INITIAL STUDY

PROJECT TITLE: Shell Oil Products US – Shell Martinez Refinery		CALSTARS CODING: 200196
PROJECT ADDRESS: 3485 Pacheco Boulevard	CITY: Martinez	COUNTY: Contra Costa County
PROJECT SPONSOR: Shell Oil Products US	CONTACT: Mr. Steven Overman	PHONE: (925) 313- 3281

APPROVAL ACTION UNDER CONSIDERATION BY DTSC:

☐ Initial Permit Issuance ☒ Permit Renewal ☐ Permit Modification ☐ Closure Plan
☐ Removal Action Workplan ☐ Remedial Action Plan ☐ Interim Removal ☐ Regulations
☐ Other (specify):

STATUTORY AUTHORITY:

☒ California H&SC, Chap. 6.5 ☐ California H&SC, Chap. 6.8 ☐ Other (specify):

DTSC PROGRAM/ ADDRESS: Standardized Permitting and Corrective Action Branch	CONTACT: Waqar Ahmad	PHONE: (510) 540-3932

PROJECT DESCRIPTION:

The Project is to approve a Hazardous Waste Facility Permit Renewal Application (the "Renewal Application") for the hazardous waste storage and treatment facility at the Shell Martinez Refinery, which is owned by Equilon Enterprises LLC and operated by Shell Oil Products US (Shell, or "Refinery"). The Refinery, including the hazardous waste facility, is located at 3485 Pacheco Boulevard in Martinez, California (Figures 1 and 2) .

If approved, the Project will permit: three existing Carbon Monoxide (CO) boilers referred to as CO Boiler #1, #2 and #3; an above ground 47,750 gallon storage tank referred to as Tank 12038 (Figure 2); burning of three waste streams (Dissolved Nitrogen Flotation [DNF], Waste Biosludge and Waste Biosolids) and storage of these waste streams in Tank 12038.(Figure 3).

<u>Tank 12038</u>

Tank 12038 is an aboveground tank made of carbon steel with a phenolic coating. It is a double wall and double bottom tank with a cone roof. The tank is 20 feet in diameter and 20 feet high, has a capacity of 47,754 gallons, and is nitrogen-blanketed. The interior wall and bottom of Tank 12038's primary shell is lined with a cross-linked epoxy-phenolic coating. The tank was built according to American Petroleum Institute (API) Code 650. The secondary shell serves as the secondary containment for the tank. The interstitial space between the two shells is equipped with a pressure/vacuum relief valve. The interstitial space is equipped with leak detectors and a continuous monitor to detect leaks from the primary tank with

alarms in the Effluent Treatment Plant control center. Tank 12038 is equipped with an overfill prevention system.

Specific conditions of the proposed permit for this unit include: management of hazardous waste in Tank 12038 in accordance with requirements of California Code of Regulations, title 22,sections, 66264.190 through 66264.199; maintenance of a secondary containment system in accordance with the DTSC approved Operations Plan; prevention of spills and overflows; restrictions on introduction of treatment reagents in the tank system; maintenance of tank shell thickness; inspection of tank systems according to the schedule and procedures provided in the approved Operations Plan; response to leaks or spills in accordance with the approved Operations Plan; and a closure of tank systems following procedures approved in the Operations Plan.

CO Boilers

Each CO Boiler system consists of the following components: firebox, draft fan, flue gas duct, the electrostatic precipitator (ESP), urea injection system, conveyor, dust hopper, sling bag, the stack and pumps. Each boiler is 90 feet in diameter and 220 feet high.

The firebox is made of carbon steel and is 12.9 ft high. It has four fuel burners, dual-fluid type. Draft fans are designed to provide at a flow rate of 105,000 actual cubic feet per minutes and a discharge pressure of 15 inches water column. The flue gas duct is made of carbon steel lined with refractory. Electrostatic Precipitators (SP-75, SP-76, SP-77) are plate and wire type. The urea injection system is comprised of a 54,000-gallon tank and a pump Urea is injected into the gases leaving the combustion zone to reduce nitrogen oxide emissions. The urea-injection pump is capable of providing a flow of 5 to 180 gallons per hour] The conveyor is a screw type. There are eight dust hoppers per boiler. The stack is constructed of carbon steel and has an outer diameter of 8 feet.

The CO Boilers burn fuel gas, process gases such as carbon monoxide, and certain hazardous wastes generated from oil refining process that are regulated by DTSC. Combustion of carbon monoxide and hazardous wastes serves two purposes: it allows the Refinery to safely dispose of a byproduct from the refining operations; and it generates steam as an energy source for the Refinery.

Background:

DTSC prepared an Environmental Impact Report (EIR) for the Hazardous Waste Facility Permit issued in 1995 (“1995 Permit’) that authorized Shell to store and/or treat up to seven feed streams in two tanks (Vessel 482 and Tank 12038), one incinerator (RM-17), three carbon monoxide boilers (CO Boilers #1, #2, and #3), and one biotreater (ETP-1). The 1995 Permit allowed Shell to manage the following feed streams:

1. Dissolve Nitrogen Flotation (DNF), hazardous waste
2. Waste Biosolids, non-hazardous waste
3. Waste Biosludge, hazardous waste
4. Sulfinol Reclaimer Bottoms, hazardous waste
5. Catalytic Cracker Unit Regenerator Offgas, non-hazardous waste
6. Flexicoker gas, non-hazardous waste.
7. Fuel oil, non hazardous material,

During the preparation of the EIR in 1995, DTSC analyzed the following: 1) meteorology and air quality, 2) public health and safety, 3) geology and soils, 4) hydrology and water quality, 5) biological resources, 6) land use and public policies, 7) traffic and circulation, 8) vibration and noise, 9) cultural resources, 10) socioeconomics, 11) visual resources, 12) emergency response, 13) energy, and 14) growth-inducing impacts of proposed project. The Approved 1995 EIR found that the Vessel 482 could have an adverse impact on public health and safety, geology and soils.

With DTSC’s approval, Shell closed the RM-17 Incinerator in December 1996 and Vessel 482 in

April 1997. On August 21, 2003, DTSC allowed the biotreater (ETP-1) to stop receiving hazardous waste water, and now it stores and treats only nonhazardous wastewater.

The Renewal Application is only for three CO Boilers, Tank 12038, and three feed streams (DNF Float, Waste Biosludge, and Waste Biosolids (which is non-hazardous). Thus the Renewal Application proposes a reduction in the number of waste management units and waste streams (See Attachment B) compared to the 1995 permit. Further, no structural changes to the Facility are proposed.

ENVIRONMENTAL IMPACT ANALYSIS:

1. Aesthetics

Project Activities Likely to Create an Impact: None.

Description of Baseline Environmental Conditions:

The Refinery is located on a broad plain in the north central portion of the Contra Costa County. To the north is the open water of the Suisun Bay and the Carquinez Strait. The Refinery is bounded to the northeast and east by I-680; Pacheco Boulevard and numerous local streets to the south and west; and by the Carquinez Strait and Southern Pacific railroad tracks to the north.

The land surrounding the Refinery has an urban and industrial appearance, separated by areas of open space, wetlands, and shoreline. In general, the topography slopes from the south to the north in the direction of the Carquinez Strait. The local topography varies from hilly south of and onto the facility, to tidal flats north and northeast of the facility. The Contra Costa County General Plan designates I-680 between Highway 242 and the Carquinez Strait as a “Connecting Route” between designated scenic highways. Although "gateway" sections are not identified in the General Plan, Implementation Measure 9-h refers to "gateways" within the scenic routes which are located at unique transitions points in topography or land use and serve as entrances to regions of the County. The area of the I-680/Marina Vista (Waterfront Road) interchange (currently under reconstruction) is considered one of the "gateways" to north Contra Costa County as well as to the city of Martinez. Elements of the Refinery are visible from the approach to the Benicia Bridge from both north and south and from along Pacheco Boulevard and Marina Vista Avenue. The Refinery buildings and structural features are predominately aluminum-gray in color, but some large specific components such as tanks, stacks, and spheres are painted to blend into the setting. The utilitarian character of the site presents a complex cluttered visual environment, especially at close range. From a distance, the project components combine to present a more coherent appearance of an organized industrial complex, set amid open space and overshadowed by the surrounding hills.

The Project is to approve an existing operation and no new construction is proposed. For these reasons, no further analysis of impacts to this resource category is deemed necessary.

Analysis as to whether or not project activities would:

a. Have a substantial adverse effect on a scenic vista.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

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

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

c. Substantially degrade the existing visual character or quality of the site and its surroundings.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

d. Create a new source of substantial light of glare that would adversely affect day or nighttime views in the area.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

References Used:

California State Highway Mapping System
http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm

Contra Costa County Community Development Department (CCCCDD). 2005. Contra Costa County General Plan 2005 – 2020. Transportation and Circulation Element. Open Space Element. Dated January 18, 2005.

2. Agricultural Resources

Project Activities Likely to Create an Impact: None.

Description of Baseline Environmental Conditions:

No agricultural activity occurs within or adjacent to the Refinery site. The developed portions of the Refinery site have undergone extensive disturbance that has substantially modified the original ground surface since construction of the Refinery began in 1914. The Farmland Mapping and Monitoring Program (FMMP) classifies the Refinery property as Urban Land and Built-up Land (land occupied by structures with a density of at least one unit to 1.5 acres)(CDC, 2004a). Waste management activities at the Refinery will not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as identified by the FMMP to non-agricultural uses.

The Project is to approve an existing operation and no new construction is proposed. For these reasons, no further analysis of impacts to this resource category is deemed necessary.

Analysis as to whether or not project activities would:

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

Impact Analysis
Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

b. Conflict with existing zoning or agriculture use, or Williamson Act contract.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

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

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

References Used:

California Department of Conservation (CDC), 2004a. Important Farmland in California, 2002. Division of Land Resource Protection. Farmland Mapping and monitoring Program.

(http://www.consrv.ca.gov/DLRP/fmmp/images/fmmp2002_300.pdf)

CDC, 2004b. Contra Costa County Williamson Act Lands 2004. Land Enrolled in Williamson Act and Farmland Security Zone Contracts as of 01-01-2004.
ftp://ftp.consrv.ca.gov/pub/dlrp/WA/Map%20and%20PDF/Contra%20Costa/

3. Air Quality

Project Activities Likely to Create an Impact: Storing and burning of refinery generated hazardous waste

Description of Baseline Environmental Conditions:

The Refinery is located within the San Francisco Bay Area Air Basin and the Bay Area Air Quality Management District (BAAQMD). The region is non-attainment for Ozone (1-hour and 8-hour) under federal standards, and non-attainment for Ozone (1-hr), PM 2.5 and PM10 under the state standards.

The Renewal Application concerns only three CO Boilers, Tank 12038, and three feed streams (DNF Float, waste biosludge, and waste biosolids (which is non hazardous). Thus the Renewal Application proposes a reduction in the number of waste management units and waste streams in comparison with the 1995 permit. Further, no structural changes to the Facility are proposed.

Tank 12038 is a closed top tank also regulated by BAAQMD Order #A0011 and identified as S1805. Among other requirements, Tank 12038 is subject to Condition # 4298, which requires that the annual material throughput not exceed 563,000 barrels per year. The tank at all times is

vented to the abatement device A1805 which consists of two 55-gallon drums of activated carbon vessels, arranged in series. The Refinery monitors the tank with a photo-ionization detector (PID), flame-ionization detector (FID), or other method approved in writing by the BAAQMD at the following locations: a) at the outlet of the primary carbon vessel in series, 2) at the outlet of the secondary carbon vessel in series. The monitoring results are used to estimate the frequency of carbon change-out. The air emission and impact to the environment are insignificant.

The three CO Boilers are regulated also by BAAQMD Order #A0011 and identified as S1507, S1509, and S1512. Electrostatic precipitators (ESPs) are identified as abatement devices (A12, A13, and A14) for the CO Boilers. The Refinery conducts continuous emission monitoring of ESP operating parameters for reasonable assurance of compliance with Regulation 6-310 (particle weight limitation). BAAQMD also establishes the emission limits for hydrogen sulfide (H_2S), nitrogen oxides (NOX), sulfur dioxide (SO_2), CO, ammonia (NH_3), opacity, etc.

To determine the impact of hazardous waste burning in three boilers, a trial burn and a health risk assessment were conducted (See details in Attachment C).

Analysis as to whether or not project activities would:

a. Conflict with or obstruct implementation of the applicable air quality plan.

   Impact Analysis: Shell conducted trial burns for the CO Boiler #2 in June 2006 and December 2006 in accordance with the approved trial burn plan. The three boilers have the same design and are maintained in a similar fashion, therefore a trial burn for one boiler is adequate.

   Shell submitted its trial burn results in February 2007. The trial burn results demonstrated that CO Boiler #2 destroyed and removed 99.99 percent of the principal organic hazardous constituent (monochlorobenzene) and met both DTSC and the U.S. EPA requirements; and complies with all applicable emissions standards. The continued operation of three CO Boilers will not conflict with or obstruct implementation of the applicable air quality plan, will not violate any air quality standard or contribute substantially to an existing or projected air quality violation; will not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors). These tests generated information that was used to establish operating limits in the hazardous waste facility permit conditions (see Attachment C for details).

   Conclusion:

   ☐ Potentially Significant Impact
   ☐ Potentially Significant Unless Mitigated
   ☒ Less Than Significant Impact
   ☐ No Impact

b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

   Impact Analysis: see explanation in a.

   Conclusion:
   ☐ Potentially Significant Impact
   ☐ Potentially Significant Unless Mitigated
   ☒ Less Than Significant Impact
   ☐ No Impact

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

Impact Analysis: see explanation in a.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

d. Expose sensitive receptors to substantial pollutant concentrations.

Impact Analysis: On October 30, 2006, Shell submitted a Health Risk Assessment ("2006 HRA") Report. In addition to trial stack test data from the CO Boilers, emissions were evaluated based on fugitive emissions (fugitives) from Tank 12038, fugitives from the CO Boilers and fly ash fugitives. The "2006 HRA" demonstrated that predicted cancer risk and chronic and acute non-cancer risks at all off-site receptors are below acceptable thresholds and do not trigger public notification requirements. The "2006 HRA" report was reviewed and approved by DTSC. (See Attachment C for details.)

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

e. Create objectionable odors affecting a substantial number of people.

Impact Analysis: The petroleum refining processes generate odors which are regulated by BAAQMD under Title V air permit. Tank 12038 has a fixed roof; emissions, including odors are controlled. CO Boilers' operation in comparison to other refining operations is insignificant, therefore does not create objectionable odors affecting a substantial number of people.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

f. Result in human exposure to Naturally Occurring Asbestos (see also Geology and Soils, f.).

Impact Analysis: The most common type of naturally occurring asbestos is chrysotile, but other types such as tremolite and actinolite are also found in California. Serpentinite may contain chrysotile asbestos, especially near fault zones. Ultramafic rock, a rock closely related to serpentinite, may also contain asbestos minerals. Asbestos can also be associated with other rock types in California, though much less frequently than serpentinite and/or ultramafic rock. Serpentinite and/or ultramafic rock are known to be present in 44 of California's 58 counties, including Contra Costa County.

Based on the map of naturally occurring asbestos provided by the California Air Resources Board (ARB), the Refinery is not located in an area likely to contain naturally occurring asbestos, nor are any rocks going to be disturbed.

Conclusion:
☐ Potentially Significant Impact

☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

References Used:

Bay Area Air Quality Management District (BAAQMD) website (http://www.baaqmd.gov/index.htm).

California Air Resources Board (ARB) website

http://www.arb.ca.gov/desig/adm/adm.htm and http://www.arb.ca.gov/toxics/asbestos/geninfo.htm

A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos Map, dated August 2000. Provided by the ARB website

(ftp://ftp.consrv.ca.gov/pub/dmg/pubs/ofr/ofr_2000-019.pdf)

4. Biological Resources

Project Activities Likely to Create an Impact: Burning of hazardous waste

Description of Baseline Environmental Conditions:

Table 8-1 of the 2005 Contra Costa County General Plan (2005 CCCDP) lists the inventory of significant ecological resource areas of Contra Costa County. The table identifies 41 different areas. The one area within the vicinity of Martinez Refinery is listed as 'Shoreline between Martinez Waterfront and Concord Naval Weapons Station'. This area includes open water areas, wetlands, and uplands (Figure 4).

Open Water Areas: Open water areas in the vicinity include the Carquinez Strait and Suisun Bay. The Carquinez Strait and Suisun Bay contain typically aquatic plants and fish species. These open water areas provide habitat for water birds. Open water areas are usually devoid of rooted aquatic plants, and generally contain free-floating algae and phytoplankton. Some floating plants, such as water hyacinth, yellow water weed, and duck weed are also found in open water areas.

Wetland and Marsh Areas: These areas are located to the northwest and north of the Refinery site. The marsh, located about 5,000 feet to the north along the Carquinez Strait is delineated as Coastal Brackish Marsh. Coastal Brackish Marsh is dominated by perennial, emergent, herbaceous plants growing to two meters tall. Typical plants in these wetlands include tules, cattails, aquatic buttercup, western milfoil, rushes, and other common brackish marsh species. These tidally-affected wetlands provide high-quality wildlife habitat. Resident water birds such as American coot, egrets, moorhen, marsh wren, and various rails are augmented by large numbers of winter migrants. Waterfowl include pintail, American wigeon, northern Shoveler, and mallard ducks. Songbirds are also abundant in densely vegetated area. In pickleweed areas and other salt marsh plant stands, the endangered salt marsh harvest mouse has been found.

