4.8 LAND-BASED TRANSPORTATION

Section 4.8 provides a detailed description of the existing land transportation system in the vicinity of the Tesoro Avon Marine Oil Terminal (Avon Terminal) and the potential effects on land transportation and traffic that may occur with the implementation of the Avon Marine Oil Terminal Lease Consideration Project (Project), specifically any impacts resulting from the granting of a new lease for Avon Terminal continued operations and associated Marine Oil Terminal Engineering Maintenance Standards (MOTEMS) compliance-related renovation. Assessment of vessel traffic is addressed in Section 4.1, Operational Safety/Risk of Accidents.

4.8.1 CONCEPTS AND TERMINOLOGY

Traffic is typically measured and averaged over a 24-hour period. This average daily traffic (ADT) is often based on an actual 24-hour traffic count taken during mid-week. In some cases, traffic is measured at various times throughout the day, and extrapolated to the ADT. Seasonal variations may also be taken into account by collecting data during different months of the year.

The capacity of a roadway segment or intersection is the maximum rate of vehicular traffic flow under prevailing traffic, design, and operational conditions. Factors affecting capacity include traffic controls, lane widths, grades, amount of truck and bus traffic, availability of on-street parking, parking turnover, and turn movements. Capacity is commonly defined for hourly periods of time. However, for generalized planning purposes, it is useful to define capacity as the maximum volume of traffic that a roadway may be expected to carry during a 24-hour period to maintain a level of service (LOS). Daily capacities, as defined by the Transportation Research Board in the *Highway Capacity Manual* (2000), for various facilities under ideal conditions are listed in Table 4.8-1.

The LOS of a roadway segment or intersection is a qualitatively defined measure of prevailing traffic, design, and operational conditions. The LOS, denoted alphabetically from A to F (best to worst), is a summary evaluation of the degree of congestion, roadway design constraints, delay, accident potential, and driver discomfort experienced during a given period of time (peak hour for intersections and 24 hours for roadway segments). While LOS A is the most desirable operational condition for a roadway or intersection, LOS C is considered a benchmark for planning purposes. In heavily urbanized areas, LOS D is an accepted, though undesirable, condition for peak-hour travel, particularly on freeways. The LOS may be quantitatively calculated by a number of methods that generally compare vehicle counts with the physical and operational capacity of the roadway under study. For roadway segments and controlled intersections, the volume/capacity ratio is indicative of the LOS. Traffic LOS definitions are explained in Table 4.8-2.

Table 4.8-1: Daily Capacities for Major and Minor Arterials

Facility Geometrics	Capacity in Vehicles Per Day (LOS E)[1]
8-lane Divided Regional Arterial	80,000
8-lane Divided Major Arterial	72,000
6-lane Divided Major Arterial	54,000
4-lane Divided Major Arterial	36,000
4-lane Undivided Major Arterial	30,000
2-lane Undivided Major Arterial	15,000
4-lane Minor Arterial	24,000
2-lane Minor Arterial	12,000

Source: Transportation Research Board 2000
[1]LOS = Level of Service

Table 4.8-2: Summary of Levels of Service (LOS) for Intersections

LOS	Flow Type	Delay	Maneuverability	V/C[1] Ratio
A	Stable flow	Very slight or no delay. If signalized, conditions are such that no approach phase is fully utilized by traffic and no vehicle waits longer than one red indication.	Turning movements are easily made, and nearly all drivers find freedom of operation.	0.00 – 0.60
B	Stable flow	Slight delay. If signalized, an occasional approach phase is fully utilized.	Vehicle platoons are formed. Many drivers begin to feel somewhat restricted within groups of vehicles.	0.61 - 0.70
C	Stable flow	Acceptable delay. If signalized, a few drivers arriving at the end of a queue may occasionally have to wait through one signal cycle.	Backups may develop behind turning vehicles. Most drivers feel somewhat restricted.	0.71 - 0.80
D	Approaching unstable flow	Tolerable delay. Delays may be substantial during short periods, but excessive backups do not occur.	Maneuverability is severely limited during short periods due to temporary backups.	0.81 - 0.90
E	Unstable flow	Intolerable delay. Delay may be considerable (up to several signal cycles).	There are typically long queues of vehicles waiting upstream of the intersection.	0.91 - 1.00
F	Forced	Excessive delay.	Jammed conditions. Backups from other locations restrict or prevent movement. Volumes may vary widely, depending on the downstream backup conditions.	Varies

