

STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

STAFF REPORT FOR REGULAR MEETING OF SEPTEMBER 7, 2007
Prepared August 9, 2007

ITEM NUMBER 18

SUBJECT Reissuance of Waste Discharge Requirements/NPDES Permit for ConocoPhillips Company, Santa Maria Refinery, San Luis Obispo County--Order No. R3-2007-0002, NPDES Permit No. CA0000051

KEY INFORMATION

Location: Nipomo Mesa, five miles south of Arroyo Grande, adjacent to Hwy 1
Type of Waste: Oil refining process water and storm runoff
Design Capacity: Feedstock - 44,400 barrels per day; Wastewater - 575,000 gallons per day
Present Volume: 0.4 million gallons per day (MGD)
Treatment: Oil separation, dissolved air flotation, trickling filter, extended aeration and secondary clarification
Disposal: Pacific Ocean
Reclamation: Reprocessing of sludge
Existing Order: Waste Discharge Requirements Order No. R3-2002-0010
This Action: Adopt Waste Discharge Requirements Order No. R3-2007-0020

SUMMARY

The existing NPDES Permit, Waste Discharge Requirements Order No. R3-2002-0010 for ConocoPhillips Company (formerly Tosco Refining Company), Santa Maria Refinery, expired May 31, 2007, and was extended to September 7, 2007. This proposed Order No. R3-2007-0002 is the reissued permit. Proposed changes in requirements from the existing Order reflect applicable statewide regulations, primarily the *Water Quality Control Plan for Ocean Waters of California* (Ocean Plan); the *Water Quality Control Plan, Central Coast Basin* (Basin Plan); and federal effluent limitations specified in Title 40 Code of Federal Regulations, Part 419 (40 CFR 419). The proposed Order looks considerably different from the existing document, reflecting the statewide standardized permit format. This standardized format includes a Fact Sheet (Attachment F of the Order) detailing the basis for requirements specified in the Order and Monitoring Program. The standardized permit format also includes Definitions and Standard Provisions consistent with permits issued state-wide. Proposed changes are described in detail below.

DISCUSSION

Purpose of Proposed Order: Order No. R3-2007-0002 is proposed as revised/reissued Waste Discharge Requirements (WDR) and NPDES Permit for ConocoPhillips Company's Santa Maria Refinery in San Luis Obispo County (hereafter Discharger). The proposed Order is based on the federal Clean Water Act as it applies to industrial dischargers (specifically petroleum refineries) and continues existing permit conditions with some revisions (as described below). The proposed

Order implements discharge requirements specified in the Basin Plan, Ocean Plan, federal effluent limitations, and those based on staff's best judgment. The source of each specific requirement is described in the Fact Sheet (Attachment F of the proposed Order).

Facility Description: The refinery was built in 1955 and is designed to provide feedstock for the San Francisco Refinery. Crude oil is transported by pipeline to the refinery, where it is run through the crude distillation units (44,400 barrels per day capacity). All process wastewater and contaminated storm water from the facility flows to a treatment system consisting of oil/water separators, dissolved air flotation, trickling filter, extended aeration, and secondary clarification. Manufacturing operations are continuous (24-hours/day) throughout the year, except for annual maintenance and repair shutdowns. The facility map and flow schematic are included as Attachments B and C of the proposed Order.

The treated wastewater is discharged to the Pacific Ocean through an outfall terminating 1,700 feet offshore and 27 feet deep. The discharge has not caused a violation of water quality standards to date, and based on past monitoring results, degradation of the marine environment has not occurred.

Coke (heavy waste products from distillation and treatment) is stored and further processed at the Carbon Plant adjacent to the refinery. Potential groundwater quality impacts associated with coke storage and processing are regulated and monitored under separate agreement and are not addressed in this Order.

In addition to the waste streams described above, the proposed (and existing) Order authorizes the facility to accept site remediation water for treatment at this facility. This additional source of wastewater is not likely to significantly add to pollutant concentrations in the discharge.

The Discharger also uses unlined evaporation/percolation ponds for disposal of uncontaminated storm runoff (from areas not exposed to process residues). Industrial storm water, which is likely to carry pollutants from processing areas, is collected and diverted to the wastewater treatment system, and is therefore included as part of the regulated discharge.

Discharge Limitations: The proposed permit implements federal, state and regional discharge limitations based upon 40 CFR 419, the Ocean Plan and the Basin Plan respectively. With the exception of changes described in the table below, these limitations are carried over from the existing permit. Based upon reasonable potential analyses (RPA consistent with Ocean Plan provisions), those constituents without reasonable potential to be present in the discharge in excess of water quality objectives do not appear in the permit. Results of the reasonable potential analyses are provided in the Fact Sheet (beginning on page 16).

