

STATE OF CALIFORNIA

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION
320 W. 4th Street, Suite 200, Los Angeles

FACT SHEET
WASTE DISCHARGE REQUIREMENTS
for
SHELL OIL PRODUCTS US
(LOS ANGELES REFINERY)

NPDES Permit No.: CA0003778
Public Notice No.: 05-045

FACILITY ADDRESS

2101 East Pacific Coast Highway
Wilmington, CA 90744

FACILITY MAILING ADDRESS

P.O. Box 817
Wilmington, CA 90748
Contact: Robert Stockdale
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I. Public Participation

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) is considering the issuance of Waste Discharge Requirements (WDRs) that will serve as a National Pollutant Discharge Elimination System (NPDES) permit for the above-referenced facility. As an initial step in the WDR process, the Regional Board staff has developed tentative WDRs. The Regional Board encourages public participation in the WDR adoption process.

A. Written Comments

The staff determinations are tentative. Interested persons are invited to submit written comments concerning these tentative WDRs. Comments should be submitted either in person or by mail to:

Executive Officer
California Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013

To be fully responded to by staff and considered by the Regional Board, written comments pertaining to this proposed Board action must be submitted to the Regional Board staff no later than 5 p.m. on August 5, 2005. The Regional Board chair may exclude from the record written materials received after this date. (See Cal. Code Regs., tit. 23, § 648.4).

B. Public Hearing

The Regional Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date: September 1, 2005
Time: 9:00 a.m.
Location: 30001 Ladyface Court
City of Agoura Hills, California.

Interested persons are invited to attend. At the public hearing, the Regional Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our web address is www.waterboards.ca.gov/rwqcb4 where you can access the current agenda for changes in dates and locations.

C. Waste Discharge Requirements Appeals

Any aggrieved person may petition the State Water Resources Control Board to review the decision of the Regional Board regarding the final WDRs. The petition must be submitted within 30 days of the Regional Board's action to the following address:

State Water Resources Control Board, Office of General Counsel
ATTN: Elizabeth Miller Jennings, Senior Staff Counsel
1001 I Street, 22nd Floor
Sacramento, CA 95814

D. Information and Copying

The Report of Waste Discharge (ROWD), related documents, tentative effluent limitations and special conditions, comments received, and other information are on file and may be inspected at 320 West 4th Street, Suite 200, Los Angeles, California 90013, at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Los Angeles Regional Board by calling (213) 576-6600.

E. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Regional Board, reference this facility, and provide a name, address, and phone number

II. Introduction

Los Angeles Refining Company, a division of Equilon Enterprises, LLC, discharges wastewater and storm water from its Los Angeles Refinery (hereinafter LA Refinery or Discharger) under WDRs contained in Order No. 99-093 (NPDES No. CA0003778). Shell Oil Products, US (hereinafter Shell) acquired Texaco's share of Equilon Enterprises, LLC, and therefore, Equilon Enterprises, LLC is now doing business as Shell.

Order No. 99-093, adopted by the Regional Board on September 16, 1999, expired on August 10, 2004. On September 16, 1999, the Regional Board also issued a Cease and Desist Order (CDO) contained in Order No. 99-013. The CDO established interim effluent limits and required the Discharger to cease all discharges, with the exception of non-commingled storm water, to the Dominguez Channel on or before September 30, 2001.

Shell filed a Report of Waste Discharge and applied for renewal of its WDRs and NPDES permit on February 11, 2004, for discharge of storm water to surface waters. The tentative Order is the reissuance of the WDRs and NPDES permit for discharges of storm water from the LA Refinery. Six NPDES permit compliance evaluation inspections were conducted at LA Refinery on February 21, 2001, March 22, 2002, October 29, 2002, February 6, 2003, March 13, 2003, and August 31, 2004. The inspection conducted on August 31, 2004, also served as a site visit to observe operations, verify conditions, and collect additional data to develop permit limitations and conditions.

III. Description of Facility and Waste Discharge

LA Refinery, a petroleum refinery facility, is located at 2101 East Pacific Coast Highway, Wilmington, California. LA Refinery processes an average of 95,000 barrels per day (bbls/day) of crude oil and has a capacity to process 98,500 bbls/day. Crude oil is imported to the Refinery via pipeline and marine vessels. The Facility manufactures the following products from crude oil: gasoline, diesel, aviation fuels, fuel oils, liquefied petroleum gases, petroleum coke, and sulfur (as a byproduct) from crude oil. The refinery process includes desalting, atmospheric distillation, vacuum distillation, fluid catalytic cracking, hydrocracking, delayed coking, hydrotreating, alkylation, catalytic reforming, hydrogen generation, isomerization, benzene saturation, and sulfur recovery. The Sulfur Recovery plant is situated one mile north of the refinery. LA Refinery is categorized as a cracking refinery as defined in 40 Code of Federal Regulation section 419.20 (40 CFR 419.20).

Water consumption at the Refinery totals approximately 7 million gallons per day (mgd). Most of this water is groundwater (about 90 percent) supplemented with municipal water supplied by the City of Los Angeles Department of Water and Power. Groundwater is pumped with a total capacity of 4,500 gallons per minute (gpm) from three wells in the Silverado Aquifer that is separated by aquitards from the Gaspur/Gage Aquifer. Two wells are located at LA Refinery and one well is located at the Sulfur Recovery Plant.

The Refinery generates two types of wastewaters that go into two separate trains of collection and treatment systems. The high chemical oxygen demand (HCOD) wastewaters are generated from enclosed process unit systems. The low chemical oxygen demand (LCOD) wastewaters consist of boiler blowdown, cooling tower blowdown, miscellaneous wastewaters (miscellaneous cleanup wastewaters, petroleum coke-belt washwaters, excess coke drum cutting and quench waters, hydrostatic test waters, fire system test wastewater, and water softener regeneration wastewaters), and the sulfur plant wastewater.