Source: Transportation Research Board 2000
[1]V/C = volume/capacity ratio

4.8.2 ENVIRONMENTAL SETTING

4.8.2.1 Roadway Transportation System

The Avon Terminal is located in Contra Costa County at the north end of Tesoro Refining and Marketing Company, LLC's (Tesoro) Golden Eagle Refinery (Refinery) and is contiguous to the facility. Vehicular access to/from the Avon Terminal is over private roads controlled by Tesoro. The Refinery has three vehicular access points. The three access points are staffed by security personnel that control all vehicle and personnel movements in and out of the facility. Approximately 90 to 95 percent of vehicular traffic uses two gates located on/near Solano Way, at the south end of the site. The gate located on Solano Way is used for trucks and heavy equipment. A second gate, accessed just east of Solano Way, is used by Refinery employees, other tenants operating on the private road, contractors, consultants, and other visitors, and requires vehicles to turn north onto Solano Way. A third access point is located on Waterfront Road, just east of Pacheco Slough. This entrance processes approximately 5 to 10 percent of total site traffic.

The two Solano Way entrances are located close to State Route 4 (SR-4). Eastbound SR-4 heads toward Pittsburg, Antioch, and eastern Contra Costa County, and has on/off ramps located on the south side of the highway (just east of the Solano Way underpass). Westbound SR-4 connects with Interstate 680 (I-680), and further to the west, connects with Interstate 80 in Rodeo. Westbound SR-4 has on/off ramps on the north side of the highway. Located just south of the Solano Way truck entrance, on the west side of the road, is an entrance to the Santa Fe Pacific Pipeline Terminal. The Solano Way entrances are also used for vehicular access to Chevron Product Distribution Terminal; MECS, Inc. (formerly known as Monsanto Chemical); Foster-Wheeler Co-Generation; Cardox CO_2 Plant; and Air-Liquide Hydrogen Plant.

Marina Vista/Waterfront Road runs east/west and intersects I-680. The road west of I-680 is known as Marina Vista Road, and the road east of I-680 is known as Waterfront Road. Waterfront Road provides access to I-680 at the Marina Vista Road exit. The Marina Vista Road exit from I-680 is a major access route to/from the Martinez downtown area. The preponderance of vehicular traffic on Waterfront Road headed east exits/enters at Waterbird Way. Most of this traffic is bound for the Acme Landfill and a transfer station operated by Allied Waste. Located further east on Waterfront Road are the Plains All American Marine Oil Terminal, Copart Storage Yard, and at the far end, the Waterfront Road entrance to Tesoro's Refinery. In comparison with the Acme Landfill and transfer station, the residual traffic on Waterfront Road east of Waterbird Way is a small fraction of the overall vehicles on Waterfront Road.

Waterfront Road was closed at Hastings Slough in the early 1990s to enhance security at the Military Ocean Terminal Concord (formerly known as the Naval Weapons Station

[NWS] Concord). At the same time, Port Chicago Highway was closed at Clyde and at West Pittsburg. All vehicular traffic to/from Pittsburg and Clyde on Waterfront Road ceased. Following increased security implemented by NWS Concord, the Refinery purchased Solano Way, and made access through the Refinery a private road from Arnold Industrial Way to Waterfront Road. Access was closed to public use and security gates were installed. This stopped all passenger traffic using Solano Way and Waterfront Road as a method to bypass major back-ups on northbound I-680 leading to the Benicia-Martinez Bridge.

There are no truck trips attributable to Avon Terminal operations. All Avon Terminal employee and associated delivery vehicles enter through the Solano Way entrance and park inside the facility.