The marsh located about 5,000 feet northwest of the boilers is considered Northern Coastal salt Marsh. The marsh located more inland, about 4,000 feet to the northwest, is a freshwater marsh. Examples of typical plants found in salt marshes include pickleweed, salty cordgrass, frankenia, salt grass, and salt bush.

Uplands: The uplands of the inland areas east and northeast of the site consist of non-native grasses. Annual ground along waterways and marshes contains willow trees or shrubs and blackberry. Grasslands and the dryer transitional zones provide habitat for numerous small rodents such gophers, voles, and mice. Jackrabbits may also be found in the brush.

The Natural Diversity Database of the California Department of Fish and Game (see the 2005 County General Plan, CDFG) which also includes federally listed species) and the Electronic Inventory of the California Native Plant Society were searched for records of special-status species in or near the study area (within 4 miles of the site). Four special-status plant species (*Lilaeopsis masonii*, *Aster lentus, Lathyrus jepsonii,* and *Cordylanthus mollis)* were found with potential to occur in the vicinity of the Refinery. All four plant species are associated with brackish and saltwater marshes that are not found within the developed areas of the Refinery property subject to the Renewal Application.

The Natural Diversity Database of the CDFG was also searched for records of special-status wildlife species in or near the study area. The study area is within four miles of the site. Nine special-status animal species (*Laterallus jamaicensis coturniculus, Rallus longirostris obsoletus, Geothlypis trichas sinuosa, Melospiza melodia maxillaries, Agelaius tricolor, Pogonichthys macrolepidotus, Nyctinomops macrotis, Reithrodontomys raviventris,* and *Emys marmorata* with potential to occur in the study area were found. Most species were associated with either brackish/saltwater marshes or freshwater systems that could be located in the general vicinity of the Refinery along the shoreline. However, due to the industrialized and commercial nature of the Refinery and the surrounding properties, no sensitive biological resources are known to be located at the existing Refinery or within the immediate proximity of the Refinery

Analysis as to whether or not project activities would:

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

Impact Analysis: This permit (the Project) concerns an existing facility with no new construction proposed that could potentially have an adverse impact to the biological resource. There is no significant habitat for vegetation or wildlife on the site of the CO Boilers because it is mostly graded, paved, covered with gravel, or developed. Small areas of the Refinery are covered with grasses, ornamental trees, and shrubs.

An ecological impact assessment was performed as part of the 1989 Carbon Monoxide Boiler Health Risk Assessment. The analysis consisted of describing the existing ecological setting of the area and evaluating how the emissions from the CO Boilers could not affect surrounding ecological resources. The habitat studied in 1989 was the same as described in 2005 CCGP, included open water areas, wetland, and upland. In addition, the Special Status Species studied in 1989 including the following three plant species: 1) Mason's Lilaeopsis (*Lilaeopsis masonii)*, 2) Delta Tule Pea (*Lathyrus jepsonii, 3)* Soft Bird's Beak (*Cordylanthus mollis)* and three animal species: 1) California Black Rail (*Laterallus jamaicensis coturniculus), 2*) Suisun Song Sparrow (*Melospiza melodia maxillaries), 3)* Salt Marsh Harvest Mouse (*Reithrodontomys raviventris)* are still listed in 2005.

The assessment was performed because air contaminants from boilers might affect biological resources either by direct exposure and contact with contaminated air or indirectly by deposition of the contaminants onto soil, water, and leaf surfaces. The 1989 ecological assessment was included in the 2000 HRA described the following study:

Impacts to terrestrial resources (wildlife and vegetation) from deposition of air emissions:
Air pollutants can impact vegetation and wildlife indirectly by deposition of the contaminants to soil or plant surfaces and then uptake or absorption into the organism. The pathway by which deposition of air pollutants can impact vegetation and wildlife is ingestive uptake or intake. Ingestion is the most common method of exposure to wildlife form air pollutant emissions. This occurs in animals by swallowing food or water containing the air pollutants or ingesting contaminants deposited by absorption on their bodies during grooming. Ingestive uptake in plants occurs by absorption of contaminants through the roots where air pollutants have deposited on the soil.

Metals and other nonvolatile compounds would generally be bound to particles and deposited on foliage, soil, or water. Soil acts as “sinks” for heavy metals. Small quantities of metals in soil favorably influence the growth of plants, but at certain concentrations they may be toxic to many organisms and may bioconcentrate and biomagnify through the food chain. Plant roots may accumulate them and then may transport them to above-ground portions of the plant. This may result in either greater plant growth or injury, depending on how much of the nutrient is taken up through the plant and the sensitivity of the plant to the compound. The presence of contaminants in the above-ground portions of plants would also increase the availability of contaminants to the food chain.

Table 5-2 of the 2000 HRA compares maximum concentrations of heavy metals resulting from the CO Boilers emissions to suggested screening concentrations for trace elements found to adversely affect terrestrial plants. The maximum concentrations were calculated using the same methodology described in Appendix C (Air Dispersion Modeling) of 2000 HRA. Two types of screening levels are presented within the table. One gives a concentration that when present in the soil has been found harmful to plants through plant uptake. The other type gives a concentration of the element found to be present in the tissues of plants that have been harmed by uptake of contaminants. Concentrations calculated at the point of maximum impact for both soil and plant tissues are presented in Table 5-2 of 2000 HRA for comparison to the screening levels. Comparison of the CO Boilers emission concentrations to the screening levels, again, shows that the maximum concentrations emitted from the hazardous waste management activities at facility are many times less than the impact screening levels.

Table 5-3 of the 2000 HRA, compares screening concentration values representing the lowest dietary concentrations found to be harmful to terrestrial animals to concentrations found in different aspects of diet calculated from project emissions at the point of maximum impact. This impact once again shows that concentrations from the CO Boilers emissions are much less than the screening level concentrations. Comparing the concentrations for animal effects from Table 5-3 within the values for plant tissue concentrations (Table 5-2 of 2000 HRA) shows that all metals in these tables, except for lead, would harm the plants before they would harm animals. This is especially true with arsenic, cadmium, and nickel, which would cause plant death before the contaminant would be exposed to the food chain; therefore, these compounds that are highly toxic to plants do not accumulate much through the food chain.

Of the organics that are emitted from the Refinery, the semi-volatile organic compounds with the largest molecular structure, the lowest water solubility, and the lowest vapor pressure, have the greatest chance of accumulating in soil and vegetation. These compounds would be the polynuclear aromatic hydrocarbons (PAHs), specifically benzo(a)pyrene and naphthalene. In an EPA Study of the fat and transport of organic priority pollutants applied to palnt-soil systems at rates characteristic of municipal sludge treatment, it was found that at loading rates of 0.1, 1.0, and 10 parts per million (ppm) of PAHs, the chemicals did not have any significant phytotoxic response for the four vegetative species observed. The concentrations and loading rates in the EPA study were significantly higher than that what would be deposited form emissions from the CO Boilers; therefore, since there was no impact from the significantly greater concentrations, there would not be any significant impacts expected from emissions of the CO Boilers and the combustion of DAF float.

ii) Impacts to aquatic resources from deposition of air pollutants:

Some of the compounds that will be emitted from the Refinery will be adsorbed by particulates and deposited on surface waters. Because of the volatility of many of the organic compounds, they are not easily absorbed into water from air; consequently, concentrations of volatile organics expected to enter and persist in the aquatic environment are expected to be extremely low. Inorganic emissions depositing out of the atmosphere as particulates would have the greatest potential to enter into aquatic environments. To determine the impacts of emissions from the CO Boilers that have been absorbed into or deposited onto water, a comparison was made between the maximum concentrations of pollutants in water, based on the point of maximum impact, from the CO Boilers emissions modeling and the most conservative concentrations of toxicity compounds to saltwater and

freshwater aquatic organisms. This comparison, shown in Table 5-4 of the 2000 HRA, reveals that the concentrations of pollutants contributed from the CO Boilers in water are many times less than the conservative chronic toxicity levels and are low enough that they would not add a significant contribution to background concentrations.

The 1989 ecological impact assessment of CO Boiler emissions was conducted by comparing the calculated maximum pollutant concentrations to acceptable screening-level concentrations. The results of the assessment showed that maximum pollutant concentrations were one or more orders of magnitude below conservative screening-level concentrations, and concluded that burning hazardous wastes in CO Boilers would not impact the biological resources. The Project has fewer waste streams, generates less air emissions, thus will not have impacts on the resources.
Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

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

Impact Analysis: The great majority of the area surrounding the Refinery is urbanized. Very few patches of native habitat exist within this larger urban environment. Roads, parking areas and buildings form the primary habitat features of the surrounding lands. Vegetation at the Refinery is limited to primarily ornamental plant species which have been planted for landscape. The Coastal Brackish Marsh Community has been identified in the Natural Heritage Database as a sensitive natural community. This community is not found on the Refinery property, but may be present along the shoreline in the general vicinity of the site. The Alhambra Creek, located more than 1,000 feet to the west of the Refinery, flows through the center of the City of Martinez and represents the closest riparian habitat. The creek and its associated riparian vegetation are tightly confined to its immediate channel by urban development along almost all of its length within the study area. Many portions of the creek banks have been modified by adding hard surfaces in an attempt to control bank erosion.

The shoreline between the Martinez waterfront and the Concord Naval Weapons Station has been identified as a Significant Ecological Resource Area in the Contra Costa County General Plan. A small portion of the Refinery property crosses through this area, but the activities covered in the Project are not expected to impact this resource area. The portion of the shoreline near the Refinery is relatively developed and also contains recreational areas and is adjacent to the Benicia-Martinez Bridge crossing the Carquinez Strait.

The Project is to approve an existing operation and no new construction is proposed. Therefore, the Project will not have a substantial adverse effect on any riparian habitat or other sensitive natural community.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

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

Impact Analysis: There are no federally protected wetlands located at the site. The most significant wetland in the vicinity of the site would include the tidal marshes located along the shoreline. Across

Interstate 680 from the Refinery, the Mt. View Sanitary District, which provides sewer service to unincorporated areas east of the City of Martinez, manages two wetland areas which receive treated plant effluent. These marshes, the 21-acre constructed Moorhen Marsh and the 130-acre McNabney Marsh, support a variety of aquatic invertebrates, waterfowl, and other marsh wildlife.

The Project is to approve an existing operation and no new construction is proposed. Therefore, the Project will not have a substantial adverse effect on federally protected wetlands.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

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

Impact Analysis: Migratory fish may travel past the site along the Carquinez Strait. The tidal marshes along the shoreline and the wetlands to the east of Interstate 680 are likely to be nursery areas for fish, birds, and other wildlife. No nursery sites are present on the Refinery property.

The Project is to approve an existing operation and no new construction is proposed. Therefore, the Project will not have a substantial adverse effect and will not substantially interfere with native resident or migratory fish or wildlife species and established wildlife corridors or impede the use of native wildlife nursery sites.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

e. Conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Impact Analysis: The City of Martinez Tree Protection policy applies to all oak trees and native trees measuring 20 inches or larger in circumference and to other trees within selected properties identified within the policy.

The Contra Costa County General Plan lists its overall conservation policies as:

1. Resource utilization and development shall be planned within a framework of maintaining a healthy and attractive environment.
2. Areas that are highly suited to prime agricultural production shall be protected and preserved for agriculture and standards for protecting the viability of agricultural land shall be established.
3. Watershed, natural waterways, and areas important for the maintenance of natural vegetation and wildlife populations shall be preserved and enhanced.
4. Areas designated for open space/agricultural uses shall not be considered as a reserve for urban uses and the 65 percent standard for non-urban uses must not be violated.
5. In order to reduce adverse impacts on agricultural and environmental values, and to reduce urban costs to tax payers, scattered urban development in outlying areas shall be precluded outside the urban limit line.

The Contra Cost County's vegetation and wildlife policies are listed as follows:

1. Significant trees, natural vegetation, and wildlife populations generally shall be preserved.

2. Important wildlife habitats which would be disturbed by major development shall be preserved, and corridors for wildlife migration between undeveloped lands shall be retained.
3. Significant ecological resources, particularly those containing endangered species, shall be maintained in their natural state and carefully regulated to the maximum legal extent. Acquisition of the most ecologically sensitive properties within the County by appropriate public agencies shall be encouraged.
4. Any development located or proposed within significant ecological resource areas shall ensure that the resource is protected.
5. Existing vegetation, both native and non-native, and wildlife habitat areas shall be retained in the major open space areas sufficient for the maintenance of a healthy balance of wildlife populations.
6. The ecological value of wetland areas, especially the salt marshes and tidelands of the bay and delta, shall be recognized. Existing wetlands in the County shall be identified and regulated.
7. Restoration of degraded wetland areas shall be encouraged and supported whenever possible.

The Project is to approve an existing facility and no new construction is proposed. The Project will not conflict with local policies or ordinances protecting biological resources.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

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

Impact Analysis: There is no Habitat Conservation Plan and Natural Community Conservation Plan with jurisdiction over the activities covered in the Renewal Application. The East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan pertain to areas well to the east of the Refinery property. The Refinery is within the Contra Costa Resource Conservation District but there is no specific watershed plan in effect for the refinery area. The closest is the Alhambra Watershed Council for Alhambra Creek which flows through downtown Martinez.

The Project is to approve an existing facility and no new construction is proposed. Therefore the Project will not conflict with the provisions of adopted Conservation Plans.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

References Used:

Contra Costa County Community Development Department (CCCCDD). 2005. Contra Costa County General Plan 2005 – 2020. Conservation Element. Dated January 18, 2005.

CNPS, 2001. Inventory of Rare and Endangered Plants of California (sixth edition). Rare Plant Scientific Advisory Committee, David P. Tibor, Convening Editor. California Native Plant Society. Sacramento, CA.

California Natural Diversity Database website http://www.dfg.ca.gov/whdab/html/cnddb.html

California Department of Fish and Game Habitat Conservation Planning Branch website http://www.dfg.ca.gov/hcpb/species/species.shtml

Calflora Species Information website http://www.calflora.org/species/index.html

City of Martinez Tree Protection
http://www.cityofmartinez.org/civica/filebank/blobdload.asp?BlobID=1671

Contra Costa Resource Conservation District http://www.ccrcd.org/

5. Cultural Resources

Project Activities Likely to Create an Impact: None.

Description of Baseline Environmental Conditions:

The Downtown Martinez Specific Plan and Environmental Impact Report (LSA, 2003) identified 91 known cultural resources within or adjacent to the downtown study area located directly adjacent to the western perimeter of the Refinery. Thirty are listed in county, state, or federal historic resource inventories, registers, or archives, and 61 are listed in the local Martinez Historic Resource Inventory. Six of the 91 total cultural resources are listed both in the local and county, state, or federal sources. Known cultural resources in or adjacent to the downtown study area consist of prehistoric archaeological sites (discussed below), historical architectural properties, one National Historic Trail corridor, and sites at which notable historical events occurred or buildings and structures once stood. The Contra Costa County Courthouse Block built in 1901 is the closest property to the Refinery, that is eligible, or already listed, in the National Register of historic Places. This building is over 1,000 feet from the western perimeter of the Refinery.

The Contra Costa County General Plan (CCCCDD, 2005) indicates that the areas including and surrounding the Refinery are largely urbanized areas that were excluded from the archeological sensitivity survey. However, significant resources may still be present within these urbanized areas. The Downtown Martinez Specific Plan and Environmental Impact Report (LSA, 2003) identified 2 prehistoric archaeological sites (CA-CCO-635 and CA-CCO-351) listed in the files of the Northwest Information Center at Sonoma State University as being adjacent to the downtown area. However, specific locations were not provided and they were coded as 'not evaluated' by the National Register of Historic Places so it is impossible to define how close the sites are to the Refinery. No other archeological resources were identified in the literature and a field survey of the Refinery was not conducted because the Project is an existing facility and project activities do not involve soils disturbance or building construction of any kind..

The Project is to approve an existing operation and no new construction is proposed. For these reasons, no further analysis of impacts to this resource category is deemed necessary.

Analysis as to whether or not project activities would:

a. Cause a substantial adverse change in the significance of a historical resource as defined in 15064.5.

Impact Analysis:
Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

b. Cause a substantial adverse change in the significance of an archeological resource pursuant to 15064.5.

Impact Analysis:

Conclusion:
☐ Potentially Significant Impact

☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Impact Analysis:

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

d. Disturb any human remains, including those interred outside of formal cemeteries.

Impact Analysis:

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

References Used:

Contra Costa County Community Development Department (CCCCDD). 2005. Contra Costa County General Plan 2005 – 2020. Open Space Element. Dated January 18, 2005.

LSA, 2003. Draft - Downtown Martinez Specific Plan and Environmental Impact Report. Prepared by LSA Associates, Inc. for the City of Martinez Community and Economic Development Department. Available at http://www.cityofmartinez.org/depts/planning/advance.asp

6. Geology and Soils

Project Activities Likely to Create an Impact: Damage to Tank 12038 and CO Boilers during earthquakes and ground shaking.

