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.

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. 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.

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 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

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 these 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. Significance is determined as follows. 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).

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 Ultramar Refinery is a RECLAIM facility for both NOx and SOx, therefore, the significance thresholds for NOx and SOx are calculated in Table 4-2.

TABLE 4-2

RECLAIM CEQA SIGNIFICANCE THRESHOLDS FOR ULTRAMAR

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 on-site (i.e., 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

Construction activities associated with the proposed project would result in emissions of CO, VOCs, NOx, SOx, and PM10. Construction activities will consist of completing projects necessary for producing reformulated fuels and adding new facilities to improve the operational efficiency of the Refinery. 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

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 4-3. The peak emissions for CO, VOC and NOx are estimated to occur during month 11 of the construction period. The peak emissions for SOx and PM10 are estimated to occur during months 1-3 of the construction period.* Overall construction emissions are summarized in Table 4-3. Detailed construction emissions calculations are provided in Appendix B.

Construction Equipment

On-site construction equipment will be a source of combustion emissions. Construction equipment may include; backhoes, compactors, drum rollers, trench machines, air compressors, forklifts, generators, manlifts, welding machines, cranes, and pavers. Most 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 4-3.

TABLE 4-3

ULTRAMAR CARB PHASE 3 PROPOSED PROJECT
PEAK DAY CONSTRUCTION EMISSIONS
(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(2)	***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.
(2) *The peak emissions for CO, VOC and NOx are estimated to occur during month 11 of the construction period. The peak emissions for SOx and PM10 are estimated to occur during months 1-3 of the construction period.*

Equipment Delivery/On-Site Travel

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 day (SCAQMD 1993, Table A9-5-D). Emission factors, their sources, and other assumptions used to estimate emissions from trucks are provided in Appendix B. Estimated emissions for light-duty trucks are included in Table 4-3.

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 *three* trucks traveling to the site each weekday. 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. These are expected to remain onsite during the construction period and are assumed to travel four miles per day. The remaining three heavy diesel trucks will be used for delivery or removal of materials and are assumed to travel 50 miles per day. Emission factors, their sources, and other assumptions used to estimate emissions from trucks are provided in Appendix B. Estimated emissions for heavy trucks are included in Table 4-3.

Construction Workers Commuting

Construction emissions also include emissions from construction worker vehicles traveling to and from the work site. Emission calculations were estimated assuming a maximum of 350 workers traveling to the site each weekday. Each 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 4-3. Emissions from employee vehicles were calculated using the EMFAC2000 emission factors developed by CARB. Estimated exhaust emissions for workers commuting are included in Table 4-3.

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. Fugitive dust suppression, often using water, is a standard operating practice and is one method of complying with SCAQMD Rule 403. Estimated controlled PM10 emissions from construction activities for fugitive dust sources are *78 lbs/day*. The detailed emission calculations are provided in Appendix B.

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 *206* 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 metho*dology. The estimated PM10 emissions from trucks and passenger autos for fugitive dust on paved and unpaved roads is *12.1* lbs/day.

Architectural Coatings

There is the potential for emissions from the use of architectural coatings on new structures, e.g., new pentane spheres. A maximum of 50 gallons per day is expected to be used at the Refinery.

Assuming that the VOC content of the coating complies with SCAQMD Rule 1113 (3.5 lbs/gallon), a maximum of 175 lbs/day of VOC emissions would be expected from the use of architectural coatings.

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 are summarized in Table 4-3, together with the SCAQMD's daily construction threshold levels. The construction phase of the Ultramar proposed project will exceed the significance thresholds for VOC, and NOx. Therefore, the air quality impacts associated with construction activities are considered significant. The significance thresholds for *CO*, SOx and PM10 are not expected to be exceeded during the construction phase, and the air quality impacts of *CO*, SOx and PM10 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). Mitigation measures for construction emissions are identified on page 4-18.

OPERATIONAL EMISSION IMPACTS

Modifications associated with the Ultramar Refinery CARB Phase 3 Proposed Project will add equipment to the Refinery that will generate additional emissions. The proposed project also will generate additional traffic and emissions related to mobile sources. Emissions are expected from the following activities:

Fugitive emissions from process equipment
Loading/unloading emissions
On-road vehicles/trucks associated with workers and material transport

The proposed project operational emissions are evaluated in this section. More detailed emission calculations are provided in Appendix B.

Stationary Source Emissions

Direct operational emission sources are stationary sources located at the Refinery and generally subject to regulation. The emissions associated with the proposed project modifications are shown in Table 4-4.

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 to existing units including the FCCU, Light Ends Recovery/NHT, Olefin Treater, Fuel Gas Mercaptan Treater and propane/propylene storage vessels. 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 to use 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.

TABLE 4-4

ULTRAMAR REFINERY
CARB PHASE 3 PROPOSED PROJECT
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 proposed project includes new storage vessels 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 vessels to store propane/propylene. Emission increases associated with the changes to the product storage at the Refinery were calculated using the U.S. EPA TANKS 4.07 model and are shown in Table 4-4.

Additional documentation of the procedures used to calculate the emissions estimates is provided in Appendix B. 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.

Process Pumps: Sealless pumps will be used, to the extent feasible, for BACT for pumps in gas or light hydrocarbon service. Sealless pumps will be evaluated for use as BACT in New Source Performance Standards (NSPS) Subpart GGG and SCAQMD Rule 1173 services and determined if they are suitable given the design and safety considerations of each unit. 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.

Process Valves: Leakless 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 these 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
- Valves greater than eight inches

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. 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.

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.

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.