Federal requirements for the Petroleum Point Source Category (40 CFR 419) specify technology-based effluent limitations for Biochemical Oxygen Demand (BOD), chemical oxygen demand (COD), suspended solids, oil and grease, phenolic compounds, ammonia, sulfide, total chromium, hexavalent chromium, and pH. The technology-based effluent limits are based upon effluent quality from sample refineries nation-wide, after implementation of Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT). The federal regulations allow for variance from these technology-based limits, if the discharge is fundamentally different from those used to develop the limits. In this case, the refinery uses high nitrogen crude that is different from typical feed stock used to develop the limits. Accordingly, a

Fundamentally Different Factors Variance from federal ammonia limits (approved by the Central Coast Water Board in 1978 and carried over in each permit renewal since) is reflected in the proposed permit. The variance is based upon the fundamentally different feedstock used by the ConocoPhillips Refinery compared to feedstock processed by refineries used as the basis for development of the federal technology-based limits. It should be noted however, that the technology-based ammonia limit is considerably less stringent than that required by the Ocean Plan and the Discharger's monitoring data demonstrates effluent remains consistently well below water quality based (Ocean Plan) criteria for ammonia.

Constituent limitations based on Table B of the California Ocean Plan are reflected in effluent limitations for toxic pollutants (Tables 8 and 9 of the proposed permit). The Discharger has determined initial dilution of seawater to effluent to be 83:1 (flows \leq 285,000 gpd) and 68:1 (flows \leq 575,000 gpd). Accordingly, Ocean Plan discharge limitations are calculated using these dilution factors.

Basin Plan water quality objectives are reflected in receiving water limitations for dissolved oxygen, pH, and radioactivity. Temperature limitations, reflecting the Thermal Plan (incorporated into the Basin Plan), are also included in the proposed permit.

The Discharger has developed a Best Management Practices (BMP) plan regarding spill prevention and response. The plan requires formal in-house policies for preventing and abating leaks and spills which may occur around such industrial facilities. Provisions are included in the proposed Order requiring continued implementation of the BMP plan.

Monitoring and Reporting Program: The proposed Order includes a monitoring and reporting program to evaluate compliance with requirements. The monitoring program specifies influent, effluent, receiving water, and benthic biota monitoring; as well as outfall inspections. Monitoring requirements are carried over from the existing Order, with the exceptions described in the table below. The basis for recommended changes to the monitoring program is further described in the Fact Sheet (Attachment F).

Water Recycling: Currently, none of the Discharger's treated wastewater is reused (recycled).

Proposed Changes to Requirements: The proposed Order incorporates changes in requirements (and corresponding revisions to monitoring requirements) primarily due to implementation of the 2005 Ocean Plan. The Ocean Plan specifies procedures for evaluating the discharge to determine which constituents have "reasonable potential" to be present in problem concentrations (concentrations that may cause or contribute to an exceedence of water quality objectives). These evaluation procedures, called a reasonable potential analysis (RPA), have been applied to the Discharger's monitoring data in accordance with the Ocean Plan. Those constituents with no reasonable potential to exceed or contribute to an exceedence of water quality objectives do not require effluent limits. Effluent limits are specified in the permit for those constituents with reasonable potential to exceed water quality objectives or contribute to an exceedence, and those with unclear potential. Following are the specific changes proposed and the corresponding rationale for those changes. Further discussion of the basis for each of these changes is provided in the Fact Sheet.

Change	Section	Rationale
1. Water Quality based effluent limits for ammonia, antimony, copper, cyanide, lead, mercury, total chromium, and zinc are deleted. Effluent monitoring for these constituents will continue.	WDR IV.A.2, A.3 & A.4 (pages 8-13)	RPA demonstrated no reasonable potential to be present in discharge in excess of water quality objectives.
2. Effluent daily maximum limit for phenolic compounds is revised from 4.4 to 2.7 lbs/day.	WDR IV.A.1.	Correction of error in existing permit, revised limit based upon 40 CFR 419, Subpart B.
3. Benthic sediment monitoring is reduced from every 3 years to once in the life of the permit, during 2011.	MRP VII.A (page E-6)	Past monitoring and RPA support reduced monitoring frequency. Timing will facilitate evaluation of data with next permit renewal.
4. Added receiving water monitoring for salinity, temperature and depth.	MRP VII.B (page E-8)	Constituent monitoring to facilitate evaluation of effluent dilution ratios prior to next permit renewal.
5. Storm water discharge monitoring is deleted.	MRP	Storm water from processing areas is combined, treated and monitored with process wastewater.

COMPLIANCE HISTORY

The discharge has consistently complied with the discharge requirements specified in the existing permit, Order No. R3-2002-0010. Water Board staff anticipate consistent compliance will be maintained with the proposed requirements.