Description of Baseline Environmental Conditions:
The Project site is located in a seismically active area of the San Francisco Bay Area. Major earthquakes have previously occurred within the vicinity of the City of Martinez and are expected to occur again. The nearest fault is the Concord fault, which is more than 4 km from either site. Surface rupture is considered most likely to occur along an active or potentially major fault trace. The Alquist-Priolo Earthquake Faults Act defines an active fault as one that shows evidence of fault rupture in the last 11,000 years. No known active faults are located near the Refinery property. The Concord Fault, located to the east of Martinez is the closest active fault. Potentially active faults near the Refinery include the Southampton and the Franklin faults, located to the west of the city. The City of Martinez is not listed within Special Publication 42 as a city affected by Earthquake Fault Hazard Zones (CDC, 1997). New and revised Earthquake Fault Zones were released in May 2003, but Contra Costa County was not impacted by this update.

Analysis as to whether or not project activities would:

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

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

- Strong seismic ground shaking.

- Seismic-related ground failure, including liquefaction.

- Landslides.

Impact Analysis: Shell prepared a report "Seismic Assessment of the CO Boilers and Tank-12038 at the Shell Martinez Refinery, March 2007" and demonstrated the seismic adequacy of the CO Boilers and Tank-12038. The finding of the report is summarized below (See Attachment D for details).

The CO Boilers are constructed on bedrock or on shallow fill layers over bedrock. Therefore, the potential for seismically inducted liquefaction or settlement is essentially nil. However, the structures themselves will sway to some extent as a result of strong ground shaking during moderate to strong earthquakes on nearby active faults.

Ground motions were calculated at Tank 12038 and CO Boilers using values obtained from the United States Geologic Survey (USGS) National Seismic Hazard Mapping Program. The values are results of probabilistic seismic hazard analyses performed using the current California Geological Survey statewide fault model. Review of the latest California Geological Survey (CGS) fault maps indicates that neither site (Tank 12038 and CO Boilers) is within a special studies zone.

The nearest fault is the Concord fault, which is more than 4 km from either site. In May of 1989, Woodward Clyde Consultants prepared a report "Evaluation of Holocene Faulting in the Vicinity of the CO Boiler Waste Feed," which is where Tank-12038 is currently located. No evidence of Holocene fault displacement near the site of Tank-12038 or the CO Boilers was found. Shell has concluded and DTSC concurs based on the Woodward Clyde Consultants report that the risk of fault rupture passing through the CO Boiler or Tank-12038 sites is very low.

Each CO Boiler includes two distinct structural systems, one for the spray towers and fireboxes, and one for the precipitators and stacks. The support structures for the spray towers and fireboxes were shown to be adequate using standard linear analysis techniques. However, these analyses could not be used to demonstrate the adequacy of the precipitator and stack support structures, due to apparent overstress in the braces, as well as in the bottom story of columns, where the lack of bracing causes a stiffness discontinuity. Therefore Shell used nonlinear pushover analyses to demonstrate that the precipitator and stack support structure meets basic safety objectives of being able to survive an earthquake of predicted magnitude with minor damage and maintain Life Safety objective, and that the structure could survive a much larger event without structural collapse.

Tank-12038 was demonstrated to have adequate capacity for the future earthquake. The foundations were given special attention because of the likelihood of liquefaction in a large earthquake. Based on the evaluation, the tank foundation has sufficient strength due to piles that extend into competent soils below the bay mud.

The project site is on relative flat land, and likelihood of land slide is insignificant.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

b. Result in substantial soil erosion or the loss of topsoil.

Impact Analysis: The geology of Contra Costa County was mapped by the U.S. Geological Survey in 1994 (Graymer, 1994). The Refinery and the surrounding area consist of surficial, unconsolidated Quaternary deposits with some areas of sandstone and shale. Soils in Contra Costa County were mapped by the United States Department of Agriculture (USDA) Soil Conservation Service in 1977 (USDA, 1977). Soils found within the general vicinity of the Refinery are primarily loam consisting of sand, clay, silt, and organic matter. According to the USGS Susceptibility Map of the San Francisco Bay Area, some areas around the Refinery have moderate to very high susceptibility to be subject to liquefaction (loose sand and silt that is saturated with water can behave like a liquid when shaken by an earthquake). The Contra Costa County General Plan (CCCCDD, 2005) contains maps which show the estimated damage susceptibility from seismic ground response, estimated liquefaction potential, and landslide hazard areas. The Refinery is located within Damage Susceptibility Zone 4, which has the highest susceptibility for damage from seismic ground response.

The CO Boilers are constructed on bedrock which is categorically not susceptible to liquefaction, and the risk of liquefaction at the CO boilers is considered to be nil.

The soils under T-12038 were evaluated by Shell and the thin sand layers are susceptible to liquefaction. The practical impact of this liquefaction is settlement estimated to be on the order of one inch, and downdrag forces acting as additional external loading on the piles. The piles founded in the stiff soils below the liquefiable layers will prevent settlement of the pile cap/ slab.

Bechtel, a consultant for Shell, has concluded that “If liquefaction develops in this area, it is expected to be local in extent, and will not be a design concern for pile-supported structures.” Potential effects would be some local surface settlement. Permanent lateral movement or ground lurching is not anticipated. LMG (also a Shell consultant) has concurred with Bechtel’s assessment that the pile foundations are designed to accommodate downdrag forces due to settlement. They also have concluded that the possibility of lateral spreading is very low. DTSC also concurs with the findings and conclusions based on the consultant’s assessments.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

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

Impact Analysis: see explanation in a and b.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

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

Impact Analysis: Expansive soils have a relatively high percentage of clay minerals and are subject to changes in volume with changing moisture conditions. The Refinery site is not located on expansive soil. No additional construction is included in this Project so no interaction with expansive soils is planned. However, all construction within the county is regulated by the local City or County

building codes that provide construction requirements designed to limit the probability of occurrence and the severity of consequences from geological hazards like expansive soils. All appropriate project structures have been approved by the City or County.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of water.

Impact Analysis: The Project is to continue the existing hazardous waste storage in one tank and burning in three CO Boilers. The project does not involve construction of a septic tank or waste water disposal system.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

f. Be located in an area containing naturally occurring asbestos (see also Air Quality.).

Impact Analysis: The most common type of naturally occurring asbestos is chrysotile, but other types such as tremolite and actinolite are also found in California. Serpentinite may contain chrysotile asbestos, especially near fault zones. Ultramafic rock, a rock closely related to serpentinite, may also contain asbestos minerals. Asbestos can also be associated with other rock types in California, though much less frequently than serpentinite and/or ultramafic rock. Serpentinite and/or ultramafic rock are known to be present in 44 of California's 58 counties, including Contra Costa County.

Based on the map of naturally occurring asbestos provided by the California Air Resources Board (ARB), the Refinery is not located in an area likely to contain naturally occurring asbestos, nor are any rocks going to be disturbed.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

References Used:

California Department of Conservation, 1997. Fault Rupture Hazard Zones in California, Alquist-Priolo Special Studies Zones Act of 1972 with Index to Special Studies Zones Maps. California Division of Mines and Geology Special Publication 42. State of California, Department of Conservation. Available at ftp://ftp.consrv.ca.gov/pub/dmg/pubs/sp/Sp42.pdf

Release of Official Maps of New and Revised Earthquake Fault Zones May 1, 2003

http://www.consrv.ca.gov/CGS/rghm/ap/official_release/index.htm

USGS Susceptibility Map of the San Francisco Bay Area
http://sfgeo.wr.usgs.gov/liquefaction/susceptibility.html

Graymer, R.W., D.L. Jones, and E.E. Brabb, 1994. Preliminary geologic map emphasizing bedrock formations in Contra Costa County, California: a digital database, U.S. Geological Survey Open-File Report 94-622.

United States Department of Agriculture Soil Conservation Service, 1977. Soil Survey of Contra Costa County, California.

Contra Costa County Community Development Department (CCCCDD). 2005. Contra Costa County General Plan 2005 – 2020. Safety Element. Dated January 18, 2005.

Geotechnical Report in Support of Seismic Assessment, Shell Martinez Refinery, August 2006, prepared by Land / Marine Geotechnics (LMG), a consultant to Shell.

7. Hazards and Hazardous Materials

Project Activities Likely to Create an Impact: Storing and burning of hazardous waste

Description of Baseline Environmental Conditions:

The Contra Costa County General Plan (CCCCDD, 2005) indicates that the county contains extensive heavy industrial development which may be associated with hazardous materials, primarily along the west and north coasts. These land uses have the potential to present a significant risk to public safety because of the hazardous nature of some petroleum and chemical materials. Potential hazards include explosion and flammability of petroleum products and other chemicals, as well as chemical toxicity. The General Plan identifies petroleum and chemical industries and petroleum product pipelines as hazardous land uses at the Refinery location.

Analysis as to whether or not project activities would:

a. Create a significant hazard to the public or the environment throughout the routine transport, use or disposal of hazardous materials.

Impact Analysis: No particular routes for hazardous materials transportation are designated in the County so potentially hazardous materials are regularly carried on freeways and major roads designated as explosives routes.

The Project is to renew the Hazardous Waste Facility Permit authorizing continued burning of certain refinery hazardous wastes in the Refinery's carbon monoxide boilers. Shell only ships out hazardous waste ash (generated as a byproduct during the burning process) on approximately one flatbed truck per week to the Class 1 landfill at the Clean Harbors Buttonwillow facility, Kern County, This project reduces the transportation of hazardous wastes, i.e. DNF floats and biosludges on public roads. These wastes would otherwise need to be transported off site to an appropriate disposal or recycling facility.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

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

Impact Analysis: The Renewal Application, dated March 2005 and revised June 2007(ENSR) includes a comprehensive characterization of specific wastes managed onsite, methods for minimizing wastes from the Refinery and from CO boilers, specific processes for preventing releases of hazardous wastes, corrective action to respond to releases, procedures for preventing hazards, a

contingency plan delineating emergency action for incidents involving hazardous wastes. In addition, stack tests were performed as part of the DTSC-approved Trial Burn Plan, which was completed in June 2006 and December 2006 to determine specific concentrations of chemicals in the stack of the CO Boilers. This data has been used in a Health Risk Assessment (HRA, October 2006), which included an analysis of potential impacts from both routine and upset/accident conditions on a variety of receptors. The 2006 HRA conformed to the DTSC-approved HRA work plan, was completed by October 2006 and approved in July 2007 (see Attachment C for details). The 2006 HRA concluded that allowing the storing and burning of hazardous waste in Tank 12038 and CO Boilers will not cause any unacceptable risk to human health in routine or upset/accident conditions.

As mentioned earlier, the CO Boilers burn hazardous waste as well as carbon monoxide and other fuel materials. On March 9, 2007, the Refinery experienced a problem, causing the shut down of the CO Boilers that provide steam to a portion of the refinery process, and control carbon monoxide emissions. The boilers' being shut down resulted in excess emissions of carbon monoxide to the atmosphere. This resulted in Shell being out of compliance with its operating permit conditions for several days. There were no injuries or community impact from the incident. The incident was caused in part by a crack in the steam piping and a valve malfunction. All mechanical issues related to the boilers system have been resolved and appropriate repairs made. The repairs to the steam header were conducted according to industry and Shell guidelines to ensure mechanical integrity. This steam header is part of the refinery's steam distribution system, not the CO Boiler itself. No agency approval for these repairs was required. While the equipment repaired was in part the cause of the CO release it was not the source of the CO release. This work only included repairs of existing steam header equipment. Neither DTSC nor the Bay Area Aiq Quality Management District provides any oversight for such maintenance activities. In general, during repair work of any equipment, Shell follows the procedures as recommended by the equipment manufacturers. As stated in Section 3 (Air Quality), these CO Boilers are also regulated also by the BAAQMD, which establishes the emission limits for hydrogen sulfide (H_2S), nitrogen oxides (NOX), sulfur dioxide (SO_2), CO, ammonia (NH_3), opacity, etc. Until this event, Shell Martinez had never exceeded its annual average CO emission limit. As a result of the incident, Shell reached a settlement with the BAAQMD, which included a fine. The fine imposed by the BAAQMD was associated with an exceedance of a rolling annual average of CO emissions permit limit. Shell Martinez Refinery staff repaired the steam distribution system as quickly as possible to return to compliance with BAAQMD permit limits. As confirmed by DTSC inspectors in May 2007, the waste feed to the CO Boilers was properly cut off prior to the shutdown of the CO Boilers. This incident did not cause any exceedance or violation of the refinery's RCRA Part B permit nor was there any release of any contaminants covered by the RCRA Part B permit. Since this incident only caused exceedances of BAAQMD permit limits, the BAAQMD had oversight authority for this incident.

The Project is to approve an existing facility and does not include new construction. Shell has operated the three boilers and Tank 12038, under DTSC's oversight, for the past 10 years and has not caused any hazardous waste releases. DTSC, therefore, has determined that if the Project is approved, it will not create a significant hazard to the public or the environment through reasonable foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

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

Impact Analysis: There are no sensitive receptors located within one-quarter mile of the Refinery processes handling the hazardous wastes.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

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

Impact Analysis: Government Code section 65962.5 requires the California Environmental Protection Agency to develop at least annually an updated Hazardous Waste and Substances Site List (also known as the "Cortese List"). This list is used as a planning document by the State, local agencies, and developers to comply with California Environmental Quality Act requirements in providing information about the location of hazardous materials releases. The Shell Martinez Refinery is not listed on the Cortese List.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

e. Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.

Impact Analysis: The Contra Costa County Hazardous Materials Area Plan, adopted in 1988, focuses on the management of hazardous materials. This Plan outlines the procedures that County regulatory and response agencies will use for managing, monitoring, containing and removing hazardous materials from the site of an actual or threatened accidental release. The Plan also identifies the agencies responsible for the effective management of hazardous materials within the County.

The Project is to approve an existing operation, no expansion planned. If approved, it will not impair implementation of, or physically interfere with, an adopted emergency response plan or evacuation plan.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

References Used:

California Department of Toxic Substances Control's Hazardous Waste and Substances Site List – Site Cleanup (Cortese List) http://www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm

Contra Costa County Community Development Department (CCCCDD). 2005. Contra Costa County General Plan 2005 – 2020. Safety Element. Dated January 18, 2005.

8. Hydrology and Water Quality

Project Activities Likely to Create an Impact: None.

Description of Baseline Environmental Conditions:

The Refinery is located within the San Francisco Bay Hydrologic Study Area and is bounded on the east by the Ygnacio Valley Groundwater Basin and on the west by the Arroyo del Hambre Groundwater Basin. The depth to the groundwater at the Refinery is about 50 to 60 feet at CO Boilers and 4 to 5.5 feet at Tank 12038. CO Boilers and Tank 12038 are about two miles apart.

Several unnamed aquifers occur beneath the Refinery, but are limited in water yield and areal extent. Groundwater beneath the Refinery occurs in several modes, including: (1) in interconnected pores and fractures within the bedrock hills, (2) temporarily or seasonally within alluvial deposits and localized fill which overlies the bedrock, (3) within unconsolidated alluvial fill which blankets the lower elevations, and (4) within the pore spaces of the low permeability bay mud which occurs near the Carquinez Strait and Suisun Bay. Groundwater beneath the Refinery, both shallow and deep, is brackish and limited in available economic quantities. Therefore, groundwater is not utilized as a domestic or industrial supply source. However, the groundwater basins which border the Refinery on the east and west are used as water supply sources.

Groundwater beneath the Refinery is recharged primarily from the surrounding hills. Water percolates downward through the pore spaces and fractures until it reaches the water table where the flow is then governed by hydraulic gradients as the water moves to areas of lower potential at the base of hills. Many of the unconsolidated alluvial sediments which occur at the bases of the hills are less permeable than the bedrock of the hills and retard the flow of the groundwater. As recharging groundwater from the bedrock encounters the less permeable alluvial sediments a mounding of groundwater occurs. During periods of high rainfall, water level fluctuations of over 25 feet have been observed in some wells and in the presence of seeps along the flanks of the hills. Groundwater within the alluvial sediments discharges to ponds, creeks, and marshlands in and surrounding the Refinery as well to Carquinez Strait and Suisun Bay. Groundwater flowing beneath the western property line of the Refinery discharges to the Arroyo Hambre Groundwater Basin, whereas groundwater flowing east from the Refinery discharges to the Ygnacio Valley Groundwater Basin. Groundwater which flows north from the central portion of the Refinery discharges to Carquinez Strait.

The groundwater within one mile of the Refinery boundary does not meet secondary standards for drinking water. Therefore, there are no drinking water wells. None of the water producing wells are located directly downgradient of the Refinery.

The Refinery is divided into two watersheds. Surface and process waters in the west watershed are collected by the sewer system which drains to the effluent treating area north of Marina Vista Boulevard. Process wastewaters in the east watershed are discharged to the gross oil separator and then pumped to the west watershed for additional treatment. Storm (surface) water in the east watershed is diverted to storm ponds equipped with oil baffles and weirs. After separation, the water is discharged through ditches, eventually entering Suisun Bay at Bulls Head point.

None of the permitted hazardous waste units lie within the 100-year floodplain.

Analysis as to whether or not project activities would:

a. Violate any water quality standards or waste discharge requirements.

   Impact Analysis: The project site, located within Peyton Slough watershed which encompasses 3.5 square miles including the Refinery, is zoned and allowed to store and treat hazardous material and waste.