Emission offsets are *generally* required for new and modified emission sources *(with certain exemptions)* by SCAQMD Regulation XIII and/or Regulation XX, 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. The reformulated fuels projects at the Refinery are required to comply with state reformulated fuels requirements. Therefore, emission offsets are not required for the reformulated fuels projects identified in this EIR.

Indirect Emissions

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. The potential indirect emissions associated with the project are discussed below.

Truck Trips: Ultramar's proposed project is expected to result in increases in the routine delivery to or transport from the Refinery of additional materials by truck, including trucks used to transport propane/propylene and ethanol. A maximum of about 10 additional trucks per day are estimated to be associated with the transport of propane/propylene from the Refinery. About 30 trucks per day are expected to transport ethanol associated with the proposed project operations. The emission increases associated with the increased truck traffic is shown in Table 4-4.

Worker Travel: The operation of the proposed project is expected to require eight additional workers at the Refinery. Therefore, the proposed project is expected to increase the worker vehicles traveling to/from the Refinery on a daily basis. The emission increases associated with the increased worker vehicles is shown in Table 4-4.

Railcars: Ethanol is expected to be transported to the Wilmington area via railcars, resulting in the delivery of nine additional railroad tank cars per day. The emission increases associated with the increased railcars are shown in Table 4-4.

Marine Vessels: The proposed project is expected to result in a decrease of about 32 vessels per year transporting MTBE and an increase in marine vessels of about 23 vessels per year of high octane blending components. Therefore, an overall decrease of about nine vessels per year is expected. The emission decreases associated with the decreased marine vessels are shown in Table 4-5 and detailed emission calculations are provided in Appendix B. *These emission reductions have not been included in the summary of the proposed project impacts because the project will only result in an annual reduction in emissions and not a daily reduction in emissions.*

TABLE 4-5

ULTRAMAR REFINERY
CARB PHASE 3 PROPOSED PROJECT
MARINE VESSEL EMISSION REDUCTIONS

SOURCE	CO	VOC	NOx	SOx	PM10
Marine Vessel Emission Reductions:					
Total Annual Emission Change (lbs/yr)	-1,670	-679	-18,063	-23,176	-3,193

Operational Emission Summary

Operation emissions are summarized in Table 4-6, 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. The operation of the proposed project will exceed the SCAQMD significance threshold for indirect emissions of NOx but not for SOx. The operation of the proposed project will exceed the SCAQMD significance threshold for VOC. The proposed project will not exceed the significance thresholds for CO and PM10. Therefore, the air quality impacts associated with operational emissions from the proposed project are significant and mitigation measures are required.

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. Since the traffic analyses herein (see Section H, Transportation/Circulation) indicates that there are no significant

impacts at local intersections during the project operation, no significant increase in CO is expected such that a hot spot or high concentration of CO would be created.

TABLE 4-6

UlLTRAMAR REFINERY
STATIONARY SOURCE OPERATIONAL EMISSIONS SUMMARY

(lbs/day)

	CO	VOC	NOx	SOx	PM10
Background Data:					
2002 RECLAIM Allocation(1)	--	--	1,315	1,171	--
Significance Determination for Direct Sources of RECLAIM Pollutants:					
Project + 2002 Allocation	--	--	1,315	1,171	--
Significance Threshold for RECLAIM Pollutants(1)	--	--	2,383	2,918	--
SIGNIFICANT?	**--**	**--**	**NO**	**NO**	**--**
Significance Determination for Indirect Sources of RECLAIM Pollutants:					
Project Emissions	--	--	*213*	5	--
Significance Threshold	-	-	55	150	-
SIGNIFICANT?	**-**	**-**	**YES**	**NO**	**-**
Significance Determination for All Project Emissions of Non-RECLAIM Pollutants:					
Project Emissions	*325*	*73*	-	-	*67*
Significance Threshold	550	55	-	-	150
SIGNIFICANT	**NO**	**YES**	**-**	**-**	**NO**

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

Air Quality Management Plan

Existing emissions from the industrial facilities are included in the Air Quality Management Plan (AQMP). The SCAQMD identifies air 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). New emission sources associated with the proposed project are required to comply with the SCAQMD's New Source Review regulations that include the use of BACT and the requirement that all new emissions be offset. Pursuant to SCAQMD Rule 1304(c)(4), offsets are not required for projects required for compliance with state and federal regulations if these projects are being undertaken to comply with air pollution control laws, rules, regulations or orders, e.g., the reformulated fuels projects. The control strategies in the AQMP are based on projections from the local general plans from various cities in southern California (including the City of Los Angeles). Projects that are consistent with the local General Plans are consistent with the air quality related regional plans. Therefore, 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.

Odors

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. In addition, the use of BACT (e.g., leakless valves) also reduces the emissions of compounds that could produce odor impacts. Potential odor impacts from the proposed project are not expected to be significant.

Toxic Air Contaminants

A health risk assessment (HRA) was performed to determine if emissions of toxic air contaminants generated by the proposed project would exceed the SCAQMD thresholds of significance for cancer risk and is included as Volume II to this EIR. The results of the HRA will be used to evaluate the impacts of toxic air contaminants from the proposed project.

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 4-7. A total of 72 toxic air contaminants were evaluated for inclusion in the HRA (see Table 4-7). 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. 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 4-7

MAXIMUM 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	3.77E-03	3.30E+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	1.73E-04	1.52E+00
Hexane	110-54-3	4.61E-02	4.04E+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	-2.51E-04	-2.20E+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	2.34E-03	2.05E+01
Xylenes	1-21-0	3.49E-04	3.05E+00

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).

Of the 39 toxic air contaminants included in the HRA, only 17 will be emitted by the proposed project. 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 proposed project are listed in Table 4-7.