ENVIRONMENTAL SUMMARY

Waste discharge requirements for this discharge are exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21100, et. seq.) in accordance with Section 13389 of the California Water Code.

COMMENTS

Staff Corrections - Constituent limitations for acrolein and antimony were inadvertently exchanged in the draft permit circulated for comments (antimony and its limits appeared where acrolein and its respective limits should have been listed). Reasonable potential analyses indicate that there is no reasonable potential for antimony to be present in effluent in excess of limits; therefore, the effluent limit is deleted from the proposed permit. However, the reasonable potential analyses were inconclusive regarding acrolein; accordingly, effluent limits for acrolein are carried over from the existing permit (reflecting Ocean Plan standards). As stated in the Fact Sheet, both constituents are included in required monitoring, to ensure the discharge characteristics remain unchanged and that compliance is maintained. The proposed Order has been corrected accordingly.

Reasonable potential analyses demonstrated no potential for chronic toxicity to exceed Ocean Plan limits; therefore the draft permit circulated for comments did not include effluent limits for chronic toxicity but did require monitoring for chronic toxicity. However, chronic toxicity is a valuable screening tool to evaluate combined effects of discharge constituents. Therefore, chronic toxicity effluent limits (based upon the Ocean Plan) are incorporated in the proposed permit to be used to evaluate monitoring results. Chronic toxicity monitoring requirements are

unchanged from those circulated in the draft permit for public review and comment.

ConocoPhillips – The Discharger submitted editorial comments and corrections regarding the draft order, and those minor corrections and clarifying notes have been incorporated into the proposed Order. Substantial comments are paraphrased below and the letter is included as Attachment 2 to this report.

1. Monitoring of storm water entering the treatment system should be based on flow estimates in lieu of metered values. Storm water is commingled with process wastewater and collected from a large number of drains throughout the facility, and there is no practical method of separating and metering such storm flows. In the past, flow estimates have been used to determine the portion of discharge originating from storm runoff. The entire treated flow is measured using a Parshall flume, prior to discharge to the ocean.

Staff Response: Staff agrees that flow estimates will adequately characterize the storm water portion of facility wastewater (as has been the case for the past 20+ years). Accordingly, the Monitoring and Reporting Program is modified to allow storm water flow estimates rather than metered values.

2. The effluent daily maximum phenolic compounds limit specified in the draft permit is reduced significantly from that specified in the existing permit (existing limit 4.40 lbs/day, proposed limit 2.7 lbs/day). What is the basis for the phenolic compounds limit reduction?

Staff Response: As described in the Fact Sheet (Attachment F, beginning on page F-12) and Technology Based Effluent Limit Calculations (Attachment G), the phenolic compounds limit reflects federal limitations specified in 40 CFR 419, Subpart B. These requirements call for application of Best Practicable Treatment control technology (BPT) when such limits are more stringent than Best Available Technology (BAT), which is the case here. The existing permit incorrectly applied only the BAT effluent limit for phenolic compounds and overlooked the application of the more stringent BPT limit. This error is corrected in the proposed Order.

3. The discharge consists of effluent from the treatment facility and intermittent brine discharges from reverse-osmosis units, commingled and discharged through an ocean outfall. The draft permit proposes compliance sampling from the commingled flows just prior to discharge to the ocean outfall. Unfortunately, this single sample location will not facilitate accurate compliance evaluation with limits specified in the permit. Specifically, during 2001 laboratory staff noted that brine discharges were interfering with the accuracy of analyses for some wastewater constituents. To remedy the interference problem and accurately monitor the discharge, the sample point was relocated upstream of the brine input. Separate brine evaluation has been performed to assure that the RO brine does not contribute to water quality violations. The proposed Monitoring and Reporting Program should be modified to allow for separate effluent and brine monitoring, in order to eliminate brine interference with analytical results.

Staff Response: Brine interference with laboratory analyses has been noted at several regulated facilities throughout the Central Coast Region, and staff concurs with the Discharger's proposal to monitor effluent upstream of the brine input. In order to ensure that the brine discharge remains as previously characterized and does not contribute to water quality impacts, annual brine monitoring is added to the proposed Order. Compliance with federal technology-

based limits (mass-based limits) shall be evaluated based upon calculations using effluent samples, combined flow monitoring data (for mass discharge) plus mass of brine constituents (characterized annually by constituent analyses and flow estimates). Compliance with water quality based limits shall be evaluated based upon effluent data plus brine constituent data (proportional to discharge volume) for each constituent present in the brine. The proposed Monitoring and Reporting Program is revised to reflect this clarification in sample locations. Also, the draft permit circulated for comments specified Ocean Plan parameters to be reported in both concentration-based and mass-based units. The proposed Monitoring and Reporting Program is modified to require reporting in concentration-based parameters unless such data indicates a violation of either constituent or flow (only scenario in which mass-based violation could occur). This modification is intended to simplify reporting and review of such reports.