   The Refinery is conducting groundwater cleanup/corrective action under the oversight of San Francisco Bay Regional Water Quality Control Board (RWQCB) Order 95-234. The RWQCB is the lead agency overseeing the cleanup of contaminated groundwater where hazardous substances

releases had occurred from areas other than Tank 12038 and three boilers. The Refinery's NPDES permit No. CA 0005789 issued by the RWQCB addresses applicable water quality and discharge of treated refinery effluent and stormwater. The Order No. 95-234 addresses groundwater monitoring and remediation activities. These requirements include an annual review of groundwater elevations, groundwater recovery rates and groundwater modeling to demonstrate the effectiveness of the Refinery's groundwater barrier projects.

Tank 12038 has adequate secondary containment; any releases will be detected during daily tank inspection, and be collected as soon as practical.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficient in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).

Impact Analysis: The project is to allow existing storage and burning of hazardous waste and will not use any groundwater supplies, or interfere substantially with groundwater recharge.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

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

Impact Analysis: The project is to allow existing storing and burning of hazardous waste. There is no new construction that may impact existing site drainage.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

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

Impact Analysis: The implementation of drainage facilities in the County falls under the jurisdiction of either the 19 cities, the County for the unincorporated areas, or the County Flood Control and Water Conservation District. All three groups generally use the same design criteria in sizing and evaluating drainage systems. The basis unit for the storm drainage is a watershed. Watershed boundaries do not coincide with political boundaries, but are determined by topography, or the "lay of the land." The pattern of stormwater drainage is determined by water's natural tendency to flow downhill. Consequently, much of the drainage system serving the County consists of natural drainage swales, ditches and water courses.

The Project is to allow existing storing and burning of hazardous waste. There is no new construction that may alter the existing drainage pattern of the site or area.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

e. Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.

Impact Analysis:

The Tank 12038 has adequate secondary containment, any run on or runoff liquid hazardous waste will be collected. Liquid hazardous waste stream is atomized prior to burning in CO Boilers; therefore there is no likelihood of liquid hazardous waste releases or runoff from boilers.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

f. Otherwise substantially degrade water quality.

Impact Analysis: See explanation in e.

The project is to allow existing storing and burning of hazardous waste. There is no new construction that may substantially degrade water quality.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

g. Place within a 100-flood hazard area structures which would impede or redirect flood flows.

Impact Analysis: None of the hazardous waste units (CO Boilers or Tank 12038) lies within the 100-year floodplain. Tank 12038 is found on the Flood Insurance Rate Map (FIRM) titled “City of Martinez, California Contra Costa County” revised on May 2, 2002, and the CO Boilers are found on the FIRM titled “Contra Costa County, California (Unincorporated Areas)” revised on September 7, 2001. The FIRMs illustrate that the active hazardous waste units are not located in the 100-year floodplain.

For more information, refer to Renewal Application (Part B Permit Application), Volume I, Section B.3.3- Site Surface Hydrology (100-year Floodplain), and Federal Emergency Management Agency FIRMs as Attachment B-22.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

h. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.

Impact Analysis: see explanation in g.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

i. Inundation by sieche, tsunami or mudflow.

Impact Analysis: Although the northern portion of the Refinery borders the shoreline of Carquinez Strait, wave height and tsunami run-up is expected to be small in the interior portions of the San Francisco Bay. The hazardous waste management units are located three miles from the shore and therefore are not expected to be subject to inundation by seiche, tsunami, or mudflow.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

References Used:

California Department of Water Resources. Statewide Groundwater Basin Map Version 3 (October, 2003) http://www.groundwater.water.ca.gov/bulletin118/basin_maps/index.cfm

9. Land Use and Planning

Project Activities Likely to Create an Impact: None.

Description of Baseline Environmental Conditions:

The Project is located in the central Contra Costa County (CCC) which predominant industrial uses of Central County include refineries in the northern part of Central County. Commercial use accounts for approximately 11 percent of the developed land in the County. Commercial uses such as office parks and business strips are located on the major thoroughfares of I-680, State Route 242, and others. As in the West County Area, residential development in the Central County area covers approximately 30 percent of the total developed land.

The land use at the Refinery is identified as Heavy Industry in the CCC General Plan. Land uses surrounding the Refinery include commercial, industrial, and residential developments, as well as open spaces and recreational areas. The Refinery property to the north is bordered by open space and recreational space associated with the Carquinez Strait Regional Shoreline. The northern portion of the Refinery itself borders the shoreline of Carquinez Strait. The properties on the opposite side of Interstate 680 consist of more open space and recreational space, some associated with the Mt. View Sanitary District wetlands. South of Pacheco Boulevard, the land use is primarily a mix of commercial and residential activities within the City of Martinez.

While residential growth has been very strong in the central portion of the County through the 1980s, many of the cities along the I-680 corridor are now reaching “built out,” as the last remaining lands are developed. Housing growth will continue and at least 10,000 more units may be added in the North

Central area. The residential neighborhood east of I-680 shall be buffered from the industrial/land fill-related sites.

The Refinery is located mainly in the unincorporated portions of Contra Costa County, adjacent to the City of Martinez. It comprises three parcels of land with a total area of about 880 acres. The two smaller parcels and the north-western portion of the large parcel are located within the City of Martinez boundaries, while the remaining site extends over unincorporated land. The CO Boilers are located on unincorporated Contra Costa land; T-12038 and the Biotreater are within Martinez City boundaries. The Refinery is bounded to the northeast and east by I-680; Pacheco Boulevard and numerous local streets to the south and west; and by the Carquinez Strait and Southern Pacific railroad tracks to the north.

Analysis as to whether or not project activities would:

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

   Impact Analysis: The Project is to approve an existing operation and no new construction is proposed.

   Conclusion:
   ☐ Potentially Significant Impact
   ☐ Potentially Significant Unless Mitigated
   ☐ Less Than Significant Impact
   ☒ No Impact

b. Conflict with any applicable habitat conservation plan or natural community conservation plan.

   Impact Analysis: There is no Habitat Conservation Plan and Natural Community Conservation Plan with jurisdiction over the activities covered in the Renewal Application. The East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan pertain to areas well to the east of the Refinery property.

   Conclusion:
   ☐ Potentially Significant Impact
   ☐ Potentially Significant Unless Mitigated
   ☐ Less Than Significant Impact
   ☒ No Impact

References Used:

Contra Costa County Community Development Department (CCCCDD). 2005. Contra Costa County General Plan 2005 – 2020. Land Use Element. Dated January 18, 2005.

East Contra Costa County Habitat Conservation Plan Association http://www.cocohcp.org/

10. Mineral Resources

Project Activities Likely to Create an Impact: None.

Description of Baseline Environmental Conditions:

Mineral resources in the Contra Costa County include aggregate and stone for commercial, industrial, and construction uses. The Contra Costa County General Plan (CCCCDD, 2005) shows that there are no significant mineral resources located in the vicinity of the Refinery. The most important resources that are

currently mined in the area include crushed rock near Mt. Zion, shale in the Port Costa area, and sand and sandstone deposits mined from several locations but focused in the Byron area. The deposits in Port Costa are the closest deposits to the Refinery and are located approximately 3 miles from the Refinery and are surrounded by the Carquinez Straits Regional Shoreline Park. No mineral mining occurs on the Refinery property.

The Project is to approve an existing operation and no new construction is proposed. Therefore, renewal of the permit would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local General Plan Maps. In the unlikely event that mineral resources are identified at this site in the future; the potential that materials under this site would be a readily accessible or economically viable mineral resource is very low. For these reasons, no further analysis of impacts to this resource category is deemed necessary.

Analysis as to whether or not project activities would:

a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

   Impact Analysis:

   Conclusion:
   ☐ Potentially Significant Impact
   ☐ Potentially Significant Unless Mitigated
   ☐ Less Than Significant Impact
   ☒ No Impact

b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

   Impact Analysis:

   Conclusion:
   ☐ Potentially Significant Impact
   ☐ Potentially Significant Unless Mitigated
   ☐ Less Than Significant Impact
   ☒ No Impact

References Used:

Contra Costa County Community Development Department (CCCCDD). 2005. Contra Costa County General Plan 2005 – 2020. Conservation Element. Dated January 18, 2005.

11. Noise

Project Activities Likely to Create an Impact: Burning of hazardous waste

Description of Baseline Environmental Conditions:

The primary noise source at the Refinery is associated with normal refinery activities which may include loading and operation of vessels, noise generated by various pumps and operation of the vapor recovery system. Additional noise sources include traffic noise from Interstate 680 and commercial and industrial activities (e.g., trains, truck deliveries) and residential noise sources (e.g., passenger vehicles along Pacheco Road).

In Contra Costa County, traffic along freeways (e.g., Interstate 80, Interstate 680, State Route 24, and State Route 4), and major arterials (e.g., Willow Pass Road and Ygnacio Valley Road) are the primary sources of vehicular traffic. Rail operations also contribute to the noise environment in the County. The Atichison Topeka and Santa Fe (ATSF) and Southern Pacific (SP) railroad corridors in the County are primary freight lines. These lines generate high noise levels during passbys and their trains are required to sound their whistles when crossing roadways at-grade. The Bay Area Rapid Transit (BART) system is an electrically driven passenger line. BART passbys are typically less noisy than the freight trains. BART trains do not have at-grade crossings. Existing air traffic activity also contributes to the noise in the Contra Costa County. Buchanan Field, near Concord, is the primary source of aircraft noise. Other sources of aircraft noise are local emergency airports and military helicopter activity. The remaining noise sources are industrial plants such as oil refineries and materials processing plants.

Analysis as to whether or not project activities would:

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

   Impact Analysis: The Project is to approve an existing operation and no new construction is proposed. The three boilers burn fuels, non-hazardous waste, and hazardous waste continuously and this generates some noise. Noise generated as result of burning hazardous waste is indistinguishable from continuous fuels or non-hazardous waste burning. Therefore the Project will not expose persons or generate noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies.

   Conclusion:
   ☐ Potentially Significant Impact
   ☐ Potentially Significant Unless Mitigated
   ☐ Less Than Significant Impact
   ☒ No Impact

b. Exposure of persons to or generation of excessive groundbourne vibration or groundbourne noise levels.

   Impact Analysis: see explanation in a. The project will not expose persons to or generate excessive groundbourne vibration or noise levels.

   Conclusion:
   ☐ Potentially Significant Impact
   ☐ Potentially Significant Unless Mitigated
   ☐ Less Than Significant Impact
   ☒ No Impact

c. A substantial permanent increase in ambient noise levels in the vicinity above levels existing without the project.

   Impact Analysis: see explanation in a. Therefore no substantial permanent increases in ambient noise levels in the vicinity.

   Conclusion:
   ☐ Potentially Significant Impact
   ☐ Potentially Significant Unless Mitigated
   ☐ Less Than Significant Impact
   ☒ No Impact

d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

Impact Analysis: see explanation in a. The project will not have a substantial temporary or periodic increase in ambient noise levels in the project vicinity.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

References Used:

12. Population and Housing

Project Activities Likely to Create an Impact: None.

Description of Baseline Environmental Conditions:

Contra Costa County is the ninth most populous county in California with a population at approximately 949,000 as of the 2000 census. According to the Contra Costa County General Plan (CCCCDD, 2005), this represents an increase of 18% over the previous census in 1990. Additional population growth is expected within the county, most notably within the cities of Richmond and Hercules in the western part of the county. Contra Costa County has experienced a 12% increase in housing stock between 1990 and 2000, with the City of Martinez experiencing a 13% increase for the same period.

The Project is to approve an existing operation and no new construction is proposed. There are no aspects of the project that would result in displacement of existing housing or the construction of replacement housing. It is not anticipated that this project will result in substantial population growth in the area or would require additional roads or other infrastructure. For these reasons, no further analysis of impacts to this resource category is deemed necessary.

Analysis as to whether or not project activities would:

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

Impact Analysis:

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.

Impact Analysis:

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Impact Analysis:

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

References Used:

Contra Costa County Community Development Department (CCCCDD). 2005. Contra Costa County General Plan 2005 – 2020. Housing Element. Dated January 18, 2005.

U.S. Census Bureau, 1990 and 2000 Census http://factfinder.census.gov/

Shell Martinez Refinery http://www.piersystem.com/go/doc/159/1712/

13. Public Services

Project Activities Likely to Create an Impact: Burning of hazardous waste

Description of Baseline Environmental Conditions:

City, autonomous Fire Districts, and County governed fire districts provide the protection and suppression services throughout the Contra Costa County. All fire agencies within the County have signed mutual aid agreements to provide assistance to neighboring agencies. Projects which fall within a city boundary are subject to city review rather than County review. Of critical importance to reducing fire-related losses are fire prevention techniques and successful fire control and extinguishment. The latter requires that fire fighters and equipment are able to arrive at the scene promptly.

Analysis as to whether or not project activities would:

a. Result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:

- Fire Protection: Fire protection and emergency medical services within the City of Martinez are provided by the Contra Costa County Fire Protection District (CCCFPD) which had a total of approximately 400 personnel and 30 fire stations located throughout the fire district's service area. The two stations closest to the Refinery are located at 521 Jones Street (Station 14) and 1240 Shell Avenue (Station 12). The Refinery maintains an internal fire department on-site and provides its own security staff and security infrastructure for day-to-day site security needs. As such, it places few demands on the public services in Contra Costa County. As a supplemental fire protection resource, the Refinery and other Bay Area refineries and industrial facilities are members of a mutual aid emergency response association.

- Police protection: Police services in Contra Costa County are provided by a number of agencies at several levels of government. These agencies include: the Federal Bureau of Investigation; the California Highway Patrol; the Contra Costa County Sheriff's Department; the individual city police departments; the Kensington Police District' the East Bay Regional Parks District Police;

the State Park Rangers; and the Bay Area Rapid Transit District Police. Police protection services within the City of Martinez are provided by the Martinez Police Department (MPD). The MPD operates one station, located at 525 Henrietta Street in Martinez and as of July 2003 included 66 sworn officers.

- Schools: There are 18 school districts and one community college district in the County. Figure 7-9 (CCCCDD, 2005) also indicates the location of existing and sites for proposed new schools. The area of Martinez closest to the Refinery is served by the Martinez Unified School District which has a K-12 grade enrollment of 4,194 students. The district includes four elementary schools, one middle school, one high school, a continuation high school and an Independent Study program school. Currently, the district's K-12 grade average daily attendance is declining with a decline of 125 students noted from 2003-2004 to 2004-2005.

- Parks: The Martinez Public Works Department maintains 103 acres of developed parkland and 230 acres of open space throughout the City. The Shell Oil Company leases the property for the Highland Avenue Park to the City. This small park is located on a ¼-acre lot in a residential neighborhood adjacent to the western perimeter of the Refinery. Several other parks are located within the Martinez city limits and the largest include: the 42-acre Rankin Park located to the west of downtown Martinez and the 150-acre Martinez Waterfront Park located within the Martinez Regional Shoreline and adjacent to Refinery property north of Joe DiMaggio Drive.

- Other public facilities: The City of Martinez also supports the Martinez Senior Community Center located at 818 Green Street, the Martinez Boys & Girls Club located at 1301 Alhambra Avenue, the Martinez Community Swimming Pool at 100 Buckley Street, and a public library at 74 Court Street.

Impact Analysis: The Project is to approve an existing operation and no new construction is proposed. There is no need of additional public services.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

References Used:

LSA, 2003. Draft - Downtown Martinez Specific Plan and Environmental Impact Report. Prepared by LSA Associates, Inc. for the City of Martinez Community and Economic Development Department. http://www.cityofmartinez.org/depts/planning/advance.asp

Contra Costa County Fire Protection District http://www.cccfpd.org/

Martinez Unified School District http://www.martinez.k12.ca.us/

City of Martinez, California http://www.cityofmartinez.org/default.asp

14. Recreation

Project Activities Likely to Create an Impact: None.

Description of Baseline Environmental Conditions:

According the Contra Costa County General Plan (CCCCDD, 2005), there are several major parks and open spaces administered by the East Bay Regional Park District or the California Department of Fish and Game within approximately 3 miles of the Refinery. These include the Carquinez Strait Regional

Shoreline and the Martinez Regional Shoreline to the west and the Waterbird Regional Preserve and Point Edith Wildlife Area to the east.

The Carquinez Strait Regional Shoreline comprises 2,795 acres of bluffs and shoreline along Carquinez Scenic Drive between the town of Crockett and the hillsides overlooking Martinez. Multi-purpose trails provide access to canyon views and ridge-top vistas. The Martinez Regional Shoreline contains areas for boating and fishing, multiple walking and biking trails, a horse arena, bocce ball courts, softball diamonds, and soccer fields. The Waterbird Regional Preserve is a 198-acre area comprised of a wetland and associated uplands to the east. The Point Edith Wildlife Area consists of approximately 760 acres of marshes, water channels, and ponds located approximately 2 ½ miles east of Martinez, north of Waterfront Road.

The City of Martinez website lists 16 parks within the city boundaries. Those closest to the Refinery include: the Highland Avenue Park located along the western perimeter of the Refinery, the Martinez Waterfront Park located adjacent to Refinery property north of Joe DiMaggio Drive, and Cappy Ricks Park, a 1 acre park with tennis courts, basketball courts, picnic areas and a playground, located near Pacheco Boulevard approximately 800 feet from the Refinery. The city also supports the Martinez Senior Community Center located at 818 Green Street, the Martinez Boys & Girls Club located at 1301 Alhambra Avenue, the Martinez Community Swimming Pool at 100 Buckley Street, and a public library at 74 Court Street.