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. Three new sources were added to the assessment, the proposed truck loading rack, propylene bullets, and Mercaptan Treater. All other sources remained the same. See Volume II of this EIR for more detailed information on the HRA.

Proposed Project HRA Results - Carcinogenic Health Impacts

Maximum Exposed Individual Worker: The cancer risk estimates are shown in Table 4-8. 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 1.5×10^{-7} or 0.15 in a million. 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 1.8×10^{-8} or 0.018 per million (see Table 4-8). 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 1.7×10^{-5} and 1.6×10^{-4} for the residential and occupational populations, respectively. (See Table 6 in Volume II for further details.)

Sensitive Receptors: The maximum cancer risk from the proposed project alone to a sensitive receptor was estimated to be 0.016×10^{-6} or approximately 0.02 per million at the Edison School. This risk estimate is overly conservative as it is based on a 70-year continuous exposure period.

Figure 4-1 goes here

Proposed Project HRA Results - Non-Carcinogenic Health Impacts

Chronic Hazard Index: The highest chronic hazard index for the proposed project is estimated to be 6.4×10^{-3} for the respiratory tract. The maximum chronic hazard index location is the same as the proposed project MEIW.

TABLE 4-8

SUMMARY OF PROPOSED PROJECT CANCER RISK

EXPOSURE PATHWAY	Proposed Project	
	Maximum Exposed Individual Resident	Maximum Exposed Individual Worker
Inhalation	1.79E-08	1.51E-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	**1.79E-08**	**1.51E-07**

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 maximum acute hazard index location is the same as the proposed project MEIW.

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

MITIGATION MEASURES

Mitigation measures are required to minimize the significant air quality impacts associated with the construction phase of the proposed project. Mitigation measures focus on the construction emissions of VOC and NOx.

Construction Mitigation Measures

Mitigation measures to reduce emissions associated with Refinery construction activities are necessary primarily to control emissions from heavy construction equipment and worker travel. The following mitigation measures are required:

On-Road Mobile Sources:

A-1 Develop a Construction Emission Management Plan for the proposed project. The Plan shall include measures to minimize air 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 site.*

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 to avoid emissions from gas or diesel welders in portions of the Refinery where electricity is available.

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

A-7 Prior to use in 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 *alternative fuels,* selective catalytic reduction, oxidation catalysts, air enhancement technologies, etc., will be evaluated. These technologies will be required if they are commercially available and can feasibly be retrofitted onto construction equipment.

A-8 Use CARB certified construction equipment for all construction equipment that requires CARB certification.

A-9 Suspend use of all construction equipment during first stage smog alerts.

A-10 The engine size of construction equipment shall be the minimum practical size.

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

A-11 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 is required by 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.

On-Site VOC Emissions:

A-12 Ultramar shall investigate the feasibility of using coatings during the construction period with a VOC content below 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; 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 and NOx emissions so mitigation measures are required. The major source of VOC emissions are from fugitive emission sources, including pumps, valves, and flanges. The major sources of NOx emissions are railcar emissions associated with the transport of ethanol into the Basin and from trucks used to transport ethanol to various terminals within the Basin.

The proposed project requires the installation of fugitive components (e.g., valves, flanges, and pumps) which is a large source of VOC emissions from the proposed project. VOC emissions from fugitive components are controlled through the use of BACT. 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 modified emission sources. In addition, the fugitive components will be required to be included in an inspection and maintenance program to ensure that the equipment is properly maintained. Therefore, additional VOC emission reductions (through mitigation

measures) from fugitive components associated with the proposed project equipment are not feasible.

The major portion of the emissions from the proposed project is from indirect emission sources, including trucks, railcars, and marine vessels, primarily used to transport ethanol. The NOx emissions from railcars and trucks are expected to be significant. In accordance with the Clean Air Act, emissions from trucks are regulated by the U.S. EPA and the CARB. The SCAQMD has very limited authority over truck emissions. The U.S. EPA and the CARB are currently evaluating the regulation of on-road diesel engines and are expected to control emissions from trucks in the near future. The *CARB* and U.S. EPA control emissions from railcars.

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 to 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. *The Burlington Northern and Santa Fe Railway Company and Union Pacific Railroad Company railroad companies have voluntarily entered into an agreement with CARB, and U.S. EPA to accelerate the introduction and use of cleaner, lower-emitting locomotives in the South Coast Air Basin. This agreement is expected to have substantial emission benefits over and above those estimated by the U.S. EPA for compliance with their emission standards for locomotive engine emissions. In addition, the agreement is expected to have operational and financial impacts on the participating railroads over and above the cost of compliance with the U.S. EPA's proposed emission standards for new and remanufactured locomotive engines.*

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 VOCs and NOx are expected to remain significant following mitigation (see Table 4-9). The construction emissions associated with CO, 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.

Operation

Operation emissions associated with the proposed project are expected to remain significant for VOC and NOx emissions, while emissions of CO, SOx, and PM10 are less than significant prior to mitigation. Additionally, long-term air quality 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.

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.

