected to leave the site during the evening peak hour.

Table 4-24 shows the predicted proposed project LOS analysis and volume to capacity ratios due to peak construction activities (see Appendix C for the complete traffic analysis). This table indicates that four intersections show changes in the LOS due to the construction phase of the proposed project. The Wilmington Avenue/Sepulveda and Santa Fe Avenue/Anaheim Street intersections will change from LOS A to LOS A/B. The Alameda Street/Anaheim Street and the Santa Fe/Pacific Coast Highway intersections will change from LOS B to LOS B/C during the construction phase. The traffic changes at these four intersections are not considered to be significant impacts since free-flowing traffic would continue and no significance criteria are exceeded. Therefore, the proposed project impacts on traffic during the construction phase would be considered less than significant.

Any transport of heavy construction equipment or oversized Refinery equipment that will require oversized transport vehicles on state highways will require a Caltrans Transportation permit.

Construction will require contractor parking areas, equipment laydown and materials stockpiling areas. Parking for project construction will be in areas currently used for contractor parking and sufficient parking is expected to be available so no significant adverse impacts on parking are expected.

TABLE 4-24

ULTRAMAR CARB PHASE 3 REVISED PROJECT CONSTRUCTION TRAFFIC IMPACTS LEVEL OF SERVICE ANALYSIS AND VOLUME-TO-CAPACITY RATIOS

INTERSECTION	BASELINE[(1)]				IMPACTS			
	A.M LOS	Peak Hour V/C	P.M LOS	Peak Hour V/C	A.M LOS	Peak Hour V/C	P.M LOS	Peak Hour V/C
Alameda St./I-405	A	0.362	A	0.382	n/a	n/a	A	0.390
Alameda St./223rd Ramp	A	0.294	A	0.327	n/a	n/a	A	0.330
ICTF entry/I-405 Ramps/ Wardlow/223rd St.	A	0.497	A	0.549	n/a	n/a	A	0.565
Alameda St./Sepulveda	A	0.395	A	0.432	n/a	n/a	A	0.447
Alameda St./PCH	A	0.497	B	0.612	n/a	n/a	B	0.633
Alameda St./Anaheim St.	B	0.623	B	0.690	n/a	n/a	B/C	0.708
Wilmington Ave/223rd St.	E	0.924	E	0.988	n/a	n/a	E	0.997
Wilmington Ave/Sepulveda	A	0.563	A	0.595	n/a	n/a	A/B	0.601
Santa Fe/PCH	B	0.648	B	0.693	n/a	n/a	B/C	0.705
Henry Ford/Anaheim St.	A	0.513	A	0.581	n/a	n/a	A	0.591
Santa Fe/Anaheim St.	A	0.425	A	0.535	n/a	n/a	A/B	0.601
9th St/"I" St/Anaheim St.	A	0.506	A	0.505	n/a	n/a	A	0.547

Notes: (1) = based on 2000 traffic data.
V/C = Volume to capacity ratio (capacity utilization ratio)
LOS = Level of Service

Several segments of the proposed new pipelines will be placed in the right-of-way of streets and/or local cross streets. The pipelines will need to cross Anaheim Street, Pacific Coast Highway, Alameda Street, and Sepulveda Boulevard. The LOS at the intersections near the Refinery is generally A or B indicating that traffic in the vicinity of the Refinery is free-flowing. The proposed project could create significant adverse traffic impacts during construction of the pipeline as construction may be required across these busy streets.

A Traffic Control Plan will be required by the City of Los Angeles and the City of Carson as part of a franchise permit to construct the pipeline. The Traffic Control Plan must specify the permitted hours of construction (generally off-peak hours), method of safeguarding traffic flow, method of re-routing or detouring traffic if necessary, the placement of traffic control devices (including signs, flashing arrows, traffic cones and delineators, barricades, etc.) and flaggers (if needed), temporary modifications to existing signals and signal timing (if needed), and other details of the pipeline construction. The Traffic Control Plan also may require boring of the pipeline at intersections or

streets with heavy traffic. Boring would eliminate the need to trench across the streets thus eliminating the need to close a lane of traffic. The Traffic Control Plan will needed to be approved by the City of Carson and City of Los Angeles Department of Transportation. The Traffic Control Plan will help ensure that public safety will not be endangered, and inconvenience will be reduced to a minimum.

The construction phase is not expected to result in an increase or decrease in marine or rail traffic.