The Project is to approve an existing operation and no new construction is proposed. No new growth, additional employees or recreational facilities will be required. For these reasons, no further analysis of impacts to this resource category is deemed necessary.

Analysis as to whether or not project activities would:

a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

   Impact Analysis:

   Conclusion:
   ☐ Potentially Significant Impact
   ☐ Potentially Significant Unless Mitigated
   ☐ Less Than Significant Impact
   ☒ No Impact

b. Include recreational facilities or require construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

   Impact Analysis:

   Conclusion:
   ☐ Potentially Significant Impact
   ☐ Potentially Significant Unless Mitigated
   ☐ Less Than Significant Impact
   ☒ No Impact

References Used:

Contra Costa County Community Development Department (CCCCDD). 2005. Contra Costa County General Plan 2005 – 2020. Open Space Element. Dated January 18, 2005.

California Department of Fish and Game, Lands and Facilities Branch, Point Edith Wildlife Area
http://www.dfg.ca.gov/lands/wa/region3/pointedith.html

East Bay Regional Park District, Waterbird Regional Preserve
http://www.ebparks.org/parks/waterbrd.htm

City of Martinez, California, Recreation and Community Services
http://www.cityofmartinez.org/depts/community/recreation/default.asp

15. Transportation and Traffic

Project Activities Likely to Create an Impact: None.

Description of Baseline Environmental Conditions:

The Refinery is located in the City of Martinez, Contra Costa County, and is north of State Route 4, west of Interstate 680 (I-680), and south of the Benicia Bridge. The Refinery is roughly bound by Marina Vista to the north and Pacheco Boulevard to the south. I-680 is a freeway composed of 6 to 8 lanes. It runs north-south along the east side of the Refinery, and can be accessed from the Refinery by Marina Vista, Pacheco Boulevard, or Arthur Road. State Route 4 is four-lane freeway that is located south of the Refinery, and runs east-west, and intersects I-680.

Traffic routing and control at the Refinery are designed for free and safe access of routine and emergency traffic onto and about the Refinery. Everyday approximately 700 vehicles enter and leave the Refinery, however, only a small portion of this traffic is associated with the operation of Tank 12038 and the three CO Boilers, which would continue to be authorized by this Project.

Waste DAF float is transferred by the pipes through the surge tank (Tank 12038) to the CO Boilers. Process wastewater is transferred into the Biotreater through piping and, once treated, is discharged to the receiving waters through piping. No vehicles are needed.

Approximately one flatbed truck every week is required to haul the precipitator fines from the CO Boilers off-site for disposal in a permitted Class I disposal facility in Kern County.

The general traffic in the Refinery consists of product shipments (asphalt, sulfur, petroleum coke, propane), Refinery employees, contractors, and hazardous waste shipments away from the Refinery. The product shipments use rail cars, tank trucks and hopper trucks. Refinery employees use cars and pickup trucks. The contractors use pickup trucks, cars, vacuum trucks, end dumps, forklifts, cranes, and backhoes. The hazardous waste shipments associated with the Refinery (as a generator not a hazardous waste facility) use bins, and dumps, vacuum trucks, enclosed vans, and flatbeds.

The Refinery has an established traffic control system that is enforced by the Health and Safety Department of the Refinery. All vehicles entering and exiting the Refinery must be checked in and out at one of the vehicle gates. The maximum speed limit in the Refinery is 20 mph. In some operating areas the maximum speed limit is 15 or 10 mph. All speed limit requirements are posted. Reflectorized markers are present along roads where there is tank. Each major intersection is marked with a stop sign and the other intersections are marked with yield signs. Some of the bridges in the Refinery are designated as one lane bridges and others are posted with weight limits. If one load of a road is blocked for any reason, a traffic control system is setup with flag personnel.

All roads within the Refinery are constructed of black top pavement. The roads can handle an H20 load capacity which is the Department of Transportation's Code for the load capacity of a truck and trailer. This means that the roads in the Refinery can handle any truck that is allowed to travel on public roads.

Analysis as to whether or not project activities would:

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

Impact Analysis: The Project is to approve an existing hazardous waste storage and treatment facility and no new construction is proposed. The Project will have no effect on the existing transportation system in the vicinity of the site. However, if the Project were not approved, there could be an increase in traffic generated by the transport of hazardous wastes offsite because the hazardous wastes could not be combusted in the Refinery carbon monoxide boilers.

References:

Draft Environmental Impact Report for Shell Oil Company, Martinez Manufacturing Complex, March 1994.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☒ Less Than Significant Impact
☐ No Impact

b. Exceed, either individually or cumulatively, a level of service standard established by the country congestion management agency for designated roads or highway.

Impact Analysis: Freeway service levels are calculated using the Highway Capacity Manual methodology, which relates Level of Service (LOS) to factors affecting drivers' speed, proximity to other drivers, freedom to maneuver, etc. The parameter used to define freeway LOS is density, expressed in passenger cars per mile per lane (pc/mi/ln). Density can be related to the peak hour flow rate (i.e. passenger cars per hour per lane), given a design speed for the freeway segment in question. LOS is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Six service levels are defined ranging from LOS A, the best operating conditions, to LOS F, the worst operating conditions. Acceptable intersection operations are defined as LOS D or better. LOS E corresponds to "at-capacity" operations. When volumes exceed capacity, stop-and-go conditions result and operations are designated LOS F. (See Attachment E for details).

The Project is to approve an existing operation and no new construction is proposed. The Project will have no impact on the level of service standard.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

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

Impact Analysis: All roads within the Refinery are constructed of black top pavement. The roads can handle an H20 load capacity that meets the Department of Transportation's Code for the load capacity of a truck and trailer. This means that the roads in the Refinery can handle any truck that is allowed to travel on public roads, such as the trucks used at the Refinery for hazardous waste purposes. Please refer to Part B Permit Application, Volume I, Section B.3.4.2- Access Roads.

The Project is to approve an existing operation and no new construction is proposed. The Project will not substantially increase hazards due to a design feature.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

d. Result in inadequate emergency access.

Impact Analysis: Main emergency access routes in the vicinity of the Refinery would involve Highway 680 to the east which runs north and south and east/west running roads which intersect Highway 680 including Marina Vista, Pacheco Boulevard, and Highway 4. Highway 4 also connects to Interstate 80 about 10 miles west of the Refinery.

The Project is to approve an existing operation and no new construction is proposed. The Project will not result in inadequate emergency access.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

e. Result in inadequate parking capacity.

Impact Analysis: Ample parking is provided at the Refinery. The Project is to approve an existing operation, no new construction is proposed and no new employees are required. The Project will not result in inadequate parking capacity.

References:

Draft Environmental Impact Report for Shell Oil Company, Martinez Manufacturing Complex, March 1994.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

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

Impact Analysis: Bicycle racks/facilities in downtown Martinez, are located to the west of the Refinery, Numerous biking trails are also available within the recreational areas located along the Carquinez Strait shoreline. Contra Costa County Transit Authority (CCCTA) operates the majority of the bus service in the downtown Martinez Area. There is an Amtrak station located on Marina Vista to the west of the Refinery. According to Martinez City Staff, there are approximately 15 freight trains that pass through the downtown area. The Union Pacific Railroad (UPRR) provides this freight service. These rail freight lines bisect the northern and southern portions of the Refinery property.

The Project is to approve an existing operation, no new construction is proposed and no new employees are required. The Project will not result in conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

References Used:

LSA, 2003. Draft - Downtown Martinez Specific Plan and Environmental Impact Report. Prepared by LSA Associates, Inc. for the City of Martinez Community and Economic Development Department. http://www.cityofmartinez.org/depts/planning/advance.asp

16. Utilities and Service Systems

Project Activities Likely to Create an Impact: Burning of hazardous waste

Description of Baseline Environmental Conditions:

Water service in Contra Costa County is provided by special service districts or by nine municipalities. There are two major providers in the County: the East Bay Municipal Utility District (EBMUD) and the Contra Costa Water District (CCWD). EBMUD delivers water directly to its customers after it is treated. CCWD provides treated water services to several cities in the Central County area and several city and other water agencies buy "raw," untreated water form CCWD, treat it, and then sell it to their own local customers.
Sewer service in Contra Costa County is the responsibility of several municipalities and service districts. The largest sewage treatment agencies are Central Contra Costa Sanitary District (CCCSD), which serves most of the central portion of the County; Delta Diablo; West Contra Costa Sanitary District; and the EBMUD. Sewer service consists of the transmission of municipal and industrial wastewater to a treatment facility, and then disposal of the wastewater and residual waste solids. As with water service, several cities operate their own local sewage collection system and contract with the larger agencies to treat the effluent.

In Contra Costa County the private sector has traditionally been responsible for solid waste collection and disposal. It is estimated that residents, businesses and industries in the County generate over 1,300,000 tons of solid waste annually. Fourteen of the 19 cities and four special districts franchise solid waste collection. All of the disposal facilities, as well as the collection services, are privately owned. Presently, there are three separate landfill sites disbursed geographically throughout Contra Costa County, with one site serving West County, one serving Central and South County, and another serving East County. Two of these sites have very limited capacity and are expected to close in the near future. There are four transfer stations in the County.

The Contra Costa County Hazardous Waste Management Plan, prepared in 1989 pursuant to State law, is a comprehensive analysis of all aspects of hazardous waste management from generation through disposal. The Contra Costa County Hazardous Waste Management Program is established to ensure the safe and responsible management of hazardous wastes within the County. It is important to note that most hazardous waste is generated and managed by private sector companies, which are regulated by the County Health Services Department and DTSC. As shown in Figure 7-8 (CCCCDD, 2005), the two existing commercial hazardous waste treatment and transfer facilities, the Ecology Central Industries and the Oynx Environmental Services are the only facilities in the County that are permitted for commercial hazardous waste management.

Analysis as to whether or not project activities would:

a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.

Impact Analysis: The Project is to approve an existing operation, no new construction is proposed, and the Project will not exceed waste water treatment requirements.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

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

Impact Analysis: The Project is to approve an existing operation, no new construction is proposed, and no new water or wastewater treatment facilities or expansion is needed.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

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

Impact Analysis: The Project is to approve an existing operation and no new storm water drainage facilities or expansion is needed.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

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

Impact Analysis: The Project is to approve an existing operation and no new construction for demand for water is proposed and sufficient water supplies are available to serve the Project. No aspects of the project will change the water supplies.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

e. Result in determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the projects projected demand in addition to the providers existing commitments.

Impact Analysis: The Project is to approve an existing operation and the Refinery has adequate wastewater treatment capacity.

Conclusion:

☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

f. Be served by a landfill with sufficient permitted capacity to accommodate the projects solid waste disposal needs.

Impact Analysis: Currently the Refinery uses Clean Harbors Class 1 landfill in Buttonwillow, Kern county, California for disposing of the hazardous waste residues. The Renewal Application proposes a reduction in the number of waste management units and waste streams. The renewal of this permit will reduce the amount of waste residues and traffic that go from the Refinery to the landfill.
.
Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

g. Comply with federal, state, and local statutes and regulations related to solid waste.

Impact Analysis: The management of the hazardous waste will comply with federal, state, and local statutes and regulations. The current hazardous waste burning residue is sent to the Class 1 landfill at Clean Harbors Buttonwillow facility, Kern County, California.

Conclusion:
☐ Potentially Significant Impact
☐ Potentially Significant Unless Mitigated
☐ Less Than Significant Impact
☒ No Impact

References Used: Contra Costa County Community Development Department (CCCCDD). 2005. Contra Costa County General Plan 2005 – 2020. Public Facilities/Services Element. Dated January 18, 2005.

Finding Of De Minimis Impact To Fish, Wildlife And Habitat

The following provides substantial evidence as to why the Project will have **no potential for adverse effect** on the listed resources as defined by section 711.2 of the Fish and Game Code:

a. Riparian land, rivers, streams, watercourse, and wetlands under state and federal jurisdiction.

Discussion:

The Refinery is located on a broad plain in the north central portion of Contra Costa County. To the north is the open water of the Suisun Bay and the Carquinez Strait. The land surrounding the Refinery has an urban and industrial appearance, separated by areas of open space, wetlands, and shoreline.

The shoreline between the Martinez waterfront and the Concord Naval Weapons Station has been identified as a Significant Ecological Resource Area in the Contra Costa County General Plan. A small portion of the Refinery property crosses through this area, but the hazardous waste storage and burning activities are not expected to impact this resource area. The portion of the shoreline near the Refinery is relatively developed and also contains recreational areas and is adjacent to the Benicia-Martinez Bridge crossing the Carquinez Strait.

There are no federally protected wetlands located at the Refinery. The most significant wetland is in the vicinity of the site would include the tidal marshes located along the shoreline. Across Interstate 680 from the Refinery, the Mt. View Sanitary District, which provides sewer service to unincorporated areas east of the City of Martinez, manages two wetland areas that receive treated plant effluent. These marshes, the 21-acre constructed Moorhen Marsh and the 130-acre McNabney Marsh, support a variety of aquatic invertebrates, waterfowl, and other marsh wildlife.

The Project is to approve an existing operation within an existing facility. There is no new construction, no new air pollutants or waste discharges that could potentially impact riparian land, rivers, streams, watercourse, and wetlands under state and federal jurisdiction.

Finding:

☒ No potential for adverse effect.

b. Native and non-native plant life and the soil required to sustain habitat for fish and wildlife.

Discussion:

There is no significant habitat for vegetation or wildlife on the site of the CO Boilers because it is mostly graded, paved, covered with gravel, or developed. Small areas of the Refinery are covered with grasses, ornamental trees, and shrubs.

Migratory fish may travel past the site along the Carquinez Strait. The recent Natural Diversity Database of the California Department of Fish and Game (CDFG) (which also includes federally listed species) and the Electronic Inventory of the California Native Plant Society were searched for records of special-status species in or near the study area (within 4 miles of the site). Four special-status plant species (*Lilaeopsis masonii*, *Aster lentus, Lathyrus jepsonii,* and *Cordylanthus mollis)* were found with potential to occur in the vicinity of the Refinery. All four plant species are associated with brackish and saltwater marshes that are not found within the developed areas of the Refinery property subject to the Renewal Application.

The recent Natural Diversity Database of the CDFG was also searched for records of special-status wildlife species in or near the study area (2005 County General Plan). Nine special-status animal species (*Laterallus jamaicensis coturniculus, Rallus longirostris obsoletus, Geothlypis trichas sinuosa, Melospiza melodia maxillaries, Agelaius tricolor, Pogonichthys macrolepidotus, Nyctinomops macrotis, Reithrodontomys raviventris,* and *Emys marmorata* with potential to occur in the study area were found. Study area was within 4 miles of the site. Most species were associated with either brackish/saltwater marshes or freshwater systems that could be located in the general vicinity of the Refinery along the shoreline. However, due to the industrialized and commercial nature of the Refinery and the surrounding properties, no sensitive biological resources are known to be located at the existing Refinery or within the immediate proximity of the Refinery

An ecological impact assessment was performed as part of the 1989 Carbon Monoxide Boiler Health Risk Assessment because air contaminants from boilers might affect biological resources either by direct exposure and contact with contaminated air or indirectly by deposition of the contaminants onto soil, water, and leaf surfaces. The habitat studied in 1989 was the same as described in 2005 CCGP, included open water areas, wetland, and upland. In addition, the Special Status Species studied in 1989 including the following three plant species: 1) Mason's Lilaeopsis (*Lilaeopsis masonii)*, 2) Delta Tule Pea (*Lathyrus jepsonii, 3)* Soft Bird's Beak (*Cordylanthus mollis)* and three animal species: 1) California Black Rail (*Laterallus jamaicensis coturniculus), 2*) Suisun Song Sparrow (*Melospiza melodia maxillaries), 3)* Salt Marsh Harvest Mouse (*Reithrodontomys raviventris)* are still listed in 2005.

The 1989 ecological assessment was included in the 2000 HRA included the following study:

i) Impacts to terrestrial resources (wildlife and vegetation) from deposition of air emissions: Air pollutants can impact vegetation and wildlife indirectly by deposition of the contaminants to soil or plant surfaces and then uptake or absorption into the organism. The pathway by which deposition of air pollutants can impact vegetation and wildlife is ingestive uptake or intake. Ingestion is the most common method of exposure to wildlife form air pollutant emissions. This occurs in animals by swallowing food or water containing the air pollutants or ingesting contaminants deposited by absorption on their bodies during grooming. Ingestive uptake in plants occurs by absorption of contaminants through the roots where air pollutants have deposited on the soil.

Metals and other nonvolatile compounds would generally be bound to particles and deposited on foliage, soil, or water. Soil acts as “sinks” for heavy metals. Small quantities of metals in soil favorably influence the growth of plants, but at certain concentrations they may be toxic to many organisms and may bioconcentrate and biomagnify through the food chain. Roost of plants may accumulate them and then may transport them to above-ground portions of the plant. This may result in either greater plant growth or injury, depending on how much of the nutrient is taken up through the plant and the sensitivity of the plant to the compound. The presence of contaminants in the above-ground portions of plants would also increase the availability of contaminants to the food chain.