4.8.2.2 Railroad System

Railroad tracks owned by Union Pacific Railroad run parallel to Waterfront Road. These tracks carry freight and Amtrak San Joaquin passenger trains from the San Francisco Bay Area to Bakersfield (10 trains per day), and follow the southern shore of the Carquinez Strait. The Refinery has several railroad spurs connecting to these tracks. Railroad traffic and switching of Refinery railcars can temporarily block internal Refinery access of vehicular traffic to the Avon Terminal on Waterfront Road and/or Solano Way.

4.8.3 REGULATORY SETTING

Interstate highways, State routes, and bridges are governed by the Federal Highway Administration and California Department of Transportation. County roads are governed by Contra Costa County. Other local streets and highways are governed by local cities. In all cases, specific standards apply with respect to the planning, design, and operation of roadways and intersections. Not all governing agencies impose the same criteria (e.g., cross sections and rights-of-way for the same street may differ from jurisdiction to jurisdiction). Rail facilities are regulated in the State by the California Public Utilities Commission (CPUC). Train operations are also subject to CPUC guidelines. The design and operation of railroad grade crossings are subject to Federal Railroad Administration guidelines. Numerous other federal agencies also have regulatory authority over rail transportation.

Federal and State laws that may be relevant to the Project are identified in Table 4-1. Local laws, regulations, and policies are discussed in the following paragraphs.

<u>TRANSPAC, Central County Action Plan for Routes of Regional Significance</u>

Regional transportation planning committees work cooperatively to establish overall goals, set performance measures (i.e., multi-modal transportation service objectives) for designated routes of regional significance, and outline a set of projects, programs,

measures, and actions that will support achievement of the objectives. Routes of regional significance are roadways that carry significant through-traffic, connect two or more jurisdictions, serve major transportation hubs, or cross county lines. I-680 and SR-4 are routes of regional significance through Contra Costa County.

Contra Costa County

The *Contra Costa County General Plan* (2005) is a comprehensive, long-range planning document stating the county's development goals and policies. The Transportation and Circulation Element establishes transportation goals and policies, and specific implementation measures to assure that the transportation system of the county will have adequate capacity to serve planned growth in Contra Costa County through the year 2020.

4.8.4 SIGNIFICANCE CRITERIA

For the purposes of this analysis, an impact was considered to be significant and to require mitigation if it would result in any of the following:

- Generate Project-related traffic that would cause LOS to drop below standards established by the local jurisdictions, if Project-generated traffic cannot be minimized at these critical locations through development and implementation of a traffic control plan and/or appropriate improvements to accommodate continued facility operations
- Design elements of the Project, or Project renovation, would result in conditions increasing the risk of accidents for vehicular or non-distance, sharp curves, or large speed differentials between renovation-related and general-purpose traffic
- Generate parking demand that exceeds parking supply
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance of safety of such facilities
- Substantially affect emergency response capabilities to effectively mitigate spills and other accident conditions

Environmental impacts are discussed in this section relative to the roadways in the vicinity of the Project. The impact on vehicular traffic associated with the MOTEMS compliance-related renovation is expected to be less than significant. Overall, the continued operation of the Avon Terminal would have no effect on vehicular traffic.

4.8.5 IMPACT ANALYSIS AND MITIGATION

The following subsections describe the Project's potential impacts on land-based transportation. Where impacts are determined to be significant, feasible mitigation measures (MM) are described that would reduce or avoid the impact.

4.8.5.1 Proposed Project

Impact Land Transportation (LT)-1: Generate Project-related traffic that would cause LOS to drop below standards established by local jurisdictions; increase risk of accidents due to design elements of the project; generate significant parking demand; conflict with adopted policies, plans, or programs regarding land-based transportation; or substantially affect emergency response capabilities. (Less than significant.)

No vehicular activity is associated with existing Avon Terminal continued operations beyond employees and delivery vehicles; hence, no new impacts would result from continued Avon Terminal operations. Avon Terminal continued operations would not conflict with any adopted transportation plans, policies, and programs or affect emergency response capabilities. All parking related to Avon Terminal continued operations would be accommodated on-site.