The previous permit regulated the discharge of storm water and wastewaters generated from the Refinery operation through Discharge Serial Nos. 001, 002, and 003 to Dominguez Channel, a water of the United States. Previously, the HCOD wastewaters were treated in the HCOD wastewater treatment plant (HWTP) and discharged to the sanitary sewer of the County Sanitation Districts of Los Angeles County (CSDLAC). The LCOD wastewaters and commingled storm water were treated in the LCOD wastewater treatment system (LWTP) and discharged through Discharge Serial No. 002 to Dominguez Channel. Discharge Serial No. 002 was the primary discharge point in the previous permit, which was located approximately 50 feet south of Pacific Coast Highway at Latitude 33° 47' 29" North, Longitude 118° 13' 51" West. The CDO, issued by the Regional Board on September 16, 1999, required the Discharger to cease all discharges, with the exception of non-commingled storm water, to the Dominguez Channel on or before September 30, 2001. To comply with the CDO, the Discharger permanently re-routed the treated LCOD wastewater and storm water to the sanitary sewer of CSDLAC and discontinued the discharge through Discharge Serial No. 002 on July 31, 2001. The discharge point has been modified such that wastewater and commingled storm water can no longer be discharged. Currently, the treated HCOD wastewater from the HWTP, and the treated LCOD and storm water from the LWTP, are blended in the effluent blending plant (EBP) and discharged through Outfall C to the sanitary sewer of CSDLAC.

To meet the CDO effluent limitations immediately, LA Refinery supplemented the LWTP treatment system with fabric filters and activated carbon beds. However, the Facility still violated the CDO effluent limitations for zinc in January 2000, and benzene in December 1999 and February 2000. Since June 2000, LA Refinery established an interim connection to the sanitary sewer and temporarily diverted treated LCOD wastewaters and storm water to the sanitary sewer. During peak flow periods, however, the Facility discharged to Dominguez Channel through Discharge Serial No. 002. The intermittent discharge to Dominguez Channel through Discharge Serial No. 002 occurred every four or five weeks and during storm events. The intermittent discharge to the Dominguez Channel was in compliance with the CDO interim limitations. Since July 31, 2001, the Discharger permanently rerouted the treated LCOD wastewater and storm water to the sanitary sewer and discontinued the discharge through Discharge Serial No. 002.

The proposed Order permits discharge of 4.32 mgd of non-commingled storm water from LA Refinery to Dominguez Channel through Discharge Serial No. 001 (Latitude 33° 47' 35" North, Longitude 118° 13' 48" West) and unspecified flow of emergency discharge of commingled storm water through Discharge Serial No. 003 (Latitude 33° 47' 8" North,

Longitude 118° 14' 6" West). Discharge Serial No. 002 is no longer in operation and is therefore, not covered by this Order.

Discharge Serial 001, also known as No. 8 Gate, drains storm water from west, northwest, and portions of north tank farm areas where products are stored. The storm water drained from these areas is not mixed with the wastewater generated from refining operations and thus is considered non-commingled storm water. The non-commingled storm water from the west and northwest tank farms and goes through API separators and then to 9 Pond. The non-commingled stormwater from the north tank farm is routed directly to No. 9 Pond. The storm water is impounded in the ponds prior to routing to LWTP for treatment and discharge to the sanitary sewer. Usually, the first flush of a storm event is sent to the LWTP for treatment. To manage storm water flows/inventory during storm events, the non-commingled storm water collected in No 9 Pond may also be discharged untreated to the Dominguez Channel through Discharge Serial No. 001. No discharge through Discharge Serial No. 001 during the term of the previous permit has been reported.

Discharge Serial No. 003 is also known as No. 3 Gate. Boiler blowdown, cooling tower blowdown, and the storm water from the Refinery process areas are sent to two lamella separators operating in parallel. Lamella separators separate out oil and solids from the wastewater and commingled storm water. The combined water is then treated in the LWTP and EBP and discharged to the sanitary sewer. During very high storm events, a portion of the combined water in the lamella separators is discharged through Discharge Serial No. 003 to prevent flooding in the Refinery. Combined water is discharged through Discharge Serial No. 003 only during very high storm events (above 6 inches in 24 hours) to protect the Refinery from flooding. No discharge through Discharge Serial No. 003 during the term of the previous permit has been reported.

The Discharger submitted monthly monitoring reports for the period November 1999 to August 2004 for Discharge Serial Nos. 001, 002, and 003. Discharge Serial No. 002 was discontinued on July 31, 2001 and is no longer covered by this Order. Therefore, data for Discharge Serial No. 002 are not used in the analysis. The monthly monitoring reports submitted show no discharge from Discharge Serial Nos. 001 and 003. However, in the permit renewal application, the Discharger reported data for samples collected from the No. 9 Pond for Discharge Serial No. 001 (February 19, 2003 and March 18, 2003) prior to routing this storm water to LWTP and EBP for treatment and discharge to the sanitary sewer. The reported monitoring data for No. 9 Pond (Discharge Serial No. 001) are summarized below:

Pollutant (units)	Reported Effluent Concentrations	
	February 19, 2003	March 18, 2003
pH (standard units)	5.6	7.54
Biochemical oxygen demand (BOD) (mg/L) ¹	3	3.5
Chemical oxygen demand (COD) (mg/L)	11	12