TABLE 4-9

PEAK DAY CONSTRUCTION EMISSIONS FOLLOWING MITIGATION (lbs/day)

ACTIVITY	CO	VOC	NOx	SOx	PM10
Unmitigated Emissions[1]	*447*	*288*	*240*	*40*	*106*
SCAQMD Threshold Level	550	75	100	150	150
SIGNIFICANT?	***NO***	**YES**	**YES**	**NO**	**NO**
Amount Needed to Reduce Emissions Below Significance Level	-	*213*	*140*	-	-
MITIGATION MEASURES[2]					
Use Electric Welders	*-6*	*-1*	*-9*	*-1*	*-1*
Water Active Construction Sites[3]	-	-	-	-	*-27*
Maintain Engines in Proper Tune	*-15*	*-5*	*-11*	*-2*	*-1*
Total Emission Reductions	*-21*	*-6*	*-20*	*-3*	*-29*
Total Emissions After Mitigation	*426*	*282*	*220*	*37*	*77*
SIGNIFICANT AFTER MITIGATION?	***NO***	**YES**	**YES**	**NO**	**NO**

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

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

No significant topographic changes are expected to the project site. The Refinery and the location of the pipeline routes have 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. No substantial topographic changes are proposed for the Refinery. The pipeline route also is essentially flat. Grading will be required 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 part of the proposed project, standard construction practices will be employed to minimize water erosion. Construction sites will be watered twice 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 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 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 project site, so no significant project impacts are expected.

Previous construction activities have been conducted at the Refinery and contaminated soils have been uncovered. Given the heavily industrialized nature of the site, the fact that the site overlies the Wilmington Oil Field and that refining activities have been conducted at the site since the 1970s, contaminated soils may be uncovered during construction activities. It is not uncommon for a refinery and other types of industrial properties to contain contaminated soils and ground water. Currently, there is no evidence that soil contamination is located within the areas of the Refinery proposed for new construction.

Construction of the proposed pipeline also 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. Assuming that about 10 percent of the soil from grading is contaminated, an estimated *1,837* 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.

There are plugged and abandoned wells located within the Refinery boundaries. These plugged and abandoned wells may be impacted during project construction. Sufficient data are not available to determine the precise location of construction activities with respect to the 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.

Operational Impacts

No faults or fault-related features are known to exist within the confines of the Refinery or along the proposed pipeline route. The project sites 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 Refinery facilities are expected from seismically induced ground rupture. No known damage has ever occurred to the Refinery as a result of previous earthquakes in Southern California over the life of the facility.

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 Refinery 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. 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 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 can conduct 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 represents 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 for review. Ultramar must receive approval of all building plans and building permits to assure compliance with the latest Building Code adopted by the City prior to commencing construction activities.

The proposed pipeline 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.

The Refinery and proposed pipeline route 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 considers liquefaction potential and establishes 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 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 or along the pipeline route 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

Process Units

A hazard analysis was conducted for the proposed new and modified units (see Table 4-10). The details of the analysis are included in Volume III.

The hazard methodology included a review of the hazard scenarios for the existing units that are a part of the proposed project and for the units following the proposed modifications.

Hazard Identification

The potential hazards associated with Ultramar's existing Refinery and those associated with the proposed project are a function of the materials being processed, processing systems, procedures used for operating and maintaining the Refinery, and hazard detection and mitigation systems. Common hazards include toxic gas clouds (gas with hydrogen sulfide, sulfuric acid, etc.), torch fires (gas and liquefied gas releases), flash fires (liquefied gas releases), pool fires (flammable/combustible liquid releases), vapor cloud explosions (gas and liquefied gas releases), and boiling liquid expanding vapor explosions (BLEVEs) (major failures of liquefied gas storage tanks). The hazards specifically found at the Refinery, related to those units that are part of the proposed project are shown in Table 3-10.

TABLE 4-10

PROCESS UNITS AND FACILITIES INVOLVED IN THE PROPOSED PROJECT

Designation	Description	Existing/New	Modified
Process Units			
FCCU	Fluid Catalytic Cracking Unit	Existing	Yes
GCU/SHU	Gas Concentration/Selective Hydrogenation Unit	Existing	Yes
NHT	Naphtha Hydrotreating Unit	Existing	Yes
OLEFIN	Olefin Treater Unit	Existing	Yes
LER1	Light Ends Recovery Unit	Existing	Yes
LER2	Light Ends Recovery Unit	Existing	Yes
MEROX	Merichem Fuel Gas Unit	Existing	Yes
	Merichem Fuel Gas Unit	New	--
Storage			
TANK	Atmospheric Storage	Existing	Yes
PROPANE/ PROPYLENE	Pressurized Storage	Existing	No
	Pressurized Storage	New	--
Product Transfer			
TT	Tank Trucks and Loading Racks	Existing	No
	Tank Trucks and Loading Racks	New	--
PIPE	Pipelines	Existing	No
	Pipelines	New	--

In order to compare the hazards of toxic gases, fires and explosions on humans, equivalent levels of hazards must be defined. The endpoint hazard criterion defined in this study corresponds to a hazard level that might cause an injury. Table 4-11 provides the endpoint hazard criterion used in this study. The endpoint hazard criteria were used in the modeling to determine the extent of impacts due to an upset condition.

TABLE 4-11

ENDPOINT CRITERIA FOR CONSEQUENCE ANALYSIS

Hazard Type	Injury Threshold		
	Exposure Duration	Hazard Level	Reference
Hydrogen Sulfide Inhalation	Up to 60 min.	30 ppm	ERPG-2(1)
Radiant Heat Exposure	40 sec.	1,600 Btu/(hr-ft^2)	40 CFR Part 68
Explosion Overpressure	Instantaneous	1.0 psig	40 CFR Part 68
Flash fires (fireballs)	40 sec.	1,600 Btu/(hr-ft^2)	40 CFR Part 68
Flash fires (flammable vapor clouds)	Instantaneous	LFL	40 CFR Part 68

(1) 40 CFR Part 68 – U.S. EPA RMP endpoints.