The majority of delivery and removal of materials to the renovation site would be by water, and there would be minimal truck traffic to deliver materials, including concrete and new piping.

The renovation workforce of 50 to 180 persons is estimated to generate 45 to 160 vehicle trips to the Avon Terminal Project site, assuming approximately 11 percent of the vehicles would have more than one occupant as reported by the Contra Costa Transportation Authority. Renovation activities would be performed in two 10-hour shifts. It is expected that approximately 15 workers would work a night shift for four months. As phases of the work are completed, the workforce at the Avon Terminal would gradually decline. It is anticipated that daytime crews would typically enter the renovation site between 6:30 a.m. and 7 a.m., and depart between 5:30 p.m. and 7 p.m. Night shift crews would enter the site between 5:30 p.m. and 7 p.m. and depart between 4:30 a.m. and 5 a.m. The primary roadways that would be used for travel to and from the renovation site are I-680, SR-4, and Solano Way.

The work crew would park their privately owned vehicles in an existing parking lot just south of Area A, on the east side of the Refinery. From there, buses would travel on Refinery roads to take the crews to their respective work locations at the beginning of each shift. The quantity of bus trips would depend on the number of personnel that would be used to complete the work, but it is anticipated that there would be

approximately 25 round trips per day at peak renovation. All parking would be accommodated on-site.

Transportation of workers by bus within the Refinery reduces the use of privately owned vehicles within the site. The bus system is used daily to transport renovation and maintenance personnel for multiple projects within the site. During renovation, the ADT could increase by 45 to 160. However, the majority of renovation personnel would access the Refinery entrance on Solano Way directly from the Solano Way off ramp from SR-4, and would not access city streets. Therefore, due to the proximity of the parking lot to SR-4, impacts on traffic would be negligible.

Mitigation Measure: No mitigation required.

4.8.5.2 Alternative 1: No Project

Impact LT-2: Generate traffic resulting from the dismantling of existing structures. (Less than significant.)

Under the No Project alternative, the Avon Terminal lease would not be renewed and the existing Avon Terminal would be decommissioned with its components abandoned in place, removed, or a combination thereof. Decommissioning would likely be accomplished primarily via the water, with equipment and materials not needed by the Refinery taken away via barge. If any materials were relocated by land, they would likely be relocated via heavy truck within the Refinery. Based on prior experience, a crew of 30 workers would be anticipated. During demolition and removal activities, estimated to last 180 days, five trucks are assumed on a daily basis, and when two-way trips and passenger-car equivalents are calculated, the demolition could add as many as 40 ADT. Impacts resulting from increased traffic due to Avon Terminal decommissioning and demolition would be less than significant, as removal would be short term, and truck trips could be scheduled to avoid peak traffic hours. Since the Avon Terminal would no longer be operational, daily vehicular supply trips and employee trips associated with Avon Terminal continued operations would cease, and there would be little to no differential on surface street traffic with elimination of the Avon Terminal.

Mitigation Measure: No mitigation required.

Impact LT-3: Construction of pipeline or rail improvements could increase traffic substantially in relation to existing traffic load and capacity of the street system. (Potentially significant.)

Under the No Project alternative, to continue to meet existing regional demands and the current throughput from the Avon Terminal, Tesoro would need to arrange for product delivery by truck, pipeline, and/or rail transfers from the Refinery to other marine oil terminals in the San Francisco Bay Area. If the Refinery were to ship this product by

truck, it is estimated that it would require as many as 175 tank trucks on the road daily, which is beyond the capability of the Refinery's truck loading rack. This would require the design, permitting, and construction of a new truck loading rack. The addition of 175 tank trucks daily would impact traffic on Solano Way and SR-4. Pipeline delivery would require construction of new pipelines and/or the purchase of existing pipeline capacity from other local petroleum refinery competitors. Short-term traffic impacts would result from the modifications at other San Francisco Bay Area marine oil terminals; however, such modifications would require a separate environmental review under the California Environmental Quality Act (CEQA). Short- and long-term impacts associated with pipeline and/or railroad construction and operation are addressed below.