Pollutant (units)	Reported Effluent Concentrations	
	February 19, 2003	March 18, 2003
Total suspended solids (TSS) (mg/L)	37	31
Oil & grease (mg/L)	2.33	<1
Ammonia (mg/L)	0.55	1.65
Arsenic (mg/L)	<0.02	0.0044
Barium (mg/L)	0.043	0.11
Beryllium (mg/L)	<0.005	0.00028
Chromium (mg/L)	<0.01	0.027
Cobalt (mg/L)	<0.01	0.0057
Copper (mg/L)	0.033	0.12
Lead (mg/L)	0.031	0.12
Mercury (mg/L)	<0.0003	0.0003
Molybdenum (mg/L)	<0.02	0.0029
Nickel (mg/L)	<0.02	0.057
Thallium (mg/L)	0.029	<0.002
Zinc (mg/L)	0.18	0.65
Vanadium (mg/L)	<0.01	0.026
2-Chlorophenol (̇ g/L)	11	<10
4-Chloro-3-methylphenol (̇ g/L)	12	<10
MTBE (̇ g/L)	16	<5

1. 5-day BOD at 20 °C

All other toxic pollutants were reported in the permit application as “non-detect”.

Because there was no discharge from Discharge Serial Nos. 001 and 003 during the term of the previous permit, no violations were reported for these two discharge locations. Also, no violation was observed during the compliance evaluation inspections conducted on February 21, 2001, March 22, 2002, October 29, 2002, February 6, 2003, March 13, 2003, and August 31, 2004.

The proposed Order regulates the discharge of 4.32 mgd storm water and non-process wastewater from LA Refinery to Dominguez Channel through Discharge Serial Nos. 001 and 003. The receiving waters are waters of the United States. The Regional Board and the United States Environmental Protection Agency (U.S. EPA) have classified LA Refinery as a major discharge.

IV. Applicable Plans, Policies, Laws, and Regulations

The requirements contained in the proposed Order are based on the requirements and authorities contained in the following:

- A. The federal Clean Water Act (CWA). The federal Clean Water Act requires that any point source discharges of pollutants to a water of the United States must be done in conformance with an NPDES permit. NPDES permits establish effluent limitations that incorporate various requirements of the CWA designed to protect water quality.
- B. Code of Federal Regulations, Title 40 (40 CFR) – Protection of Environment, Chapter I, Environmental Protection Agency, Subchapter D, Water Programs, Parts 122-125 and Subchapter N, Effluent Guidelines. These CWA regulations provide effluent limitations for certain dischargers and establish procedures for NPDES permitting, including how to establish effluent limitations for certain pollutants discharged by LA Refinery.
- C. Code of Regulations, Title 40 (40 CFR) – Protection of Environment, Chapter I, Environmental Protection Agency, Subchapter D, Water Programs, Part 419 Effluent Limitation Guidelines and Standards for the Petroleum Refining Point Source Category. These regulations provide effluent guidelines for various constituents common in contaminated runoff from petroleum refining facilities. These guidelines were considered in the development of various effluent limitations established in this permit.
- D. On June 13, 1994, the Regional Board adopted a revised *Water Quality Control Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan). The Basin Plan contains water quality objectives and beneficial uses for inland surface waters and for the Pacific Ocean. Water quality objectives include narrative and numeric water quality criteria for several chemicals and parameters. The immediate receiving water bodies for the permitted discharges covered by this permit are Dominguez Channel and Dominguez Channel Estuary. The Basin Plan contains beneficial uses and water quality objectives for Dominguez Channel and Dominguez Channel Estuary. The beneficial uses are listed below.

Dominguez Channel

Existing Uses: Non-contact water recreation and preservation of rare and endangered species.

Potential Uses: Municipal and domestic supply; water contact recreation; warm freshwater habitat; and wildlife habitat.

Dominguez Channel Estuary

Existing Uses: Water contact recreation; non-contact water recreation; commercial and sport fishing; estuarine habitat; marine habitat; wildlife habitat; preservation of rare and endangered species; migration of aquatic organisms; and spawning, reproduction, and/or early development.

Potential Uses: Navigation.

- E. Ammonia Basin Plan Amendment. The 1994 Basin Plan provided water quality objectives for ammonia to protect aquatic life, in Tables 3-1 through Tables 3-4. However, those ammonia objectives were revised on April 25, 2002, by the Regional Board with the adoption of Resolution No. 2002-011, *Amendment to the Water Quality Control Plan for the Los Angeles Region to Update the Ammonia Objectives for Inland Surface Waters (Including Enclosed Bays, Estuaries and Wetlands) with Beneficial Use Designations for Protection of Aquatic Life*. The ammonia Basin Plan amendment was approved by the State Board, the Office of Administrative Law, and U.S. EPA on April 30, 2003, June 5, 2003, and June 19, 2003, respectively. Although the revised ammonia water quality objectives may be less stringent than those contained in the 1994 Basin Plan, they are still protective of aquatic life and are consistent with U.S. EPA's 1999 ammonia criteria update.
- F. The State Water Resources Control Board (State Board) adopted a *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Water and Enclosed Bays and Estuaries of California* (Thermal Plan) on May 18, 1972, and amended this plan on September 18, 1975. This plan contains temperature objectives for inland surface waters.
- G. On May 18, 2000, the U.S. EPA promulgated numeric criteria for priority pollutants for the State of California [known as the *California Toxics Rule* (CTR) and codified in 40 CFR 131.38. In the CTR, U.S. EPA promulgated criteria that protect the general population at an incremental cancer risk level of one in a million (10^{-6}), for all priority toxic pollutants regulated as carcinogens. The CTR also allows for a schedule of compliance not to exceed five years from the date of permit renewal for an existing discharger if the Discharger demonstrates that it is infeasible to promptly comply with effluent limitations derived from the CTR criteria. The CTR criteria for the protection of aquatic saltwater organisms or human health for consumption of organisms, whichever is more stringent, are applicable to discharges through Discharge Serial Nos. 001 and 003 to Dominguez Channel. The CTR also allows for a schedule of compliance not to exceed five years from the date of permit issuance for a point source discharge if the Discharger demonstrates that it is infeasible to promptly comply with effluent limitations derived from the CTR criteria. CTR's Compliance Schedule provisions sunset on May 18, 2005. After this date, the provisions of the SIP allow for Compliance Schedules not to exceed five years from issuance or past May 18, 2010, whichever is sooner.
- H. On March 2, 2000, State Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP was effective on April 28, 2000, with respect to the priority pollutant criteria promulgated for California by the U.S. EPA through National Toxics Rule (NTR) and to the priority pollutant objectives established by the Regional Boards in their basin plans, with the exception of the provision on alternate test procedures for individual discharges that have been approved by the U.S. EPA Regional Administrator. The alternate test procedures