Table 5-2 of 2000 HRA compares maximum concentrations of heavy metals resulting from the CO Boilers emissions compared to suggested screening concentrations for trace elements found to adversely affect terrestrial plants. The maximum concentrations were calculated using the same methodology described in Appendix C (Air Dispersion Modeling) of 2000 HRA. Two types of screening levels are presented within the table. One gives a concentration which when present in the soil has been found harmful to plants through plant uptake. The other type gives a concentration of the element found to be present in the tissues of plants that have been harmed by uptake of contaminants. Concentrations calculated at the point of maximum impact for both soil and plant tissues are presented in Table 5-2 of 2000 HRA for comparison to the screening levels. Comparison of the CO Boilers emission concentrations to the screening levels, again, shows that the maximum concentrations from the facility are many times less than the impact screening levels.

Table 5-3, of 2000 HRA, compares screening concentration values representing the lowest dietary concentrations found to be harmful to terrestrial animals to concentrations found in different aspects of diet calculated from project emissions at the point of maximum impact. This impact once again shows that concentrations from the CO Boilers emissions are much less than the screening level concentrations. Comparing the concentrations for animal effects form Table 5-3 within the values for plant tissue concentrations (Table 5-2 of 2000 HRA) shows that all metals in these tables, except for lead, would harm the plants before they would harm animals. This is especially true with arsenic, cadmium, and nickel which would cause plant death before the contaminant would be exposed to the food chain; therefore these compounds that highly toxic to plants do not accumulate much through the food chain.

Of the organics that are emitted from the Refinery, the semi-volatile organic compounds with the largest molecular structure, the lowest water solubility, and the lowest vapor pressure, have the greatest chance of accumulating in soil and vegetation. These compounds would be the polynuclear aromatic hydrocarbons (PAHs), specifically benzo(a)pyrene and naphthalene. In an EPA Study of the fat and transport of organic priority pollutants applied to palnt-soil systems at rates characteristic of municipal sludge treatment, it was found that at loading rates of 0.1, 1.0, and 10 parts per million (ppm) of PAHs, the chemicals did not have any significant phytotoxic response for the four vegetative species observed. The concentrations and loading rates in the EPA study were significantly higher than that what would be deposited form emissions from the CO Boilers; therefore, since there was no impact form the significantly greater concentrations, there would not be any significant impacts expected from emissions of the CO Boilers and the combustion of DAF float.

ii) Impacts to aquatic resources from deposition of air pollutants:

Some of the compounds that will be emitted from the Refinery will be adsorbed to particulates and deposited on surface waters. Because of the volatility of many of the organic compounds, they are not easily absorbed into water form air; consequently, concentrations of volatile organics expected to enter and persist in the aquatic environment are expected to be extremely low. Inorganic emissions depositing out of the atmosphere as particulates would have the greatest potential to enter into aquatic environments. To determine the impacts of emissions from the CO Boilers that have been absorbed into or deposited onto water, a comparison was made between the maximum concentrations of pollutants in water, based on the point of maximum impact, from the CO Boilers emissions modeling and the most conservative concentrations of toxicity compounds to saltwater and freshwater aquatic organisms. This comparison, shown in Table 5-4 (of the 2000 HRA), reveals that the concentrations of pollutants contributed from the CO Boilers in water are many times less than the conservative chronic toxicity levels and are low enough concentrations so they would not add a significant contribution to background concentrations.

The 1989 ecological impact assessment of CO Boiler emissions was conducted by comparing the calculated maximum pollutant concentrations to acceptable screening-level concentrations. The results of the assessment showed that maximum pollutant concentrations were one or more orders of magnitude below conservative screening-level concentrations, and concluded that burning hazardous wastes in CO Boilers would not impact the biological resources.

The Project is to approve an existing operation with fewer waste streams than allowed in the previous permit. There is no new construction, soil or vegetation disturbance, or new air pollutants and waste discharges that could potentially impact native and non-native plant life and the soil required to sustain habitat for fish and wildlife.

Finding:
☒ No potential for adverse effect.

c. Rare and unique plant life and ecological community's dependent on plant life.

Discussion: see explanation in "b"
The Project is to approve an existing operation within an existing facility. There is no new construction, soil or vegetation disturbance, no new air pollutants or waste discharges that could potentially impact rare and unique plant life and ecological community's dependent on plant life.

Finding:
☒ No potential for adverse effect.

d. Listed threatened and endangered plant and animals and the habitat in which they are believed to reside.

Discussion:

See explanation in "b."

The Project is to approve an existing operation within an existing facility. There is no new construction, soil or vegetation disturbance, no new air pollutants or waste discharge that could potentially impact listed threatened and endangered plant and animals and the habitat in which they are believed to reside.
Finding:
☒ No potential for adverse effect.

e. All species of plant or animals as listed as protected or identified for special management in the Fish and Game Code, the Public Resources Code, the Water Code, or regulation adopted there under.

Discussion: see explanation "b"

The Project is to approve an existing operation within an existing facility. There is no new construction, soil or vegetation disturbance, no new air pollutants or waste discharge that could potentially impact species of plant or animals as listed as protected or identified for special management in the Fish and Game Code, the Public Resources Code, the Water Code, or regulation adopted there under.

Finding:
☒ No potential for adverse effect.

f. All marine and terrestrial species subject to the jurisdiction of the Department of Fish and Game and the ecological communities in which they reside.

Discussion: see explanation in "b"

The Project is to approve an existing operation within an existing facility. There is no new construction, soil or vegetation disturbance, no new air pollutants or waste discharge that could potentially impact marine and terrestrial species subject to the jurisdiction of the Department of Fish and Game and the ecological communities in which they reside.
Finding:
☒ No potential for adverse effect.

g. All air and water resources the degradation of which will individually or cumulatively result in a loss of biological diversity among the plants and animals residing in that air and water.

Discussion:
The Refinery is regulated by the Bay Area Air Quality District (BAAQMD), and emissions of all air pollutants are permitted by BAAQMD. The Refinery is also regulated by the San Francisco Bay Regional Water Quality Control Board (RWQCB). All discharge into surface water or groundwater are therefore regulated and permitted by the RWQCB. The Project is to approve an existing operation within an existing facility. There will be no new air pollutants or waste water discharge that cause the degradation of air and water resources that will individually or cumulatively result in a loss of biological diversity among the plants and animals residing in that air and water.

Finding:
☒ No potential for adverse effect.

Mandatory Findings of Significance

Based on evidence provided in this Initial Study, DTSC makes the following findings:

a. The project ☐ has ☒ does not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory.

b. The project ☐ has ☒ does not have impacts that are individually limited but cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

c. The project ☐ has ☒ does not have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly.

Determination of Appropriate Environmental Document:

The Renewal Application is subject to DTSC discretional approval and CEQA requirements. Based on evidence provided in this Initial Study, DTSC makes the following determination:

☒ The proposed project COULD NOT HAVE a significant effect on the environment. A **Negative Declaration** will be prepared.

☐ The proposed project COULD HAVE a significant effect on the environment. However, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A **Mitigated Negative Declaration** will be prepared.

☐ The proposed project MAY HAVE a significant effect on the environment. An **Environmental Impact Report** is required.

☐ The proposed project MAY HAVE a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **Environmental Impact Report** is required, but it must analyze only the effects that remain to be addressed.

☐ The proposed project COULD HAVE a significant effect on the environment. However, all potentially significant effects (a) have been analyzed adequately in an earlier Environmental Impact Report or Negative Declaration pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier Environmental Impact Report or Negative Declaration, including revisions or mitigation measures that are imposed upon the proposed project. Therefore, nothing further is required.

Certification:

I hereby certify that the statements furnished above and in the attached exhibits, present the data and information required for this initial study evaluation to the best of my ability and that the facts, statements and information presented are true and correct to the best of my knowledge and belief.

//original signed by//		10-01-2007
Preparer's Signature		Date
Waqar Ahmad	Hazardous Substances Engineer	510-540-3932
Preparer's Name	Preparer's Title	Phone #
//original signed by//		10-01-2007
Branch or Unit Chief Signature		Date
for Mohinder S. Sandhu	Chief	510-540-3974
Branch or Unit Chief Name	Branch or Unit Chief Title	Phone #

Figure 1 – Site Location Map

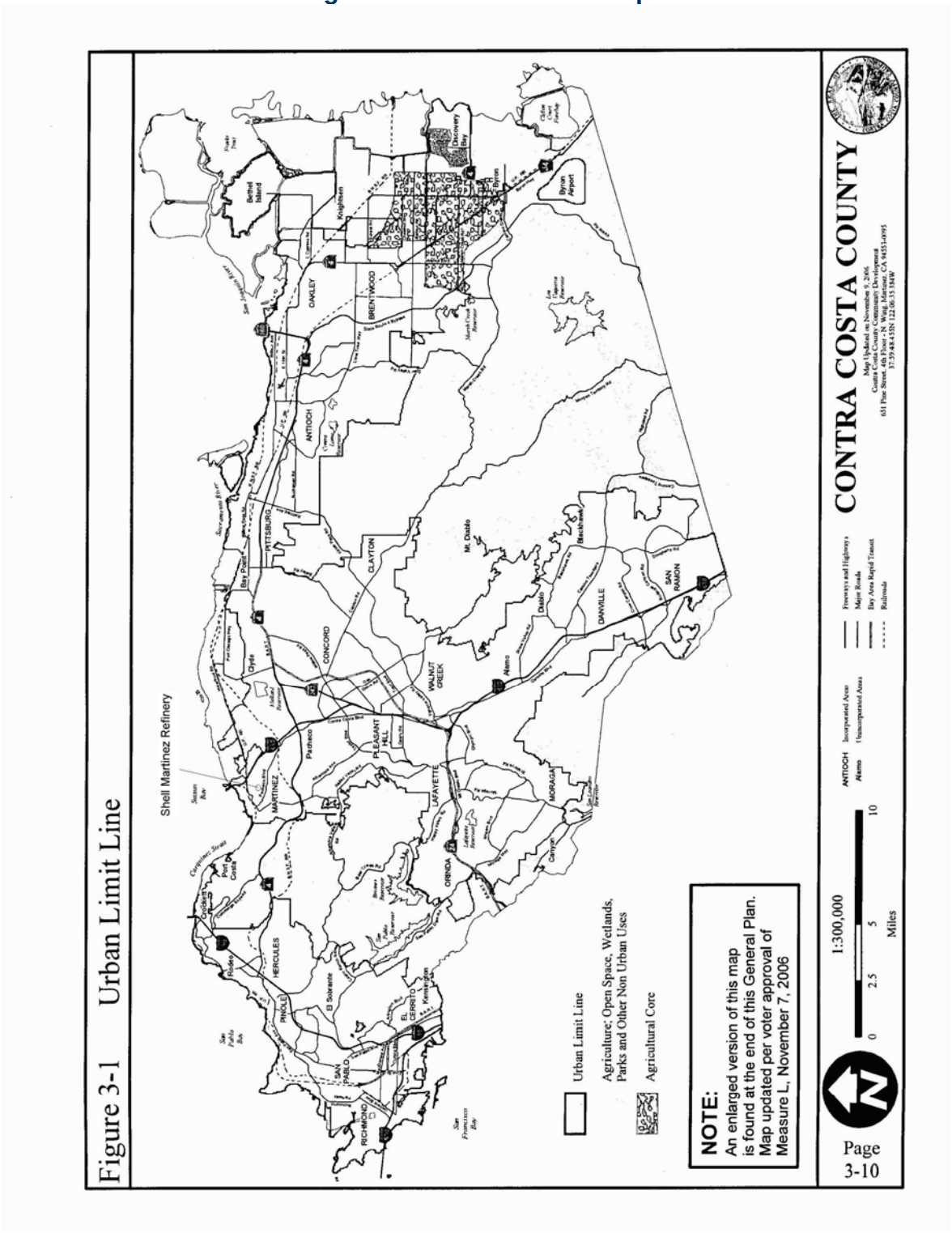

Figure 2 – Site Layout Map

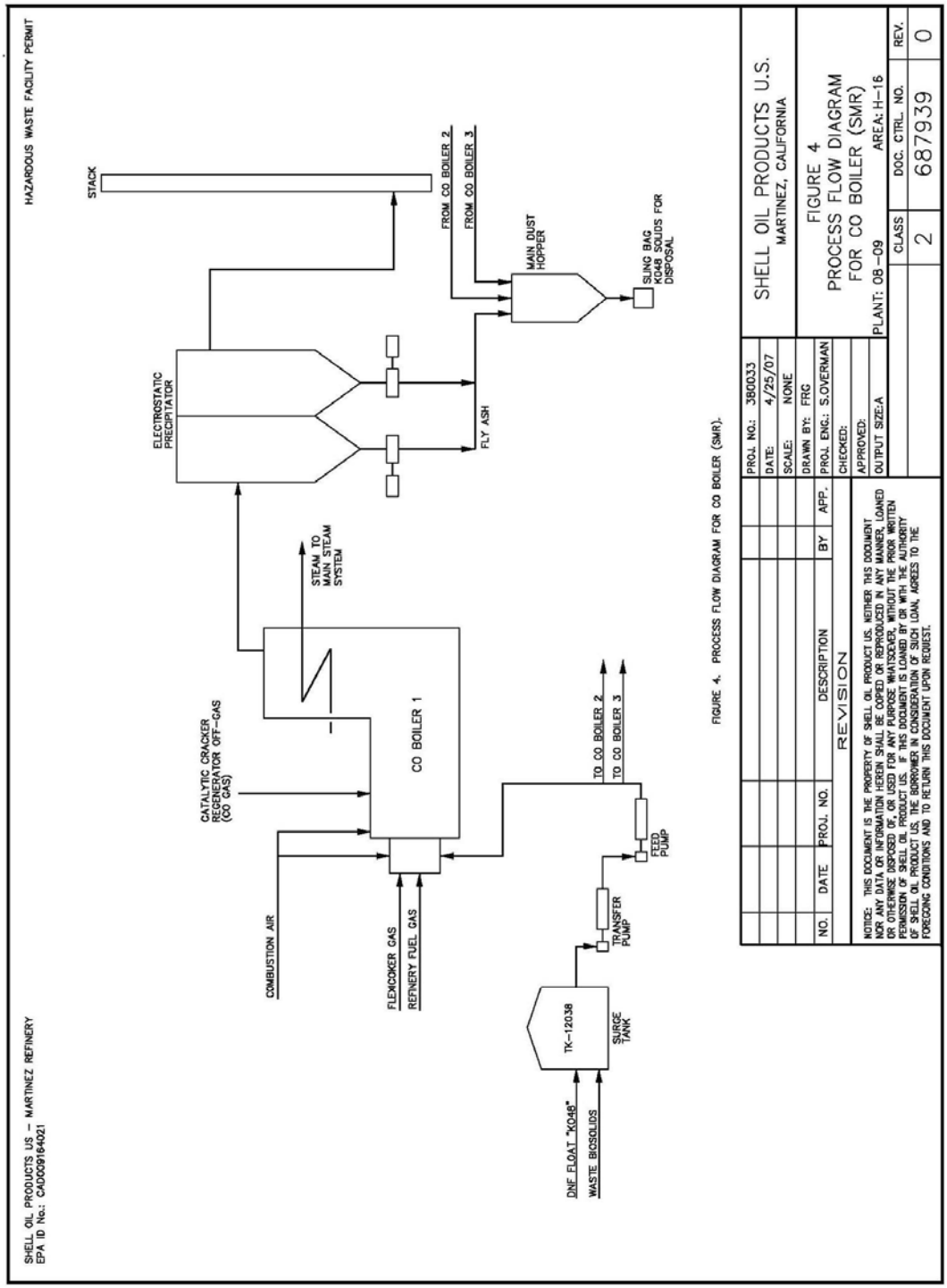

Figure 3 – Process flow of CO Boilers

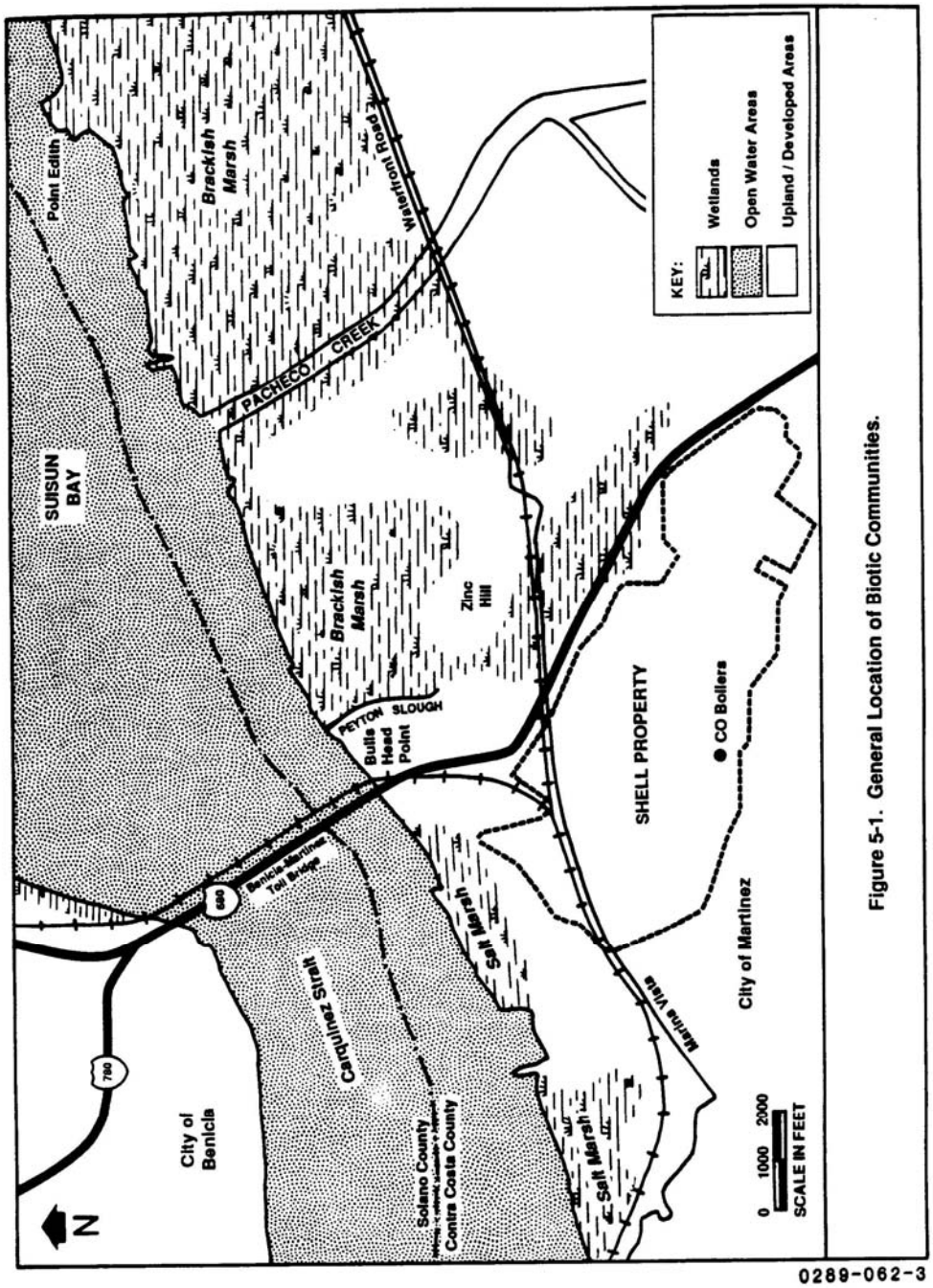

Figure 4. General Location of Biotic Communities, Shell Martinez Refinery

ATTACHEMENT A

REFERENCES

A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos Map, dated August 2000. Provided by the ARB website. (ftp://ftp.consrv.ca.gov/pub/dmg/pubs/ofr/ofr_2000-019.pdf)

Bay Area Air Quality Management District (BAAQMD) website (http://www.baaqmd.gov/index.htm).