Short-term Impacts

Pipeline and/or rail construction would require both material deliveries and construction workers, thereby creating a small increase in localized traffic. Based on prior experience, it is estimated that construction may require approximately 25 workers daily, and as many as 10 trucks to bring construction supplies and remove any cut material and debris, as necessary. Assuming that each haul truck is equivalent to two passenger cars and that each vehicle makes two trips (coming and going), the impact of the construction activities would be an additional 45 ADT. Depending on the chosen route and the LOS on access roads, this temporary additional volume could result in significant impacts if these vehicles are forced onto roads operating at unacceptable levels (i.e., LOS E or F).

A second area of temporary, potentially significant impacts would occur when the pipelines come into proximity with roads. Installation of pipeline crossings may necessitate the closure of half or all road lanes during construction. Similarly, if the line parallels or is constructed within the confines of any roads, one or more lanes may be closed. A lane closure can have a significant impact if it causes congestion that extends back to the previous intersection and reduces the traffic-carrying capacity of that intersection. Closing one lane of a two-lane road causes a reduction of more than 50 percent, because not only is the number of lanes reduced by half, but the speed in the vicinity of the closure may be reduced due to traffic-control mechanisms (cones, flagmen, etc.) and the "rubbernecking" phenomenon (the tendency of motorists to want to see what is causing an impairment). Alternative routing of traffic during construction along a roadway segment may mitigate congestion. However, the increase in traffic on nearby adjacent roads typically causes traffic slowing and backups on those roads and would only slightly mitigate the problems associated with roadway construction.

Long-term Impacts

Traffic along the roads in the vicinity of the new pipeline and/or rail lines would be the same as baseline conditions in the long term. The occasional trips associated with

inspection and maintenance would be negligible. Therefore, there would be no long-term impacts to land-based transportation under this alternative.

Mitigation Measures: Should this alternative be selected, MMs would be determined during a separate environmental review under CEQA.

4.8.5.3 Alternative 2: Restricted Lease Taking Avon Terminal Out of Service for Oil Transport

Impact LT-4: Construction of pipeline or rail improvements could increase traffic substantially in relation to existing traffic load and capacity of the street system. (Potentially significant.)

Refer to Impact LT-3.

4.8.6 CUMULATIVE IMPACT ANALYSIS

No vehicular activity is associated with existing Avon Terminal continued operations, beyond employees and delivery vehicles. Routine continued operations at the Avon Terminal would not contribute to cumulative land-based transportation impacts. During renovation, the majority of delivery and removal of materials to the renovation site would be by water, and there would be minimal truck traffic to deliver materials. The Project's individual impact on land-based transportation would be minimal and short-term; therefore, it would not be considered to have a significant cumulative impact.

4.8.7 SUMMARY OF FINDINGS

Table 4.8-3 includes a summary of anticipated impacts to land-based transportation and associated mitigation measures.

Table 4.8-3: Summary of Land-based Transportation Impacts and Mitigation Measures

Impact	Mitigation Measure(s)
Proposed Project	
LT-1: Generate project-related traffic that would cause LOS to drop below standards established by local jurisdictions; increase risk of accidents due to design elements of the project; generate significant parking demand; conflict with adopted policies, plans, or programs regarding land-based transportation; or substantially affect emergency response capabilities.	No mitigation required
Alternative 1: No Project	
LT-2: Generate traffic resulting from the dismantling of existing structures.	No mitigation required

Impact	Mitigation Measure(s)
LT-3: Construction of pipeline or rail improvements could increase traffic substantially in relation to existing traffic load and capacity of the street system.	Should this alternative be selected, MMs would be determined during a separate environmental review under CEQA
Alternative 2: Restricted Lease Taking Avon Terminal Out of Service for Oil Transport	
LT-5: Construction of pipeline or rail improvements could increase traffic substantially in relation to existing traffic load and capacity of the street system.	Should this alternative be selected, MMs would be determined during a separate environmental review under CEQA