provision was effective on May 22, 2000. The SIP was effective on May 18, 2000, with respect to the priority pollutant criteria promulgated by the U.S. EPA through the CTR. The SIP requires the dischargers' submittal of data sufficient to conduct the determination of priority pollutants requiring water quality-based effluent limitations (WQBELs) and to calculate the effluent limitations.

- I. 40 CFR 122.44(d)(1)(vi)(A) requires the establishment of numeric effluent limitations to attain and maintain applicable narrative water quality criteria to protect the designated beneficial uses. Where numeric water quality objectives have not been established in the Basin Plan, 40 CFR 122.44(d) specifies that WQBELs may be set based on U.S. EPA criteria and supplemented, where necessary, by other relevant information to attain and maintain narrative water quality criteria to fully protect designated beneficial uses.
- J. State and Federal antibacksliding and antidegradation policies require that the Regional Board take actions to protect the water quality of a water body and to ensure that the waterbody will not be further degraded. The antibacksliding provisions are specified in sections 402(o) and 303(d)(4) of the CWA and in 40 CFR 122.44(l). Those provisions require a reissued permit to be as stringent as the previous permit with some exceptions where effluent limitations may be relaxed.
- K. Effluent limitations are established in accordance with sections 301, 304, 306, and 307 of the federal CWA, and amendments thereto. These requirements, as they are met, will maintain and protect the beneficial uses of Dominguez Channel and Dominguez Channel Estuary.
- L. Existing waste discharge requirements are contained in the previous Order No. 99-093, adopted by the Regional Board on September 16, 1999. In most cases, permit conditions (effluent limitations and other special conditions) for storm water discharges established in the previous Order have been carried over to this permit.
- M. On March 30, 2000, U.S. EPA revised its regulation that specifies when new and revised State and Tribal water quality standards (WQS) become effective for Clean Water Act (CWA) purposes (40 CFR 131.21, 65 FR 24641, April 27, 2000). Under U.S. EPA's new regulation (also known as the Alaska rule), new and revised standards submitted to U.S. EPA after May 30, 2000, must be approved before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to U.S. EPA by May 30, 2000, may be used for CWA purposes, whether or not approved by EPA.

V. Regulatory Basis for Effluent Limitations

The CWA requires point source discharges to control the amount of conventional, nonconventional, and toxic pollutants that are discharged into the waters of the United States. The control of the discharge of pollutants is established through NPDES permits that contain effluent limitations. The CWA establishes two principal bases for effluent

limitations. First, dischargers are required to meet technology-based effluent limitations that reflect the best controls available considering costs and economic impact. Second, they are required to meet WQBELs that are developed to protect applicable designated uses of the receiving water.

The CWA requires that technology-based effluent limitations be established based on several levels of control:

- Best Practicable Treatment Control Technology (BPT) is based on the average of the best performance by plants within an industrial category or subcategory. BPT standards apply to toxic, conventional, and nonconventional pollutants.
- Best available technology economically achievable (BAT) represents the best existing performance of treatment technologies that are economically achievable within an industrial point source category. BAT standards apply to toxic and nonconventional pollutants.
- Best conventional pollutant control technology (BCT) is a standard for the control from existing industrial point sources of conventional pollutants including 5-day biochemical oxygen demand (BOD), total suspended solids (TSS), oil and grease, fecal coliform, and pH. The BCT standard is established after considering the “cost reasonableness” of the relationship between the cost of attaining a reduction in effluent discharge and the benefits that would result, and also the cost effectiveness of additional industrial treatment beyond BPT.
- New source performance standards (NSPS) that represent the best available demonstrated control technology standards. The intent of NSPS guidelines is to set limitations that represent state-of-the-art treatment technology for new sources.

The CWA requires U.S. EPA to develop effluent limitations, guidelines and standards (ELGs) representing application of BPT, BCT, BAT, and NSPS. Section 402(a)(1) of the CWA and 40 CFR 125.3 of the NPDES regulations authorize the use of Best Professional Judgement (BPJ) to derive technology-based effluent limitations on a case-by-case basis where ELGs are not available for certain industrial categories and/or pollutants of concern.

If a reasonable potential exists to exceed water quality standards for pollutants in a discharge, WQBELs are also required under 40 CFR 122.44(d)(1)(i). WQBELs are established after determining that technology-based limitations are not stringent enough to ensure that state water quality standards are met for the receiving water. WQBELs are based on the designated use of the receiving water, water quality criteria necessary to support the designated uses, and the state’s antidegradation policy. For discharges composed entirely of storm water, such as the potential discharges to inland surface waters, enclosed bays, and estuaries, the U.S. EPA’s *Technical Support Document for Water Quality-Based Toxics Control (TSD) of 1991* (U.S. EPA/505/2-90-001) establishes procedures for determining reasonable potential and establishing WQBELs for priority

pollutant criteria promulgated by U.S. EPA through the CTR and NTR, as well as the Basin Plan. With respect to a reasonable potential analysis, the TSD identifies an appropriate step-wise approach that can be used to determine whether a discharge has a reasonable potential. The approach used in the TSD is equally valid for determining the reasonable potential for discharges not comprised entirely of storm water discharges. Further, for non-storm water discharges to inland surface waters, enclosed bays, and estuaries, the SIP establishes specific implementation procedures for determining reasonable potential and establishing WQBELs for priority pollutant criteria promulgated by U.S. EPA through the CTR and NTR, as well as the Basin Plan.