Methodology

A hazard analysis for each unit that is part of the proposed project was completed in order to define the maximum credible hazard scenario. The hazard analysis evaluated the existing hazards associated with the existing Refinery units and compared those hazards to the hazards following modification to the Refinery unit. The hazards associated with new equipment were also evaluated. In addition, hazard analyses were completed for new and modified storage tanks and transfer operations. The hazard analysis was developed in seven increments that include:

- Initial review of available documentation
- Detailed review of process flow diagrams
- Review of process material balances
- Review of available safety studies
- Development of hazard scenarios
- Screening of hazard scenarios via hazards analysis
- Final selection of hazards cases

After the potential hazard scenarios were determined, they were screened to determine which scenario could adversely affect any off-site areas (i.e., areas outside of the Refinery boundaries). The scenarios resulting in potential off-site consequences were also identified. The maximum potential consequences were then used to identify the number of people that could possible be affected in the event of an upset.

The procedures identified above were applied to the existing units and processes to identify the existing hazard conditions. In addition, the same procedures were applied to all unit modifications and new facilities that are a part of the proposed project.

Modeling

The hazard zones resulting from the "worst-case" releases are evaluated to determine the process areas that could release material with a potential for public (off-site) impacts. When performing site-specific consequence analysis studies, the ability to accurately model the release, dilution, and dispersion for gases and aerosols is important if an accurate assessment of potential public exposure to a hazard is to be determined. Therefore, a set of models was used to calculate release conditions, initial dilution of the vapor, and the subsequent dispersion of the vapor introduced into the atmosphere. The models contain algorithms that account for thermodynamics, mixture, behavior, transient release rates, gas cloud density relative to air, initial velocity of the release gas, and heat transfer effects from the surrounding atmosphere and the substrate. See Volume III for details on the risk of upset modeling and for further discussions on the model algorithms.

Meteorological data from the Long Beach Airport was used to determine the "worst-case" wind speed/stability conditions at the Ultramar site.

Results

With the completion of the hazard identification and consequence modeling calculations for both the existing and proposed Refinery configurations, the release which generates the largest hazard zone can be defined. Table 4-12 lists the potential releases as a result of the proposed project and the results of the modeling 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 three units have 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 H2S 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 cloud 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) 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) 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 are true:

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

TABLE 4-12

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 4-12 (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*	-

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

This sequence of events is not likely and 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 is not affected by the above considerations, is also rare. For all hazard types, the potentially affected areas surrounding the facility are industrial. Nonetheless, the potential hazard impacts associated with the proposed project are considered to be significant because there is the potential for a few individuals to be exposed to the potential hazards.

Transportation of Hazardous Materials

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. For more details on the transportation of hazardous materials, see Volume III of this EIR.

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 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 delivery 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 4-13 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.

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.

TABLE 4-13

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} (9.3×10^{-7} ppb^{-1})

Source: OEHHA, 2000.

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.

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 23 per year will be offset by a decrease in MTBE delivered by about 32 vessels per year. Therefore, no increase in marine vessels visits is expected at the port.

The proposed project would increase the delivery of high octane blending components, although the proposed project is expected to result in an overall reduction in marine vessels. Alkylate and isooctane are currently shipped and stored at local marine terminals and the proposed project will only slightly increase the amount of high octane blending components shipped to the ports. 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.

Propane/Propylene

The project will increase the import and export of propane/propylene at the Refinery. It is estimated that up to 10 trucks of propane/propylene could be transported from the Refinery to other end users as part of the proposed project. The magnitude of potential impacts associated with propane/propylene transport would be unchanged from the existing setting as a result of the reformulated fuels project because the size, amount of propane/propylene per truck, construction of the transport vessel, and the transport route will not be changed. The distance traveled by all propane/propylene trucks per day was estimated to be about 500 miles per day. The estimated accidental release rate for all ethanol truck delivery is about 0.05 accidents per year or about one accident in 20 years.

Propane/propylene are not acutely hazardous materials and the hazards related to the transport of these materials are expected to be less than significant. Propane/propylene are currently shipped and stored at the Refinery. Therefore, no new hazards will be introduced to the area.

Pipeline Hazards

There is the potential for leakage or rupture when operating a pipeline system. The impacts associated with a pipeline leak or rupture would generally be contamination of the local soils. The major causes of leakage or rupture include: (1) corrosion; (2) third party excavation; (3) damage by a seismic event; and (4) operator error. New pipelines are less likely to leak or rupture than old pipelines (CSFM,1993). Approximately *11* miles of new pipelines will be installed. A leak or rupture from the pipeline would be expected to result in the contamination of soils and or ground water, in the event that the pipeline leak was not detected. Leak detection measures are required as part of new pipelines so that the potential for a leak to go undetected is minimal. In the event of a leak, there is little potential for exposure so the hazard impacts related to a spill are expected to be

less than significant. Based on the spill probabilities for new pipelines identified in Table 3-13, there is a 0.0007 per mile per year probability of a pipeline leak and a 0.0003 per mile per year probability of a pipeline rupture. Therefore, the probability of a leak in the pipelines is about 0.0077 per year or about one leak every 130 years. The probability of a rupture in the new pipelines is about 0.0033 per year or about one rupture every 303 years. The potential pipeline hazards are expected to be less than significant.

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 Refinery 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 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 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. Therefore, the rupture of a tank would be collected within the containment system and pumped to an appropriate leakless tank for storage. A seven-foot high wall has been constructed between the Refinery and the Dominguez Channel to provide a physical barrier between the Refinery and the Channel.

Spills at the facility would generally be collected within containment facilities. Large spills outside of containment areas 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 impacts are considered to be less than significant.

MITIGATION MEASURES

The proposed project could result in significant impacts associated with "worst-case" hazards in the Naphtha Hydrotreater, Light Ends Recovery Unit No.2 and the new propane/propylene storage bullets. Therefore, mitigation measures are required. There are a number of rules and regulations that Ultramar has been or must comply with that serve to minimize the potential 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:

- 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 Refinery.