Calflora Species Information website http://www.calflora.org/species/index.html

California Air Resources Board (ARB) website.

California Department of Conservation (CDC), 2004a. Important Farmland in California, 2002. Division of Land Resource Protection. Farmland Mapping and monitoring Program.

California Department of Conservation, 1997. Fault Rupture Hazard Zones in California, Alquist-Priolo Special Studies Zones Act of 1972 with Index to Special Studies Zones Maps. California Division of Mines and Geology Special Publication 42. State of California, Department of Conservation. Available at ftp://ftp.consrv.ca.gov/pub/dmg/pubs/sp/Sp42.pdf

(http://www.consrv.ca.gov/DLRP/fmmp/images/fmmp2002_300.pdf)

California Department of Fish and Game Habitat Conservation Planning Branch website http://www.dfg.ca.gov/hcpb/species/species.shtml

California Department of Fish and Game, Lands and Facilities Branch, Point Edith Wildlife Area http://www.dfg.ca.gov/lands/wa/region3/pointedith.html

California Department of Toxic Substances Control's Hazardous Waste and Substances Site List – Site Cleanup (Cortese List) http://www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm

California Department of Water Resources. Statewide Groundwater Basin Map Version 3 (October, 2003) http://www.groundwater.water.ca.gov/bulletin118/basin_maps/index.cfm

California Natural Diversity Database website http://www.dfg.ca.gov/whdab/html/cnddb.html

California State Highway Mapping System http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm

CDC, 2004b. Contra Costa County Williamson Act Lands 2004. Land Enrolled in Williamson Act and Farmland Security Zone Contracts as of 01-01-2004. ftp://ftp.consrv.ca.gov/pub/dlrp/WA/Map%20and%20PDF/Contra%20Costa/

City of Martinez Tree Protection http://www.cityofmartinez.org/civica/filebank/blobdload.asp?BlobID=1671

City of Martinez, California http://www.cityofmartinez.org/default.asp

City of Martinez, California, Recreation and Community Services http://www.cityofmartinez.org/depts/community/recreation/default.asp

CNPS, 2001. Inventory of Rare and Endangered Plants of California (sixth edition). Rare Plant Scientific Advisory Committee, David P. Tibor, Convening Editor. California Native Plant Society. Sacramento, CA.

CO Boiler Health Risk Assessment, Martinez Refining Company, June 2000

Contra Costa County Community Development Department (CCCCDD). 2005. Contra Costa County General Plan 2005 – 2020. Transportation and Circulation Element. Open Space Element. Dated January 18, 2005.

Contra Costa County Fire Protection District http://www.cccfpd.org/

Contra Costa Resource Conservation District http://www.ccrcd.org/

Draft Environmental Impact Report for Shell Oil Company, Martinez Manufacturing Complex, March 1994.

East Bay Regional Park District, Waterbird Regional Preserve http://www.ebparks.org/parks/waterbrd.htm

East Contra Costa County Habitat Conservation Plan Association http://www.cocohcp.org/

Geotechnical Report in Support of Seismic Assessment, Shell Martinez Refinery, August 2006, prepared by Land / Marine Geotechnics (LMG), a consultant to Shell.

Graymer, R.W., D.L. Jones, and E.E. Brabb, 1994. Preliminary geologic map emphasizing bedrock formations in Contra Costa County, California: a digital database, U.S. Geological Survey Open-File Report 94-622.

Health Risk Assessment for the CO Boilers at the Shell Martinez Refinery, Martinez, California October 2006.

http://www.arb.ca.gov/desig/adm/adm.htm and http://www.arb.ca.gov/toxics/asbestos/geninfo.htm

http://www.consrv.ca.gov/CGS/rghm/ap/official_release/index.htm

LSA, 2003. Draft - Downtown Martinez Specific Plan and Environmental Impact Report. Prepared by LSA Associates, Inc. for the City of Martinez Community and Economic Development Department. Available at http://www.cityofmartinez.org/depts/planning/advance.asp

Martinez Unified School District http://www.martinez.k12.ca.us/

Release of Official Maps of New and Revised Earthquake Fault Zones May 1, 2003

Shell Martinez Refinery http://www.piersystem.com/go/doc/159/1712/

U.S. Census Bureau, 1990 and 2000Census http://factfinder.census.gov/

United States Department of Agriculture Soil Conservation Service, 1977. Soil Survey of Contra Costa County, California.

USGS Susceptibility Map of the San Francisco Bay Area http://sfgeo.wr.usgs.gov/liquefaction/susceptibility.html

Attachment B

Comparison between 1995 Permit and Draft Permit 2007

I. HAZARDOUS WASTE FACILITY PERMIT ISSUED IN 1995 ("1995 PERMIT")

The 1995 Permit allowed Shell to manage the following feed streams in various waste management units.

Feed Streams:

1. Dissolve Nitrogen Flotation (DNF), hazardous waste
2. Waste Biosolids, non-hazardous waste
3. Waste Biosludge, hazardous waste
4. Sulfinol Reclaimer Bottoms, hazardous waste
5. Catalytic Cracker Unit Regenerator Offgas, non-hazardous waste
6. Flexicoker gas, non-hazardous waste.
7. Fuel oil, non hazardous material,

Waste Management Units:

- RM-17 hazardous waste incinerator
- Vessel 482 hazardous waste storage tank
- Three CO Boilers (COB-1, COB-2, and COB-3)
- Tank 12038
- Biotreater Surface Impoundment (or known as ETP #1)

Following is a description of each of the waste management units:

RM-17 INCINERATOR: Shell had a manufacturing process called "RM-17" which produced a catalyst, known as RM-17, which was used in the manufacture of industrial detergents. A majority of hazardous waste from this process was incinerated by the RM-17 incinerator. Onsite treatment eliminated the potential risk associated with storage and transportation to offsite locations. The incinerator was closed in 1996 (see Section 3 for details).

VESSEL 482: This unit was an integral part of the RM-17 hazardous waste incinerator. The vessel was closed in 1997 (see Environmental Impact Analysis section for details).

CO BOILERS: The three CO Boilers are identical, and burn hazardous and nonhazardous wastes generated at the site. The boilers burn refining process generated gases such as CO, hazardous waste, and fuel gases. Carbon monoxide is oxidized in the CO Boilers to CO_2, eliminating the emission of CO, a pollutant, to the air. Shell also uses the combined heat from the combustion process to produce steam for other refinery operations. The air pollution control equipment of the CO Boilers consists of an electrostatic precipitator for each boiler to control particulates. Flue gases are released to the atmosphere through three stacks, each 104-foot in height.

TANK 12038: Tank 12038 is used to store hazardous DNF solids and non hazardous waste biosolids. The combined waste stream of DNF solids and waste biosolids is hazardous "waste biosludge". Sulfinol reclaimer bottoms, a hazardous waste stream was also stored in Tank 12038 and burnt in the CO boilers. However, Sulfinol is no longer generated at the Refinery.

BIOTREATER: The biotreater is an essential unit of the Refinery's wastewater treatment process. The biotreater processes about 5 million gallons per day of wastewater generated at the site. The unit was modified in 2003 to receive only nonhazardous wastewater and DTSC's permit was modified accordingly. (See Section 3 for details).

OPERATION CHANGES:
With DTSC's approval, Shell closed the RM-17 Incinerator in December 1996 and Vessel 482 in April 1997. On August 21, 2003, DTSC approved a Class 2 permit modification, limiting the storage and treatment in the biotreater (known as ETP-1) to nonhazardous wastewater. DTSC also revised the groundwater monitoring, reporting, inspection, record keeping, and training requirements for the ETP-1 biotreater. Groundwater monitoring will continue to be managed through San Francisco Bay Regional Water Quality Control Board Order 95-234. The "Groundwater Boundary Control Capture Verification Modeling Report" will continue to be provided to DTSC and the Regional Water Board on an annual basis. The proposed permit requires closure of this unit to be completed when the unit ceases operating.

II. RENEWAL APPLICATION AND DRAFT PERMIT 2007:

In its March 2005 Renewal Application subsequently revised in June 2007 , Shell applied for authorization to continue the use of three CO Boilers and Tank 12038. The Renewal Application also requested DTSC's authorization to continue to manage, i.e. store and incinerate, two existing waste streams, namely dissolved nitrogen flotation float and waste biosludge.

Shell conducted two (2) trial burns for the CO boilers between June and December of 2006. The latest trial burn in December 2006 demonstrated to the satisfaction of DTSC that the three CO boilers and the associated air pollution control devices, i.e., Electrostatic Precipitator, comply with specific requirements for destruction and removal efficiency (DRE) of the principal organic hazardous constituent (POHC), particulate matter, and emission of dioxins and furans. The parameters assessed included particulate matter (PM_{10}), nitrogen oxides (NO_x), sulfur oxides (SO_x), and carbon monoxide (CO). All of these parameters were found to be well below the Bay Area Air Quality Management District (BAAQMD) significance levels.

Based on the 2006 Trial Burn and the 2006 Health Risk Assessment, DTSC prepared a draft hazardous waste facility permit ("Draft Permit"), which proposed modifications to some of the existing CO Boiler operating conditions. The Draft Permit will be subject to a 45-day public comment period.

The proposed conditions in the Draft Permit for the boilers are to ensure that public heath and the environment are protected. For example, if any of the specified parameters fall outside of accepted limits, then an automatic system will be triggered that cuts off the hazardous waste supply to the boiler(s). The following summarizes the conditions in the 1995 permit that DTSC proposes to modify and those that DTSC proposes to remain unchanged:

Modified CO Boiler Operation Conditions: The Draft Permit proposes the following changes in operating conditions compared to the 1995 permit:

- Liquid Feed Rate (maximum) – 12.07 gpm, as measured on an hourly rolling average (HRA) basis for each boiler; previously 10 gpm.
- Firebox Temperature (minimum) – 1599 °F as measured on an hourly rolling average basis; previously 1603 °F.
- Firebox Pressure (maximum) – 5.91 inches water column as measured on an hourly rolling average HRA basis, previously 5.1 inches. A positive pressure must also be maintained.
- Differential Atomization fluid pressure between atomizing fluid and the waste feed (minimum) – 50 psig measured on an Instantaneous basis; previously 38 psig.
- Electrostatic Precipitator Power (Minimum) – 31.2 kVA measured on an Instantaneous basis, previously 20 kVA.

Unchanged CO Boiler Operation Conditions: The following conditions in the 1995 Permit remain unchanged in the Draft Permit:

- Liquid Feed Rate – 30 gpm, as measured on an hourly rolling average basis for all three boilers combined.

- Stack Gas CO (maximum) – 100 ppm, corrected to 7% O2 as measured on an hourly rolling average basis.
- Stack Gas Flow Rate (maximum) – 154, 400 scfm.

The comparisons between the 1995 permit and the 2007 Draft Permit are summarized in the Table 1 below:

Table 1. Comparison of 1995 Permit and 2007 Draft Permit

	1995 Permit	2007 Draft Permit	Note
Waste Management Unit			
RM-17 hazardous waste incinerator	Yes	No	unit closed December 27, 1996
Vessel 482 hazardous waste storage tank	Yes	No	unit closed April 3, 1997
Biotreater #1	Yes	No	Unit manages nonhazardous refinery waste water (since August 21, 2003)
Three CO Boilers	Yes	Yes	
Tank 12038 (hazardous waste storage tank)	Yes	Yes	
Feed Streams			
DNF Float	Yes	Yes	Hazardous waste
Waste Biosolids	Yes	Yes	Non hazardous waste
Waste Biosludge	Yes	Yes	Hazardous waste
Fuel Oil	Yes	No	BAAQMD no longer permits burning of fuel oil.
Sulfinol Reclaimer Bottoms	Yes	No	Shell no longer generates this waste
Operation Conditions			
Liquid Feed rate (maximum)	10 gpm	12.07 gpm, Hourly Rolling Average (HRA)	Operational flexibility
Firebox Temperature (minimum)	1603 °F	1599 °F	Operational flexibility
Firebox Pressure (maximum)	5.1 inches	5.91 inches w.c	Operational flexibility
Annual ash content in the biosludge (maximum)	2%	13.5%	Different analytical methods used
Differential Atomization Fluid Pressure Between Atomizing Fluid and the Waste Feed (minimum)	38 psig	50 psig	Demonstrated equipment performance
Electrostatic Precipitator Power (minimum)	20 kVA	31.2 kVA	Demonstrated equipment performance
Liquid Feed Rate	30 gpm, HRA for all Three Boilers	30 gpm, HRA for all Three Boilers	Unchanged
Stack Gas Flow Rate (maximum)	154,000 scfm*	154,400 scfm	Unchanged
Stack Gas CO (maximum)	100 ppm, corrected to 7% O2, HRA	100 ppm, corrected to 7% O2, HRA	Unchanged

* EIR analyzed at a maximum flow rate of 174,000 scfm

Attachment C

Trial Burn and Health Risk Assessment 2006

The Approved 1995 EIR analyzed the air emission from both RM-17 and CO Boilers and concluded that the operation of the RM-17 and CO Boilers would not generate carbon monoxide, nitrogen oxides, particulate matter, non-methane hydrocarbons and sulfur oxide emissions in excess of the applicable standards. The operation of the RM-17 and CO Boilers would result in air emissions of criteria pollutants, below BAAQMD significance criteria (taken from Table S-1), if the Facility operates in compliance with Regulations 2 (permits), 5 (open burning), and 6 (particulate matter and visible emissions).

Emission of criteria pollutants from the operation of the RM-17 Incinerator was presented in Table 3.2-7 of the Approved 1995 EIR and is summarized in Attachments E and FB to this document. The combined air quality impacts from the RM-17 Incinerator and CO Boilers were presented in Table 3.2-8 of Approved 1995 EIR and are summarized in Attachments E and F to this document. The parameters assessed included particulate matter (PM_{10}), nitrogen oxides (NO_x), sulfur oxides (SO_x), and carbon monoxide (CO). All of these parameters were found to be well below BAAQMD significance levels. The conclusions were based on the Trial Burn results and a Health Risk Assessment.

The following describes the Trial Burn and Health Risk Assessment conducted by Shell in 2006:

3.1 Trial Burn

To demonstrate the CO Boilers' combustion ability to meet the emission and performance standards as identified in the Renewal Application, Shell has conducted trial burns in accordance with the approved trial burn plan, discussed below.

3.1.1 Trial Burn Plan

Shell submitted its trial burn plan (TBP) on November 3, 2005, which was approved by DTSC in January 2006. This TBP specified how testing would be conducted to demonstrate that the three CO Boilers comply with applicable emissions standards and to establish operating limits to be hazardous waste facility permit conditions. In addition, the TBP describes tests that will be conducted to generate information for use in a health risk assessment.

3.1.2 Evaluation of Principal Organic Hazardous Constituent (POHC)

An ideal POHC for trial burn program would be a compound that is native to the waste stream, easily sampled and analyzed and considered difficult to incinerate. POHC incinerability is based on thermal stability. The current POHC incinerability list is taken from the "Technical Implementation Document for EPA' Boiler and Industrial Furnace Regulations", EPA-530-R-92-011, March 1992. Thus, compounds ranked high on the list (Class 1) are considered the most difficult to incinerate. It is believed that the ability to successfully destroy a given compound implies the ability to destroy all other compounds in the same class as well as those below.