There are several other specific factors affecting the development of limitations and requirements in the proposed Order. These are discussed as follows:

A. Pollutants of Concern

The CWA requires that any pollutant that may be discharged by a point source in quantities of concern must be regulated through an NPDES permit. Further, the NPDES regulations require regulation of any pollutant that (1) causes; (2) has the reasonable potential to cause; or (3) contributes to the exceedance of a receiving water quality criteria or objective.

LA Refinery produces primarily gasoline and diesel fuels. As reported in the permit renewal application, storm water generated in the tank farm and the process areas is discharged through Discharge Serial Nos. 001 and 003 to Dominguez Channel. The storm water may come in contact with the raw materials and the products, which consist of several organic and inorganic compounds. Therefore, priority and non-priority pollutants including organic pollutants, metals and other inorganic pollutants are pollutants of concern for this type of discharge. Pollutants of concern for this type of discharge include: anthracene; 1,2-benzanthracene; 3,4-benzofluoranthene; benzo(k)fluoranthene; benzo(a)pyrene; chrysene; dibenzo(a)anthracene; indeno(1,2,3-cd)pyrene; fluorene; pyrene; arsenic; cadmium; copper; lead; mercury; nickel; selenium; silver; thallium; zinc, cyanide, and total petroleum hydrocarbons. The storm water may also come in contact with roads, buildings, and service areas. Solids and oil and grease are typical pollutants found in storm water discharges from industrial facilities.

Based on the type of operation, LA refinery is categorized as a cracking refinery as defined in 40 CFR 419.20, which sets effluent limitations for BOD, chemical oxygen demand (COD), TSS, oil and grease, phenolic compounds, and chromium for contaminated storm water runoff; therefore, they are considered pollutants of concern. The previous permit established effluent limitations for storm water discharge for all of the above pollutants of concern.

Storm water may come into contact with various organic and inorganic compounds, and therefore, other pollutants of concern exist for this type of discharge. Setting effluent limitations for the above mentioned pollutants would effectively control the discharge of

other pollutants. Therefore, the proposed Order does not establish effluent limitations for other pollutants of concern which do not have reasonable potential. Instead, the proposed Order establishes limitations for toxicity, which is an indicator of the combined effect of pollutants contained in the discharge.

Changes in temperature and pH may adversely affect aquatic life in receiving waters, and therefore are pollutants of concern for water discharges from this facility. Consistent with the Basin Plan, effluent limitations for these pollutants are established in the proposed Order.

B. Technology-Based Effluent Limitations

Based on the type of operation, LA refinery is categorized as a cracking refinery as defined in 40 CFR 419.20 (Effluent Limitation Guidelines and Standards for the Petroleum Refining Point Source Category). Effluent guidelines for contaminated runoff have been established for this category, which include BPT, BCT, and BAT for conventional pollutants (BOD, TSS, oil and grease, and pH), nonconventional pollutants (COD), and toxic pollutants (phenols and chromium). The BAT, BPT, and BCT effluent limitations for these pollutants in 40 CFR 419.22, 419.23, and 419.24 are same as or less stringent than the effluent limitations for these pollutants in the previous permit. Therefore, effluent limitations for these pollutants in the proposed Order have been carried over from the previous Order.

C. Water Quality-Based Effluent Limitations

As specified in 40 CFR 122.44(d)(1)(i), permits are required to include WQBELs for toxic pollutants (including toxicity) that are or may be discharged at levels which cause, have reasonable potential to cause, or contribute to an excursion above any state water quality standard. The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses for the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria (that are contained in other state plans and policies, or U.S. EPA water quality criteria contained in the CTR and NTR). The specific procedures for determining reasonable potential and, if necessary, for calculating WQBELs are contained in the TSD for storm water discharges and in the SIP for non-storm water discharges. Furthermore, in the BPJ of the Regional Board staff, the TSD identifies an appropriate, rational, step-wise approach that can be used to determine whether storm water discharges demonstrate reasonable potential.

The CTR contains both saltwater and freshwater criteria. According to 40 CFR 131.38(c)(3), freshwater criteria apply at salinities of 1 part per thousand (ppt) and below at locations where this occurs 95 percent or more of the time; saltwater criteria apply at salinities of 10 ppt and above at locations where this occurs 95 percent or more of the time; and at salinities between 1 and 10 ppt the more stringent of the two apply. The receiving waters are Dominguez Channel and Dominguez Channel Estuary. The CTR criteria for the protection of aquatic saltwater organisms or human

health for consumption of organisms, whichever is more stringent, apply to discharges to these receiving waters.

1. *Reasonable Potential Analysis (RPA)*

Regional Board staff conducts a reasonable potential analysis for each priority pollutant with an applicable criterion or objective to determine if a WQBEL is required in the permit. Sufficient effluent and ambient data are needed to conduct a complete RPA. If data are not sufficient, the Discharger will be required to gather the appropriate data for the Regional Board to conduct the RPA. The Regional Board analyzes effluent data to determine if a pollutant in a discharge has a reasonable potential to cause or contribute to an excursion above a state water quality standard. For all parameters that have a reasonable potential, numeric WQBELs are required. The RPA considers water quality objectives outlined in the CTR, NTR, as well as the Basin Plan.