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. 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

The potential for hydrology and water quality impacts associated with the construction of the proposed project is expected to be minimal. Additional water will be required for pressure testing the new storage vessels and pipelines, 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 would be required during grading activities which are expected to last a maximum of about two weeks. Additional water demand will be required to pressure test the new storage vessels and pipelines. The pressure test is required to assure that the tanks and lines are appropriately sealed so that the Refinery 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. Therefore, 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 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 those facilities are discharged to the municipal sewer. Sanitary wastes will be minimal and would not create a significant impact to existing sanitary sewer systems.

Storm water runoff from the construction areas, within the confines of the existing Refinery, will be collected and treated by the existing Refinery's storm water and/or wastewater treatment system. Storm water and wastewater discharges are discharged under the limitations of industrial wastewater discharge permits and the NPDES permit. Storm water discharges during the construction period are expected to be approximately the same as the existing discharges; therefore, no significant impacts are expected from storm water discharges during construction.

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.

If unexpected heavy precipitation is encountered during trench excavation, some washing away of earth could occur which would increase turbidity in the nearest storm drain outfall. In the event that contaminated soil is encountered, the potential exists that runoff of contaminated water due to rain could occur. In the event that rain occurs while contaminated soil is present, Ultramar will have vacuum trucks available for trench dewatering to prevent potentially contaminated water from reaching the public storm drain system or the Dominguez Channel. Ultramar will also obtain the necessary permits from the RWQCB and comply with all relevant storm water quality management

programs in the event that contaminated water is encountered during pipeline construction. The potential for rain water to carry excavated soil away will be minimized by avoiding placement of excavated soil in the path of surface water flow, and by minimizing the time that the trench is left open.

OPERATIONAL IMPACTS

Groundwater: The proposed project is not expected to significantly adversely affect the quantity or quality of ground water in the area. 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. 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. 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. 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.

The proposed project will change the service on some storage tanks. Storage tanks at the Refinery will no longer store MTBE and MTBE will no longer be blended into gasoline. The removal of MTBE from gasoline is expected to provide environmental benefits by reducing the potential impacts to ground water contamination in the event of a gasoline leak (CARB, 1999). The California Air Resources Board has determined that removing MTBE from gasoline will provide an environmental benefit since leaks from storage tanks (primarily underground storage tanks) or pipelines (CARB, 1999) have caused persistent ground water contamination with MTBE. MTBE is capable of traveling through soil rapidly, is very water soluble, and is much more resistant to biodegradation than other components of gasoline (e.g., benzene, xylene, toluene and ethyl benzene). MTBE that enters ground water migrates at about the same velocity as the ground water itself. As a result, MTBE travels farther than other gasoline constituents. Therefore, gasoline releases containing MTBE can be more difficult and costly to remediate than gasoline releases that do not contain MTBE. MTBE has objectionable taste and odor, which render drinking water unpalatable at low concentrations. MTBE's breakdown product, tertiary butyl alcohol, has similar objectionable noxious properties.

Ethanol is the oxygenate that will be substituted for MTBE. Ethanol is highly soluble in water. However, ethanol and its oxidation products such as acetaldehyde are toxic only at very high levels and are also very rapidly biodegraded. Consequently, ethanol is not expected to present major long-term ground water contamination problems (OEHHA, 2000). Ethanol's ability to biodegrade does present another potential issue of concern. Laboratory data and hypothetical modeling indicate that based on physical, chemical, and biological properties, ethanol will likely preferentially biodegrade in ground water compared with other gasoline components. As a result, the levels of other gasoline components in water may decline more slowly and the gasoline plumes may extend further than they would have without ethanol present. However, the gasoline components do not migrate as quickly as MTBE. Therefore, even with the presence of ethanol, gasoline plumes would not be expected to travel as far as MTBE plumes.

Ethanol biodegrades more quickly than MTBE and appears less likely to contaminate drinking water as often as MTBE, or at the concentrations of MTBE. The U.S. EPA does not expect the use of ethanol as a fuel additive to present the same magnitude of risk to drinking water supplies as MTBE. MTBE has a half-life of approximately 1.6 to 1.9 years. By comparison, the reported half-life of ethanol in surface waters was reported to be 6.5 to 26 hours. Reported half-lives for ethanol biodegradation under anaerobic conditions range from 1 to 4.3 days. As a result, it is unlikely that ethanol would affect ground water as often as MTBE or at the concentrations of MTBE (OEHHA, 2000).

Ground water is not expected to be affected by the installation of the proposed new pipelines because the pipelines do not require excavation into or below the water table. The depth of this pipeline will be about four feet below grade. Trench excavation is not expected to reach the existing water table and, therefore, existing ground water and aquifers should not be affected. The is always the potential for leakage or rupture when operating a pipeline system. The impacts associated with a pipeline leak or rupture would generally be contamination of the local soils. The major causes of leakage or rupture include: (1) corrosion; (2) third party excavation; (3) damage by a seismic event; and (4) operator error. New pipelines are less likely to leak or rupture than old pipelines (CSFM,1993). A leak or rupture from the pipeline would be expected to result in the contamination of soils and or ground water, in the event that the pipeline leak was not detected. Leak detection measures are required as part of new pipelines so that the potential for a leak to go undetected is minimal. The ground water in the area is not used for drinking water purposes due to seawater intrusion. Therefore, the potential impacts on ground water due to a leak is expected to be less than significant.

Surface/Storm Water Runoff: The process unit areas of the Refinery will be paved or otherwise impervious. The proposed project is 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 is expected and it should not change Ultramar's ability to comply with the pretreatment standards in its LACSD permit.