Environmental Law Foundation - Comments were submitted on behalf of San Luis Obispo Coastkeeper, and the letter is included as Attachment 3 to this report.

1. The proposed order includes a finding of consistency with the State's antidegradation policy, but does not adequately describe the basis for such a finding. Specifically, some effluent limitations specified in the existing permit are not carried over into the proposed permit. Such action (eliminating effluent limitations) does not appear to be consistent with the State's antidegradation policy, as it could allow for unregulated discharge of pollutants.

Staff Response: The State and federal antidegradation policies require full protection of beneficial uses, and allow degradation of high-quality waters only when necessary to accommodate important economic or social development. Effluent limitations specified in the proposed permit reflect Ocean Plan and Basin Plan water quality objectives specifically developed to protect beneficial uses of the receiving waters. As described in the Fact Sheet (starting on page F-17), water quality based effluent limitations for ammonia, antimony, copper, cyanide, lead, mercury, total chromium, and zinc are not carried over to the proposed permit since monitoring data indicates no reasonable potential for these constituents to be present in problem concentrations (as defined above) in the discharge (reasonable potential analyses in accordance with Appendix VI of the Ocean Plan). Since there is no reasonable potential to exceed the prior limits, removing them will not allow any degradation of water quality.

Chronic toxicity data also demonstrated no reasonable potential; however, since it is a broadly used screening tool for the combined effects of various constituents, chronic toxicity limits are incorporated in the permit (that were not in draft circulated for comments).

To ensure that the discharge character does not change, monitoring for these constituents is included at the same frequency as other Ocean Plan and Basin Plan constituents (twice per year). Discharge limitations specified in the proposed permit (and other NPDES permits) are based upon prior characterization of the discharge and do not allow for any discharge other than that which has been characterized. In other words, the permit does not authorize anything by omission.

Federal (technology-based) effluent limits remain, and apply where more stringent than water-quality based effluent limits specified in the existing permit. This existing discharge has been ongoing for many years, in the same manner and with the same requirements (except those changes listed in table above). The existing and proposed monitoring programs include ocean water, benthic sediment, benthic communities monitoring to evaluate potential impacts of the

discharge. To date such monitoring has not identified degradation caused by the discharge. Therefore, staff concludes that continuing the same discharge is unlikely to degrade receiving waters. Accordingly, the proposed permit is consistent with the state and federal antidegradation policies.

In order to address the commenter's concern that the permit findings or fact sheet do not adequately explain why removal of effluent limits for certain pollutants is consistent with California's Antidegradation Policy, staff has added to following to the antidegradation finding in the permit and discussion in the Fact Sheet:

"A statistical analysis of discharge monitoring data conducted according to the 2005 California Ocean Plan determined that there is no reasonable potential for the discharge to exceed the most stringent applicable water quality objectives for ammonia, antimony, copper, cyanide, lead, mercury, total chromium, and zinc. Consequently, removal of these limits does not allow degradation of receiving waters. The Facility has operated under NPDES permits since 1979. Effluent and receiving water monitoring throughout the Facility's operational history has not shown any degradation of receiving waters. This Order does not permit any expansion or other modifications of the Facility. Therefore, this Order does not allow any degradation of receiving waters. In addition, chronic toxicity monitoring and effluent limits, and other effluent and receiving water monitoring, will detect any unanticipated changes in the discharge and provide further assurance that degradation will not result from the discharge."

2. The proposed order should be re-noticed, to allow for public review of revisions.

Staff Response: NPDES regulations (40 CFR 124.15) require a new 30-day public review period if comments made during the original public review period raise "substantial new questions." The proposed permit reflects only minor revisions to the draft permit, all of which are a logical outgrowth of the matters originally noticed. The public has the opportunity to review these minor revisions during the the 10-day notice period required by the Bagley-Keene Open Meeting Act. In addition, notice and comment are not required for the Board to add findings based on matters already in the record. No additional public review period is necessary.

U. S. EPA – No comments received

SWRCB – No comments received

U. S. Fish & Wildlife – No comments received

CA Fish & Game – No comments received

SLO Co. Planning – No comments received

SLO Co. Envi. Health – No comments received

PG Environmental – No comments received

RECOMMENDATION

Adopt Waste Discharge Requirements Order No. R3-2007-0002, as proposed.

ATTACHMENT

1. Proposed Order No. R3-2007-0002 with Attachments
 - A. Definitions
 - B. Map of Facility Location
 - C. Facility Flow Schematic
 - D. Standard Provisions
 - E. Monitoring & Reporting Program
 - F. Fact Sheet
 - G. Technology Based Effluent Limit Calculations
2. July 20, 2007, comment letter from ConocoPhillips
3. July 13, 2007, comment letter from Environmental Law Foundation

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