Dischargers are required to submit sufficient data to conduct the determination of priority pollutants requiring WQBELs and to calculate the effluent limitations. In accordance with section 13267 of the California Water Code, the Regional Board, in a letter dated July 27, 2001, required the Discharger to conduct an interim monitoring program of the effluent and the receiving water. The letter stated that the data collected shall be submitted every quarter to the Regional Board. These data were intended to be used to determine the reasonable potential of a priority pollutant to exceed applicable water quality criteria and to calculate the effluent limitation, if required.

The RPA could not be completed for the Facility due to lack of sufficient effluent data. No discharge through Discharge Serial Nos. 001 and 003 during the term of the previous permit were reported. As a result, the facility reported no effluent data for Discharge Serial 003 and submitted only two sets of effluent data from No. 9 pond for Discharge Serial 001 with the permit renewal application. The Facility also reported receiving water data for the period 1999-2003. For the period between November 1999 and October 2001, the Facility reported receiving water data for the pollutants required by the previous permit. In response to the 13267 letter, dated July 27, 2001, the facility submitted five sets of receiving water data (no effluent data) between 4th Quarter of 2001 and 1st Quarter of 2003. The Facility did not report receiving water data for the 4th Quarter 2002. To conduct RPA in the next permit renewal cycle, Discharger is required to collect the data that is representative of Discharge Serial Nos. 001 and 003 and which are being discharged to sanitary sewer of County Sanitation Districts of Los Angeles County (CSDLAC). The Discharger will not be held liable for compliance as the wasters are not discharged to receiving waters.

2. *Calculating WQBELs*

If a reasonable potential exists to exceed applicable water quality criteria or

objectives, then a WQBEL must be established in accordance with one or more of the three procedures contained in Section 5.4 of the TSD and Section 1.4 of the SIP. These procedures include:

- a. If applicable and available, use of the wasteload allocation (WLA) established as part of a total maximum daily load (TMDL).
- b. Use of a steady-state model to derive maximum daily effluent limitations (MDELs) and average monthly effluent limitations (AMELs).
- c. Where sufficient effluent and receiving water data exist, use of a dynamic model, which has been approved by the Regional Board.

Because no RPA was completed for Discharge Serial Nos. 001 and 003, no new WQBELs for priority pollutants are established in the proposed Order. The effluent limitations in the previous permit are carried over in the proposed Order.

3. *Impaired Water Bodies in 303 (d) List*

Section 303(d) of the CWA requires states to identify specific water bodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations on point sources. For all 303(d)-listed water bodies and pollutants, the Regional Board plans to develop and adopt TMDLs that will specify WLAs for point sources and load allocations (LAs) for non-point sources, as appropriate.

U.S. EPA approved the State's 2002 303(d) list of impaired water bodies on July 25, 2003. Certain receiving waters in the Los Angeles and Ventura County watersheds do not fully support beneficial uses and therefore have been classified as impaired on the 2002 303(d) lists and have been scheduled for TMDL development. According to the 2002 303(d) list, the Dominguez Channel (Estuary to Vermont Avenue) is impaired for aldrin (tissue), ammonia, benthic community effects, chlordane (tissue), chlordane (tissue), chromium (sediment), DDT (tissue and sediment), dieldrin (tissue), high coliform count, lead (tissue), PAHs (sediment), and zinc (sediment). To date, no TMDL has been completed for this segment of water. Therefore, no conditions in this proposed Order are based on TMDLs.

4. *Whole Effluent Toxicity*

Whole effluent toxicity (WET) protects the receiving water quality from the aggregate toxic effect of a mixture of pollutants in the effluent. WET tests measure the degree of response of exposed aquatic test organisms to an effluent. The WET approach allows for protection of the narrative "no toxics in toxic amounts" criterion or implementing numeric criteria for toxicity. There are two types of WET tests: acute and chronic. An acute toxicity test is conducted

over a short time period and measures mortality. A chronic toxicity test is conducted over a longer period of time and measures mortality, reproduction, and growth.

The Basin Plan specifies a narrative objective for toxicity, requiring that all waters be maintained free of toxic substances in concentrations that are lethal to or produce other detrimental response on aquatic organisms. Detrimental response includes but is not limited to decreased growth rate, decreased reproductive success of resident or indicator species, and/or significant alterations in population, community ecology, or receiving water biota. In accordance with the Basin Plan, acute toxicity limitations dictate that the average survival in undiluted effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test having less than 70% survival. The existing permit contains acute toxicity limitations and monitoring requirements. Consistent with Basin Plan requirements, the proposed Order includes acute toxicity limitations and monitoring requirements.

During the normal course of business, the storm water discharges at LA Refinery to receiving waters occur only after a significant storm event. The discharge is not continuous and the discharge of storm water is not expected to contribute to long term toxic effects. Intermittent discharges are likely to have short term toxic effects. LA Refinery will be required to conduct acute toxicity testing in accordance with the Basin Plan.

D. Specific Rationale for Each Numerical Effluent Limitation

Section 402(o) of the CWA and 40 CFR 122.44(l) require that effluent limitations standards or conditions in reissued permits be at least as stringent as those in the existing permit. Effluent limitations for the pollutants in the proposed Order have been carried over from the effluent limitations for storm water discharges in the previous Order.