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 refinery structures (e.g., vessels). Storm water 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 impacts are expected to result from storm water runoff associated with operation of the proposed project.

Water Demand: The proposed project is not expected to require any additional water for operation. The NOP indicated that there would be an increase in water demand associated with the proposed project. However, the proposed project has been revised since the release of the NOP

such that 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.

Wastewater: The proposed project is not expected to result in an increase in wastewater discharged from the Refinery. The NOP indicated that there would be an increase in wastewater discharge associated with the proposed project. However, the proposed project has been revised since the release of the NOP such that there are no new units that would generate additional wastewater discharge. The proposed project is not expected to generate additional wastewater and no changes are expected to be required to the LACSD permit. The LACSD has indicated that its system could accommodate peak flows up to 800 gpm from the Refinery (see Appendix A). The wastewater discharge is not expected to exceed the maximum allowable wastewater flow or the wastewater quality requirements of the LACSD. Therefore, the proposed project impacts on wastewater are considered to be less than significant.

Spill Control and Containment: The Ultramar Refinery has a Spill Prevention, Control and Countermeasure (SPCC) Plan, as required by 40 CFR Part 112. This plan establishes the management systems to deal with potential releases at the Refinery. The purpose of this plan 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 the Refinery. The SPCC plan provides 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, spill notification, and other measures. This plan must be amended within six months of the completion of project construction to include the new facilities.

Primary spill prevention methods implemented at the Refinery 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 pipeline 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 units which should minimize the potential impacts in the event of a spill.

MITIGATION MEASURES

No significant impacts on hydrology/water quality have been identified so that 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

The proposed modifications to the Refinery 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 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 impacts with respect to altering the land use or changing the intensity of the land use.

The proposed project will require the issuance of a Coastal Development Permit 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 of the Ultramar Refinery in the process of issuing 11 coastal development permits and five de minimis waivers. For each permit, the Commission found the proposed Refinery development to be consistent with the goals and policies of the California Coastal Act. The proposed project will be consistent with similar actions taken by the California Coastal Commission. 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 the goals and policies of the California Coastal Act and is not expected to have significant impacts on coastal resources.

The proposed pipelines are expected to comply with the land use designations along the routes. The proposed pipeline route is located in industrial areas which are zoned M3-1 within the City of Los Angeles and MH in the City of Carson. The M3-1 and MH designation allows for the full range of industrial activities, including operation of pipelines. The proposed pipeline route is located in an area that is predominately used for petroleum refining and storage and would run adjacent to the Equilon refinery, Alameda Street, and adjacent to or within the Tosco and ARCO refineries. The route would avoid sensitive land use areas including residential land use, thus avoiding land use conflicts. Further, upon completion of pipeline construction, the area along the pipeline route will be returned to its existing conditions. The construction of the pipelines is

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
.

MITIGATION MEASURES

No significant 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 City of Los Angeles and Carson land zoning ordinances and land use designations, and be compatible with the surrounding land uses. Therefore no significant impacts on land use are expected.

F. NOISE

SIGNIFICANCE CRITERIA

Impacts on noise will be considered significant if:

> Construction noise levels exceed the City noise ordinance (see Table 3-17); 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

Heavy construction equipment is required during construction activities associated with the proposed project. The highest noise impacts from construction will be during equipment installation. Examples of noise levels from construction equipment are presented in Table 4-14. These noise sources will operate primarily during daylight hours and will be a temporary noise source over the approximately one-year construction period.

TABLE 4-14

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 Refinery is expected to be an average of about 85 dBA at 50 feet from the center of construction activity. The major portions of the construction activities will occur near the central portion of the Refinery. Using an estimated six dBA reduction for every doubling of distance, the noise levels at various locations surrounding the facility are estimated in Table 4-15. Most of the construction noise sources will be located near ground level, so the 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.

The construction activities at the Refinery will be normally 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 area (see

Table 4-15, location 6) are not expected to noticeably increase during construction activities. Noise levels during construction activities at other locations are not expected to exceed one dBA.

The noise levels from the construction equipment at the Refinery are expected to be within the allowable noise levels established by the Los Angeles noise ordinance (see Table 3-17). The project is not expected to increase the noise levels at residential areas. The noise level at the closest residential area is expected to be 62 dBA (Location 6), which is within the normally acceptable noise range (see Figure 3-7). The noise levels at the other noise monitoring locations are within industrial areas and no significant (audible) increase in noise levels is expected. Therefore, no significant 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.

TABLE 4-15

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 3-6.
(2) Includes all ambient noise sources. Noise levels are from Table 3-16.
(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)

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 impacts to workers during construction activities is expected.

Noise would also be generated by the construction of the proposed new pipelines. Noise impacts expected during pipeline construction activities include trenching, welding, laying of pipeline, and

resurfacing. The pipeline route is through industrial areas. The closest residential area is Blinn Avenue at Grant Street about 0.6 mile northeast of the Refinery. Noise sources along the pipeline route generally include industrial sources (refineries, hydrogen plants, junk yards, petroleum coke storage facilities, container storage facilities, etc.) and traffic along major arterials including Anaheim Street and Alameda Boulevard.

The construction of the pipelines will take place during normal working hours, minimizing impacts during the more sensitive nighttime hours. Noise levels for pipeline construction equipment also are included in Table 4-15. The estimated noise levels are illustrated in Figure 4-2. The pipeline construction noise levels at 500 feet are expected to be about 70 dBA (see Figure 4-2). 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. Actual construction noise levels are expected to be less as attenuation is a major factor in the transmission of sound or noise. 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. Mitigation measures are available to prevent construction during the more sensitive nighttime period near residential areas. The exception to this is that 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 noise impacts are expected due to construction of the pipelines.