Based on the above, the proposed revised project is not expected to result in significant adverse transportation/traffic impacts during the construction phase.

OPERATIONAL IMPACTS

The following evaluates the total operational traffic impacts associated with the previous 2001 Final EIR, the proposed Storage Tank Farms and Marine Terminal Modifications, and the Revised Project. The LOS analysis was revised to include operational traffic associated with the previous 2001 EIR, as well as the construction traffic associated with the currently proposed project. Therefore, the following discussion on operational traffic impacts includes traffic associated with the total revised CARB Phase 3 proposed project.

The proposed project will increase the permanent number of workers at the Refinery by about eight, at the Marine Tank Farm of four, at the Olympic Tank Farm of four, and require an estimated 10 trucks per day traveling to/from the Refinery. Table 4-25 shows the projected LOS analysis and volume to capacity ratios due to the increased traffic associated with the operational phase. These ratios were calculated assuming an ambient traffic growth of one percent per year to 2003, plus project operational phase related traffic.

Table 4-25 indicates that the proposed project will not result in any changes in LOS at the local intersections during the morning or evening peak hours. The intersection of Wilmington Avenue/223rd Street currently operates at LOS E during the morning and LOS F during the evening peak hour). This intersection is located about two miles northwest of the Ultramar Refinery and is impacted by traffic from other refineries and industrial facilities located closer to the intersection. Further, traffic from the proposed project is not expected to adversely affect the Wilmington Avenue/223rd Street intersection, i.e., the project does not contribute to traffic at this intersection. Free-flowing traffic would continue at all intersections except the intersection of Wilmington Avenue/223rd Street, which is already at LOS E and F. Therefore, the proposed project impacts on traffic during the operational phase would be considered less than significant.

The proposed project will increase the rail traffic to/from a third party terminal associated with the delivery of ethanol. The proposed project is expected to require an additional nine railroad tank cars per day. It is expected that the additional railcars will be delivered on each current trip so the number of railroad trips is not expected to increase.

TABLE 4-25

ULTRAMAR CARB PHASE 3 REVISED PROJECT
OPERATIONAL TRAFFIC IMPACTS
LEVEL OF SERVICE ANALYSIS AND VOLUME-TO-CAPACITY RATIOS

INTERSECTION	BASELINE[1]				IMPACTS			
	A.M LOS	Peak Hour V/C	P.M LOS	Peak Hour V/C	A.M LOS	Peak Hour V/C	P.M LOS	Peak Hour V/C
Alameda St./I-405	A	0.372	A	0.392	A	0.372	A	0.392
Alameda St./223rd Ramp	A	0.301	A	0.336	A	0.301	A	0.336
ICTF entry/I-405 Ramps/ Wardlow/223rd St.	A	0.510	A	0.564	A	0.510	A	0.564
Alameda St./Sepulveda	A	0.405	A	0.444	A	0.406	A	0.444
Alameda St./PCH	A	0.511	B	0.634	A	0.512	B	0.632
Alameda St./Anaheim St.	B	0.640	C	0.710	B	0.640	C	0.710
Wilmington Ave/223rd St.	E	0.950	F	1.016	E	0.950	F	1.016
Wilmington Ave/Sepulveda	A	0.579	B	0.612	A	0.579	B	0.612
Santa Fe/PCH	B	0.666	C	0.712	B	0.667	C	0.713
Henry Ford/Anaheim St.	A	0.527	A	0.597	A	0.529	A	0.598
Santa Fe/Anaheim St.	A	0.436	A	0.550	A	0.436	A	0.552
9th St/"I" St/Anaheim St.	A	0.519	A	0.519	A	0.519	A	0.520

Notes: (1) = based on projected year 2003 traffic data, which assumed one percent growth per year.
V/C = Volume to capacity ratio (capacity utilization ratio)
LOS = Level of Service

The proposed project is expected to increase the number of tanker calls to the Port by about 65 ships per year. This represents less than one percent of the estimated 7,000 ships that visit the port each year. Therefore, no significant adverse impact to the Long Beach/Los Angeles Harbor system is expected.

The proposed project impacts on transportation/traffic during project operation would be considered less than significant.

MITIGATION MEASURES

No significant adverse impacts are identified for transportation/traffic during construction or operation for the proposed project so that no mitigation measures are required.

LEVEL OF SIGNIFICANCE AFTER MITIGATION

The proposed project impacts on transportation/traffic would be considered less than significant prior to mitigation.

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