The RPA could not be completed for the facility due to lack of effluent data. Because no RPA was completed for Discharge Serial Nos. 001 and 003, no new WQBELs for priority pollutants are established in the proposed Order. Based on the type of operation, LA refinery is categorized as a cracking refinery as defined in 40 CFR 419.20. Effluent limitations for contaminated runoff have been established for this category for BOD, COD, TSS, oil and grease, phenols, chromium, and pH. The BAT, BPT, and BCT effluent limitations for these pollutants in 40 CFR 419.22, 419.23, and 419.24 are same as or less stringent than the effluent limitations for these pollutants in the previous permit. Therefore, effluent limitations for these pollutants in the proposed Order have been carried over from the previous Order.

The Regional Board has determined that arsenic, cadmium, copper, lead, mercury, nickel, selenium, silver, thallium, zinc, cyanide, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene,

dibenzo(a)anthracene, indeno(1,2,3-cd)pyrene, fluorene, pyrene, and total petroleum hydrocarbons are pollutants of concern for the storm water discharge. These parameters were regulated under the previous Order for the storm water discharge. Since there have not been any process changes since the last permit issuance, these pollutants are still expected to be in the discharge. Therefore, these pollutants are regulated in the proposed Order. Thus, effluent limitations have been established for these pollutants in the proposed Order, and have been carried over from the previous permit.

The effluent limitations for 1,2-benzanthracene, 3,4-benzofluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, dibenzo(a)anthracene, and indeno(1,2,3-cd)pyrene established in the proposed Order are lower than the recommended Minimum Level (ML). In accordance with Section 2.4.5 of the SIP, because concentrations below MLs are considered unquantifiable, a result recorded below the ML represents compliance with the effluent limitations for these pollutants.

Also, effluent limitations of temperature and pH are revised in the proposed Order. The temperature effluent limitation is based on the Thermal Plan. Effluent limitations for pH are based on the Basin Plan requirement to protect the beneficial uses of receiving water. The effluent limitation for acute toxicity is carried over from the previous Order to protect the beneficial uses of the receiving water, and is based on the Basin Plan.

Effluent limitations for discharges of storm water through Discharge Serial No. 001 (Latitude 33° 47' 35" North, Longitude 118° 13' 48" West) and discharges of storm water mixed with boiler blowdown and cooling tower blowdown through Discharge Serial No. 003 (Latitude 33° 47' 8" North, Longitude 118° 14' 6" West) established in the proposed Order are shown in the Table below.

Constituent	Units	Discharge Limitations			Rationale ¹
		Monthly Average	Daily Maximum	Instantaneous Maximum	
pH	standard units	Between 6.5 and 8.5 ²			BP
Temperature	°F	86 ³			TP
Biochemical oxygen demand (BOD) ⁴	lbs/1,000 gallons per day of storm water runoff	0.21	0.40	--	E, BPT
Chemical oxygen demand (COD)		1.5	3.0	--	E, BPT
Total suspended solids (TSS)		0.14	0.24	--	E
Oil and grease		0.067	0.13	--	E, BPT
Phenolic compounds		0.0014	0.0029	--	E, BPT
Total chromium		0.0018	0.005	--	E, BAT
Hexavalent chromium		0.00023	0.00052	--	E, BPT
Arsenic ⁵	µg/L	36	--	69	E

Constituent	Units	Discharge Limitations			Rationale ¹
		Monthly Average	Daily Maximum	Instantaneous Maximum	
Cadmium ⁵	µg/L	9.3	--	42	E
Copper ⁵	µg/L	2.4	--	2.4	E
Lead ⁵	µg/L	8.1	--	210	E
Mercury	µg/L	0.025	--	1.8	E
Nickel ⁵	µg/L	8.2	--	74	E
Selenium	µg/L	71	--	290	E
Silver ⁵	µg/L	--	--	2.3	E
Thallium	µg/L	6.3	--	--	E
Zinc ⁵	µg/L	81	--	90	E
Cyanide	µg/L	1	--	1	E
Anthracene	µg/L	--	110	--	E
1,2-Benzanthracene ⁶	µg/L	--	0.049	--	E
3,4-Benzofluoranthene ⁶	µg/L	--	0.049	--	E
Benzo(k)fluoranthene ⁶	µg/L	--	0.049	--	E
Benzo(a)pyrene ⁶	µg/L	--	0.049	--	E
Chrysene ⁶	µg/L	--	0.049	--	E
Dibenzo(a)anthracene ⁶	µg/L	--	0.049	--	E
Indeno(1,2,3-cd)pyrene ⁶	µg/L	--	0.049	--	E
Pyrene	mg/L	--	11	--	E
Total Petroleum Hydrocarbons	µg/L	--	100	--	BPJ
Fluorene	mg/L	--	14	--	E
Acute toxicity	% survival	7			E

1. BP = Basin Plan, TP = Thermal Plan, E= Existing permit limitation; BPT = BPT effluent limitations for contaminated storm water runoff, BAT = BAT effluent limitations for contaminated storm water runoff.
2. The pH shall remain in this range at all times.
3. This temperature value represents an instantaneous maximum value, not to be exceeded at any time.
4. 5-day Biochemical Oxygen Demand at 20 °C; only MDEL (not AMEL) of BOD is based on BPT guidelines.
5. Effluent limitations for these pollutants are expressed as total recoverable.
6. The limitation is lower than the approved analytical method minimum level (ML). Any values reported below the ML will be considered in compliance.
7. Average survival in effluent for any three consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, with no single test producing less than 70% survival.

E. Monitoring Requirements

The previous permit contained effluent monitoring requirements for Discharge Serial Nos. 001, 002 and 003. Because Discharge Serial No. 002 has been discontinued, the monitoring requirements for Discharge Serial No. 002 in the previous permit are removed from the proposed Order. The proposed Order carries over the effluent monitoring requirements for Discharge Serial Nos. 001 and 003 from the previous permit for all the pollutants with minor changes in frequency of analysis and type of sample collection. Similarly, the proposed Order carries over the receiving water monitoring requirements in the previous permit pertinent to discharges through Discharge Serial Nos. 001 and 003 only.