Benzene and Toluene were used as principal organic hazardous constituents (POHCs) in the trial burns when DTSC was processing the 1995 Permit. Benzene was present as a trace contaminant in the wastewater handled in the Biotreater (ETP-1). Toluene was a potential contaminant in the RM-17 Incinerator waste streams.

In 2006, Shell proposed, with DTSC's approval, the use of monochlorobenzene (MCB or chlorobenzene) as the 2006 Trial Burn POHC because RM-17 no longer burns toluene and biotreater (ETP-1) no longer accepts benzene. MCB is a Class 1 compound, considered equally difficult to incinerate as benzene, but is not encumbered with additional toxicity, environmental and safety-related concerns.

3.1.3. Trial Burn Results

The Trial Burn, as part of the hazardous waste facility permitting process, was conducted for the CO Boiler #2 under three operating conditions in June 2006:

Test condition 1 was designed for system operation at a minimum ESP power input (~30 kVA). Test condition 2 was designed for all risk-based testing while the unit was operating under normal operating conditions. Test condition 3 was designed for system operation at low firebox temperature, maximum firebox pressure, and maximum waste feed rate. The three conditions are summarized as below:

1. Condition 1 - A low electrostatic precipitator (ESP) power test
2. Condition 2 - A normal process operation test
3. Condition 3 - A low temperature test

Shell submitted its findings in a report, "Trial Burn Report for CO Boiler # 2, (COB-2) September 2006." Destruction and Removal Efficiency (DRE) tests were conducted in December 2006 per "DRE Retest Plan for COB-2", dated September 2006. Shell submitted its results in February 2007. The results demonstrated that COB-2 destroyed and removed 99.99 percent of principal organic hazardous constituent (monochlorobenzene). U.S. EPA guidelines require that these units achieve a DRE of 99.99 percent. All three reports have been reviewed and approved by DTSC.

3.2 Human Health Risk Assessment

A Human Health risk assessment (HRA) of the air emissions from the CO Boilers and the RM-17 Incinerator was prepared in 1989. In August 1992, Shell evaluated the potential health impacts with air emissions from the biotreater.

Pursuant to the conditions in the 1995 Permit, Shell submitted workplans for a CO Boiler and waste feed storage tanks health risk assessment on March 28, 1996; and a workplan updating the biotreater health risk assessment on April 8, 1996. In August 1999, DTSC approved the workplan, which included the latest guidance on performing human health risk assessments. At that time, RM-17, V-482 had undergone closure and no longer treated or stored hazardous waste. In addition, the biotreater no longer received hazardous waste. Therefore, Shell submitted a health risk assessment on June 8, 2000 that only evaluated emissions from the three CO Boilers and waste feed storage tank 12038. The parameters calculated were carcinogenic risk, chronic hazard index, and acute hazard index. These parameters are listed as follows:

1. Carcinogenic Risk: The maximum offsite cancer risks for a maximum exposed individual (MEI), reasonable maximum exposure (RME) and average exposed individual (AEI) exposure scenarios were calculated to be 4.6-, 2.1-, and 0.6-in-one-million, respectively. Both DTSC and USEPA have generally considered that the risk of causing one to 100 additional cancer cases per million population is acceptable.

2. Chronic Hazard Index: The maximum offsite total hazard indices for the MEI, RME and AEI exposure scenarios are calculated to be 0.3 which is less than the DTSC threshold of 1.0.

3. Acute Hazard Index: The maximum offsite total acute hazard indices for the MEI, RME, and AEI exposure scenarios are calculated to be 0.34 which is less than the DTSC threshold of 1.0.

The results demonstrated that the risk from operating the CO Boilers and Tank 12038 were within acceptable exposure levels.

On October 30, 2006, Shell submitted a Health Risk Assessment ("2006 HRA") report. This report is prepared in accordance with the protocol that was approved by DTSC on February 6, 2006. The 2006 HRA was prepared to support the permit renewal application for three CO boilers. The emission rates for the CO Boilers used in the HRA are based on stack test data collected in June 2006 while the boilers

were operating under normal operating conditions. Samples were collected and analyzed as described in the Trial Burn Plan. In addition to trial stack test data from the CO Boilers, emissions were evaluated based on fugitive emissions (fugitives) from Tank 12038, fugitives from the CO Boilers and Fly Ash fugitives.

The 2006 HRA demonstrated that predicted cancer risk and chronic and acute non-cancer risks at all off-site receptors are below acceptable thresholds and do not trigger public notification requirements. The 2006 HRA report was reviewed and approved by DTSC in July 2007.

Based on the trial burn results, DTSC has proposed the following CO Boilers operation conditions:

3.3 Modified Operation Conditions: The following proposed conditions differ from 1995 conditions:

a) Liquid Feed Rate changed from 10 to 12.07 gpm, hourly rolling average (HRA)
b) Firebox Temperature (minimum) reduced from 1603 F to 1599 F
c) Firebox Pressure (maximum) increased from 5.1 inches water column to 5.91 inches
d) Differential Atomization Fluid Pressure between atomizing fluid and the waste feed (minimum) increased from 38 psig to 50 psig.
e) Electrostatic Precipitator Power (minimum) increased from 20 kVA to 31.2 kVA
f) Stack Gas Flow Rate (maximum) – decreased from 174,000 scfm to 154,400 scfm.

3.3 Unchanged Operation Conditions: The following conditions remain unchanged.

a) Liquid Feed Rate – remains at 30 gpm, Hourly Rolling Average (HRA) for all three CO Boilers.
b) Stack Gas CO (maximum) – remains at 100 ppm, corrected to 7% O_2, HRA

The Renewal Application proposes to continue only Tank 12038 and three CO Boilers. DTSC has found that this Project, the Renewal Application, will not have any significant impacts on air quality for the following reasons:

1) The Renewal Application proposes fewer waste management units than in the 1995 permit and air parameters for the 1995 permit were well below significance levels:

   a) The RM-17 Incinerator and Vessel 484 have been closed. Consequently, these units no longer contribute to any emissions to the air pathway.

   b) Biotreater (ETP-1) has been converted to handle only nonhazardous waste water. Therefore it no longer contributes to the air pathway.

2) The number of proposed feed streams is fewer than in the 1995 Permit:

   a) Sulfinol Reclaimer Bottoms will not be stored in Tank 12038 and will not be incinerated in the three CO Boilers, as this waste stream is no longer generated at the Refinery.

   b) Fuel oil will not be burned in the CO Boilers in order to comply with the new requirements imposed by Bay Area Air Quality Management District.

Shell will continue to store DNF solids, waste biosolids, and waste biosludge in Tank 12038 and burn the wastes in the three CO Boilers. Also, Shell will continue burning fuel gas, catalytic cracker unit generator offgas, and Flexicoker gas in three CO Boilers. These three feed streams are not subject to DTSC regulation.

The following Table 2 summarizes the air impact analysis comparison between the Renewal Application and Approved 1995 EIR.

Table 2. Comparison of Air Quality Impacts from the Renewal Application and the Approved 1995 EIR

		IMPACT ON AIR QUALITY FROM RENEWAL APPLICATION COMPARED WITH 1995 EIR	**JUSTIFICATION**
1	**Waste Management Units**		
	RM-17 Incinerator	No impact	The unit is closed and is not in the Draft Permit
	Vessel 428	No impact	The unit is closed and is not in the Draft Permit
	Biotreater	No impact	This unit only receives non-hazardous waste water.
	CO Boilers	Reduced impact	No longer burn sulfinol reclaimer bottoms and fuel oil and have improved operating conditions.
	Tank 12038	Reduced impact	No longer stores sulfinol reclaimer bottoms.
2.	**Waste Streams**		
	DNF Flotation Float (Hazardous)	Same as 1995	
	Waste Biosolids (non-hazardous)	Same as 1995	
	Waste Biosludge	Same as 1995	
	Fuel oil	No Impact	Fuel oil is not permitted in CO Boilers in compliance with BAAQMD requirements.
	Sulfinol Bottoms	No impact	No longer generated at the facility
3	**Modified Operation Conditions**		**These conditions have been proposed based on the latest trial burn results.**
	Liquid Feed rate (maximum) increased from 10 to 12.07 gpm HRA	No impact	This change is to provide operational flexibility and has been verified by the trial burn results.
	Firebox Temperature (minimum) decreased from 1603 to 1599 F	No impact	This condition is based on the latest trial burn results.
	Firebox Pressure (maximum) increased from 5.1 to 5.91 w.c.	No Impact	This condition is based on the latest trial burn results.
	Differential Atomization Fluid Pressure Between Atomizing Fluid and the Waste Feed (minimum) increased from 38 to 50 psig	No impact	This condition is based on the latest trial burn results.
	Electrostatic Precipitator Power (minimum) increased from 20 to 31.2 kVA	No impact	This condition is based on the latest trial burn results.
	Stack Gas Flow Rate	Reduced Impact	This condition is based on the

		IMPACT ON AIR QUALITY FROM RENEWAL APPLICATION COMPARED WITH 1995 EIR	JUSTIFICATION
	(maximum) decreased from 174,000 scfm to 154,400 scfm		latest trial burn results.
4.	**Unchanged Permit Conditions**		**These conditions have not been changed based on the latest trial burn results.**
	Liquid Feed Rate - 30 gpm, HRA for all Three Boilers	Same as 1995	
	Stack Gas CO (maximum) – 100 ppm, corrected to 7% O_2, HRA	Same as 1995	

Attachment D

Geology and Soils

The Approved 1995 EIR found that Vessel 482 might have impacts on geology and soils. However, Vessel 482 was closed in 1997.

The CO Boilers are constructed on bedrock or on shallow fill layers over bedrock. Therefore, the potential for seismically inducted liquefaction or settlement is essentially nil. However, the structures themselves will sway to some extent as a result of strong ground shaking during moderate to strong earthquakes on nearby active faults. A re-examination of the seismic design parameters used for the CO Boilers and Tank 12038 was performed for the Renewal Application.

Shell prepared a report "Seismic Assessment of the CO Boilers and Tank-12038 at the Shell Martinez Refinery, March 2007" and demonstrated the seismic adequacy of the CO Boilers and Tank-12038. The report has been reviewed and approved by DTSC. The findings are summarized below:

1. Ground Shaking

Ground motions were calculated at the two sites (Tank 12038 and CO Boilers) using values obtained from the United States Geologic Survey (USGS) National Seismic Hazard Mapping Program (See Geotechnical Report in Support of Seismic Assessment, Shell Martinez Refinery, August 2006, prepared by Land / Marine Geotechnics (LMG), a consultant to Shell). The Report has been reviewed and approved by DTSC. The values are results of probabilistic seismic hazard analyses performed using the current California Geological Survey statewide fault model.

The CO Boilers include two distinct structural systems, one for the spray towers and fireboxes, and one for the precipitators and stacks. The support structures for the spray towers and fireboxes were shown to be adequate using standard linear analysis techniques. However, these analyses could not be used to demonstrate the adequacy of the precipitator and stack support structures, due to apparent overstress in the braces, as well as in the bottom story of columns, where the lack of bracing causes a stiffness discontinuity. Therefore Shell used nonlinear pushover analyses to demonstrate that the precipitator and stack support structure meets basic safety objectives of being able to survive a design earthquake with minor damage and maintain Life Safety objective, and that the structure could survive a much larger event without structural collapse.

Tank-12038 was demonstrated to have adequate capacity for the design event. The foundations were given special attention because of the likelihood of liquefaction in a large earthquake. Based on the evaluation, the tank foundation has sufficient strength due to piles that extend into competent soils below the bay mud.

2. Walkdown Assessment

A walkdown assessment of all three CO Boiler systems was performed. The assessment included the primary structures, supported equipment such as steam drums, control equipments, soot blowers, and ducting and piping. The only concern noted during the walkdown was the flexibility of the bellows between the electrostatic precipitators and the cooling towers. These are supported on separate structural systems and could place differentially due to out-of-phase earthquake motions. This aspect was considered during the detailed structural analysis as described below.

a). Structural Analysis for CO Boilers:

The CO Boiler and spray tower support structures were evaluated using linear analysis methods and Cal/ARP seismic criteria. Based on the results of that analysis, little or no structural damage is expected in the design level event, and no actions for structural mitigation are recommended. The electrostatic precipitator

and stack support frame was evaluated using both linear and nonlinear analysis methods. The analysis predicts that the structure might experience nonlinear behavior in the design level event, including buckling of braces and minor nonlinear response of columns. However, the structure maintains significant reserve capacity and is not at risk of collapse. In the Maximum Considered Earthquake (roughly 2,500 year return period), the structure may have extensive damage, but is able to support gravity loads following the event without collapse. The analyses reasonably demonstrate that the structures achieve the Basic Safety Objectives of Federal Emergency Management Agency (FEMA) 356 and the intent of the California Accident Release Prevention (Cal/ARP) program Seismic Guidance document, and no retrofits to the structural framing are required.

b) Structural Analysis for Tank 12038

Tank 12038 was designed in 1994 according to standards in American Petroleum Institute (API) Code 650, Appendix E, which is one of the accepted criteria documents in the Cal/ARP guidelines. The stability ratio, a parameter used in the structural analysis, for the tank was calculated and it was found that no additional anchorage is required. Pile adequacy was checked using the capacities for the conditions in the liquefied soils and was considered to be acceptable.

3 Fault Rupture

Review of the latest California Geological Survey (CGS) fault maps indicates that neither site (Tank 12038 and CO Boilers) is within a special studies zone. The nearest fault is the Concord fault, which is more than 4 km from either site. In May of 1989, Woodward Clyde Consultants prepared a report "Evaluation of Holocene Faulting in the Vicinity of the CO Boiler Waste Feed," which is where Tank-12038 is currently located. No evidence of Holocene fault displacement near the site of Tank-12038 or the CO Boilers was found. Shell has concluded that the risk of fault rupture passing through the CO Boiler or Tank-12038 sites is very low.

4. Liquefaction and Lateral Spreading

The CO Boilers are founded on bedrock which is categorically not susceptible to liquefaction, and the risk of liquefaction at the CO boilers is considered to be nil.

The soils under T-12038 were evaluated by Shell and they have concluded that the thin sand layers are susceptible to liquefaction. The practical impact of this liquefaction is settlement estimated to be order of one inch, and downdrag forces acting along as additional external loading on the piles. The piles founded in the stiff soils below the liquefiable layers will prevent settlement of the pile cap/ slab.

Bechtel, a consultant for Shell, has concluded that "If liquefaction develops in this area, it is expected to be local in extent, and will not be a design concern for pile-supported structures." Potential effects would be some local surface settlement. Permanent lateral movement or ground lurching is not anticipated. LMG (also a Shell consultant) has concurred with Bechtel's assessment that the pile foundations are designed to accommodate downdrag forces due to settlement. They also have concluded that the possibility of lateral spreading is very low.

Based on the 2006 Seismic study, DTSC has determined that the continued operation of Tank 12038 and the three CO Boilers will not have any significant impacts on geology and soil resources.

Attachment E
Transportation and Traffic

The following gives a brief description of the service level grades.

- Level of Service A: Free-flow operations, with average travel speeds of 60 mph on 70 mph design speed segments. Drivers are virtually free to choose their speed and to maneuver within the traffic stream. Average spacing between vehicles is about 440 feet (22 car lengths), with a maximum density of 12 pc/mi/ln.
- Level of Service B: Also reasonably free-flow conditions, with speeds averaging 57 mph on 70 mph segments. Average vehicle spacing is about 260 feet (13 car lengths), with a maximum density of 20 pc/mi/ln.
- Level of Service C: Stable operations, but flows approach the range where small increases in flow cause substantial deterioration in service. Freedom to maneuver is noticeably restricted. Average travel speed is 54 mph on 70 mph segments. Average vehicle spacing is 175 feet (9 car lengths) and maximum density is 30 pc/mi/ln.
- Level of Service D: Bordering on unstable flow. Small increases in flow cause substantial deterioration in service. Freedom to maneuver is severely restricted. Average travel speeds of 46 mph can still be achieved. Average vehicle spacing is 125 feet (6 car lengths) and maximum density is 42 pc/mi/ln.
- Level of Service E: Operations nearing capacity. Extremely unstable flow, with virtually no usable gaps in the traffic stream for maneuvering. Average travel speeds at capacity are approximately 30 mph. Average vehicle spacing is 80 feet (4 car lengths); maximum density 67 pc/mi/ln.
- Level of Service F: Forced or breakdown flow. Arrival flow rate exceeds capacity and vehicle queues form.

Table 1. Intersection LOS Criteria

Level of Service	Description	V/C Ratio	Average Control Per Vehicle (Seconds)1
A	Little or no delays	0.00 – 0.60	≤ 10.0
B	Short traffic delays	0.61 – 0.70	> 10.0 to 15.0
C	Average traffic delays	0.71 – 0.80	> 15.0 to 25.0
D	Long traffic delays	0.81 – 0.91	> 25.0 to 35.0
E	Very long traffic delays	0.91 – 1.00	> 35.0 to 50.0
	Extreme traffic delays with intersection capacity exceeded	>1.00	> 50.0

SOURCE: Highway Capacity Manual (Transportation Research Board, 2000).