OPERATIONAL IMPACTS

The proposed project will add equipment to the existing Ultramar Refinery so that there will be additional noise sources at the facility. Additional noise sources associated with the proposed project generally include process equipment components such as valves, flanges, vents, pumps, drains, compressors, cooling towers, and heaters. Refinery operations are continuous over a 24-hour period. 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 noise levels associated with the proposed project operation are summarized in Table 4-16. Assuming an operational "worst-case" noise level of 90 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 at the Refinery (when compared to baseline conditions). Therefore, no significant noise impacts related to project operation are expected. The noise levels in the area are expected to comply with the City's Noise Ordinance.

Figure 4-2 goes here

In general, the noise level in the Wilmington area near the Ultramar Refinery is compatible with the industrial nature of the immediately surrounding area with noise levels of about or less than 70 decibels.

Emergency/non-routine activities, such as excess/purge-gas flaring, steam/gas venting, etc., that are not part of normal operational procedures would have a disturbing intrusive noise impact on the area surrounding the Refinery. The proposed project is not expected to increase the occurrence of non-routine events or increase the need for purging/venting/flaring.

TABLE 4-16

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 3-6.
(2) Includes all predicted noise sources. Noise levels are from Table 3-16.
(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. In addition, the typical noise reduction provided by buildings is 12 to 18 decibels (with windows partially open) (State of California, 1987). Therefore, the estimated noise levels inside the homes are expected to be within general noise ordinance guidelines.

No noise increases are expected due to the operation of the proposed pipelines. Therefore, no significant impacts on noise associated with the operation of the new pipelines is expected.

Traffic Noise

The modifications to the Refinery will include eight additional workers and about 10 truck trips per day to/from the Refinery. The truck routes to/from the Refinery generally are from the Long Beach Interstate 710 Freeway to/from the Refinery via Anaheim Street and from the San Diego Interstate 450 Freeway along Alameda Street. No sensitive receptors or residential areas are located along the truck routes so that no significant noise impacts are expected. The truck traffic is expected to be distributed throughout the day so that the proposed project is expected to increase the truck traffic at the Refinery by about one truck per hour.

The proposed project is also expected to increase the noise level at a third party terminal used to receive ethanol for Ultramar by about 30 trucks. The trucks are expected to be distributed throughout the day so that 1-2 trucks per hour would be expected. This level of traffic is small so that the noise level in the area surrounding a terminal would not noticeably change or be significant.

The proposed project is expected to increase the number of railcars that are received at a third party terminal by about nine railcars per day. The project is not expected to increase the number of railroad trips but rather increase the number of railcars that are part of the train on each trip. The increase in railroad traffic is not expected to create noticeable noise impacts since no new trips will be generated. No significant noise impact due to railroad trips associated with the proposed project is expected.

Marine Vessels: The proposed project is expected to result in a decrease of about 32 vessels per year transporting MTBE and an increase in marine vessels of about 23 vessels per year of high octane blending components. Therefore, an overall decrease of about nine vessels per year is expected so that no increase in noise related to port activities from the proposed project is expected.

MITIGATION MEASURES

No significant 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 and Carson 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

The demolition of existing structures 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 70 tons, disposed of over a 1.5-year period. This represents approximately a small portion of the daily total solid waste received at Puente Hills and Bradley West Class III landfills (a total of 16,769 tons/day). Therefore, no significant impacts are expected to the existing landfill capacity due to the proposed project.

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. 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 is expected to 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 piping, process units, or pipeline construction they would be returned to storage or to other process units for conversion into products.

Construction activities also will generate hazardous wastes, e.g., paint cans and cleaning agents. Paint cans and cleaning agents would be transported to a permitted hazardous waste facility or recycling facility. Based on previous construction activities, about *1,840* cubic yards of contaminated soil could be generated by the proposed project. 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 proposed project on solid/hazardous wastes are expected to be less than significant.

OPERATIONAL IMPACTS

Solid waste generated at the Refinery is generally from administrative offices. The proposed project is expected to result in an increase in administrative staff of eight workers which is not

expected to substantially increase the amount of solid waste generated by the proposed project. Therefore, no significant impacts are expected.

The proposed project is not expected to increase the hazardous waste generated by the Refinery processing activities. The proposed project is not expected to change the refining process and only minor changes to refinery units is expected. The waste streams generated by the Refinery are not expected to be affected. Therefore, the proposed project is not expected to impact 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 impacts associated with solid/hazardous waste are expected from the proposed project so that 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

Construction and modification of the proposed project at the Refinery is expected to take about 21 months. During that time, the LOS analysis assumes 350 construction workers will be commuting to the site, during peak construction activities. It is estimated that 12 construction trucks will travel to the site each 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 4-17 shows the predicted proposed project LOS analysis and volume to capacity ratios due to peak construction activities. 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 impacts on parking are expected.

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 traffic impacts during construction of the pipeline as construction may be required across these busy streets.

TABLE 4-17

ULTRAMAR REFINERY
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

A Traffic Control Plan will be required by the City of Los Angeles and the City of Carson. 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.

OPERATIONAL IMPACTS

The proposed project will increase the permanent number of workers at the Refinery by about eight and require an estimated 10 trucks per day traveling to/from the Refinery. Table 4-18 show 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 operational phase related traffic.

TABLE 4-18

ULTRAMAR REFINERY
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

This table 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 below LOS C (i.e, 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 impact this 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 operating below LOS C. 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.

The proposed project is expected to decrease the number of tanker calls to the Port by about 9 ships per year. Therefore, no significant impact to the Long Beach/Los Angeles Harbor system is expected.

MITIGATION MEASURES

No significant 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.

DABWORD:1936EIR4