The effluent monitoring requirements for Discharge Serial Nos. 001 and 003 in the previous permit consisted of total waste flow; weekly monitoring of pH, temperature, residual chlorine, oil and grease, settleable solids, TSS, BOD, COD, ammonia, sulfides, phenolic compounds, and chromium; quarterly monitoring for copper, lead, zinc, remaining priority pollutants, methyl tertiary butyl ether (MTBE), and acute toxicity; semi-annual monitoring for arsenic, cadmium, mercury, nickel, selenium, and silver; annual monitoring for antimony, barium, beryllium, cobalt, cyanide, thallium, PCBs, HCH, and radioactivity. The receiving water monitoring program in the previous permit consisted of sediment sampling, visual observations, and receiving water monitoring.

1. *Effluent Monitoring*

The proposed Order requires monitoring for the discharge of wastewater from the facility to Dominguez Channel through Discharge Serial Nos. 001 (Latitude 33° 47' 35" North, Longitude 118° 13' 48" West) and 003 (Latitude 33° 47' 8" North, Longitude 118° 14' 6" West).

The proposed Order carries over the monitoring requirements for Discharge Serial Nos. 001 and 003 from the previous permit with minor changes in frequency of analysis and type of sample collection. To determine compliance with effluent limitations, the proposed Order establishes monitoring requirements for pH, temperature, BOD, COD, TSS, oil and grease, phenolic compounds, total chromium, chromium (VI), arsenic, cadmium, copper, lead, mercury, nickel, selenium, silver, thallium, zinc, cyanide, anthracene, 1,2-benzanthracene, 3,4-benzofluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, dibenzo(a)anthracene, indeno(1,2,3-cd)pyrene, fluorene, pyrene, and acute toxicity. In addition, monitoring requirements are established for total waste flow, residual chlorine, settleable solids, ammonia, sulfides, barium, cobalt, tertiary butyl alcohol (TBA), di-isopropyl ether (DIPE), tertiary amyl methyl ether (TAME), ethyl tertiary butyl ether (ETBE), MTBE, and total petroleum hydrocarbons (TPH).

Because the discharge through Discharge Serial Nos. 001 and 003 will occur only during storm events, the proposed Order requires that the monitoring for the above pollutants are performed once per discharge event. Annual monitoring for radioactivity in the proposed Order is carried over from the previous permit. To comply with the waste discharge requirements of the proposed Order, monitoring for chronic toxicity for Discharge Serial No. 003 is added in the proposed Order.

Pursuant to the California Water Code, section 13267, the Regional Board is requiring periodic monitoring for pollutants for which criteria or objectives apply and for which no effluent limitations have been established. Accordingly, the Regional Board is requiring that the Discharger conduct annual effluent monitoring of the CTR priority pollutants. Details of the monitoring requirements for CTR priority pollutants are discussed in Section VII of MRP No. 5427.

Section III of MRP No. 5427 contains the effluent monitoring program for NPDES Discharge Serial Nos. 001 (Latitude 33° 47' 35" North, Longitude 118° 13' 48" West) and 003 (Latitude 33° 47' 8" North, Longitude 118° 14' 6" West) from the facility to Dominguez Channel. Because discharges due to storm events are discrete, the Regional Board feels that grab samples will be sufficient to characterize the discharge.

2. *Receiving Water Monitoring*

In order to collect sufficient receiving water data to complete the RPA, the Discharger is also required to conduct receiving water monitoring for all CTR priority pollutants on an annual basis for the first two years, at a location within 50 feet upstream of the uppermost of the two storm drain discharge points in the Dominguez Channel. Receiving water monitoring shall be performed annually for the first two years only after adoption of the permit and shall be conducted at the same time as effluent monitoring. Further, the Discharger must analyze pH, salinity, and hardness of the receiving water concurrently with the analysis for the CTR priority pollutants. A list of CTR priority pollutants is included in the MRP.

3. *Effluent and Receiving Water Monitoring for Reasonable Potential Determination*

Pursuant to the California Water Code, section 13267, the Discharger is required to submit data sufficient for: (1) determining if WQBELs for priority pollutants are required, and (2) to calculate effluent limitations, if required. Accordingly, the Regional Board is requiring periodic monitoring of effluent and receiving water for pollutants for which criteria or objectives apply and for which no effluent limitations have been established. The Regional Board is requiring that the Discharger conduct annual effluent and receiving water monitoring of the priority pollutants as listed in Section VII of MRP No. 5427. Effluent samples shall be collected at Discharge Serial Nos. 001 and 003 prior to entry

into the receiving water (Dominguez Channel). If there is no discharge to receiving water, then representative samples of the discharges to sanitary sewer will be taken. Receiving water samples shall be collected at a point 50 feet upstream of the uppermost of the two storm drain discharge points to Dominguez Channel, outside the influence of the discharge. Details of the monitoring requirements, including the priority pollutants to be analyzed, sample type, and monitoring frequency, are discussed in Section VII of MRP No. 5427.

4 *Effluent and Receiving Water Monitoring of TCDD Equivalents*

The Regional Board is requiring that the Discharger also conduct effluent and receiving water monitoring for the presence of the 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD or Dioxin) congeners. The monitoring shall be a grab sample twice during the permit term (once during the 2nd year of the permit and once during the 4th year). The Regional Board requires monitoring for 2,3,7,8-TCDD and the 16 congeners listed in Section VI of MRP No. 5427. The Discharger is required to calculate Toxic Equivalence (TEQ) for each congener by multiplying its analytical concentration by the appropriate Toxicity Equivalence Factors (TEF) provided in Section VII of MRP No. 5427.