

# **EXHIBIT A**

State of California  
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, LOS ANGELES REGION

CLEANUP AND ABATEMENT ORDER NO. 88-43

REQUIRING MOBIL OIL CORPORATION TO CLEANUP AND  
ABATE THE GROUND WATER POLLUTION CAUSED BY THE  
UNCONTROLLED RELEASE OF HYDROCARBONS INCLUDING  
REFINED PRODUCT FROM THEIR TORRANCE REFINERY

(File No. 85-7)

The California Regional Water Quality Control Board, Los Angeles Region, finds:

1. Order No. 85-17 adopted by this Board on February 25, 1985, directed Mobil Oil Corporation to conduct a subsurface investigation of its Torrance Refinery at 3700 West 190th Street, Torrance, California, and to detect and assess any conditions of soil and ground water pollution which may be present.
2. Mobil Oil Corporation submitted a Site Assessment Plan on April 25, 1985. Following comments to the Plan by Board staff and the Department of Health Services, a revised Site Assessment Plan was submitted on September 23, 1985.
3. A final report on site assessment activities was submitted on May 20, 1986. The report identified hydrocarbon pools in several areas on the perched aquifer and two locations on the deeper regional aquifer. Follow-up assessment and mitigation activities were proposed and a quarterly monitoring program with quarterly reporting requirements, starting August 20, 1986, was initiated. Free product recovery from the Regional Aquifer was scheduled to begin in early 1987 but has not begun to date. In addition, the fourth quarterly monitoring report has included a further assessment of off-site migration, as requested by staff, and the assessment data has substantiated that off-site migration of refined hydrocarbons is occurring.
4. The elevation of the Torrance Refinery is about 70 feet above Mean Sea Level. The western two thirds of the Refinery is underlain by a perched aquifer at an elevation of about 30 feet above Mean Sea Level. There is another much smaller perched aquifer in the southeastern area of the Refinery at an elevation of about 4 feet below Mean Sea Level. Underlying the perched aquifers beneath the entire Refinery are three major regional aquifers: Gardena aquifer (about 15

feet below Mean Sea Level), Lynwood aquifer (about 250 feet below Mean Sea Level), and Silverado aquifer (about 600 feet below Mean Sea Level).

5. Three pools of free hydrocarbon have been identified on the surface of the perched aquifer under the western area of the Refinery. One pool located in the northeastern portion flows to the northeast. A second pool located in the central portion flows to the west. A third pool located at the southern portion flows to the west.

A small pool of free hydrocarbon also has been identified in the southeastern perched aquifer. The ground water flow in this aquifer is to the north.

This hydrocarbon has been identified as refined product.

No free product has been found on the Regional Aquifer beneath the perched zone in the western portion of the Refinery.

Currently, there are 15 recovery wells in operation in the perched aquifers for the purpose of free hydrocarbon removal. Recovery to date has been minimal.

6. One pool of free hydrocarbon on the Gardena aquifer has been identified centered around wells II-4R and III9-R which are near the southeastern property line. The ground water flow in this portion of the aquifer is to the southeast in an off-site direction. However, it appears that no off-site migration of free product has occurred to date.

However, there are two plumes of dissolved hydrocarbon in the Gardena aquifer. A small plume in the southwestern area is believed to be due to the contaminated ground water flowing from the perched aquifer above it. The ground water flow in this portion of the regional aquifer is to the north. The second, and major dissolved hydrocarbon plume is originating in the area of the free product plume present on the surface of the Regional Aquifer beneath the southeastern Tank Farm portion of the refinery and is extending off-site. The southern boundary of this plume has not been determined but current data submitted by Mobil indicates the extent to be at least 1,200 feet in the downgradient direction.

7. To date, there is no information showing that the ground water in either the Lynwood and Silverado aquifers is contaminated.
8. The Board adopted a Revised Water Quality Control Plan for

Los Angeles River Basin on November 27, 1978. The Plan contains water quality objectives for ground water in Central Basin, Coastal Plain Subunit.

9. Ground water in the Coastal Plain is beneficially used for municipal and domestic supply, agricultural supply, and industrial service and process supply. Ground water in lower Gardena, Lynwood, and Silverado aquifers are usually of best quality and quantity.
10. This project involves an action taken for the protection of the environment and as such is exempt from the provisions of the California Environmental Quality Act in accordance with California Administrative Code, Title 14, Chapter 3, Section 15321.

The Board has notified Mobil Oil Corporation and interested agencies and persons of its intent to issue an Order requiring Mobil Oil Corporation to cleanup and abate condition of ground water pollution caused by the uncontrolled release of hydrocarbon from their Torrance Refinery and has provided them with an opportunity to submit their written views and recommendations.

The Board in a public meeting heard and considered all comments pertaining to this Order.

IT IS HEREBY ORDERED, that Mobil Oil Corporation, shall comply with the following:

1. As set forth in paragraphs 2a, 2b, 3 and 4 below, Mobil Oil Corporation shall initiate a full scale program to define, clean up and abate conditions of ground water pollution, on-site and off-site, caused by the uncontrolled release of hydrocarbon from their Torrance Refinery.
2. A technical report detailing this on-site and off-site program and a timetable for its implementation shall be submitted to this Board for approval by the Executive Officer no later than May 1, 1988. The technical report shall include, but not be limited to, the following items:
  - a) On-site
    - 1) Isopach maps of free hydrocarbon product thickness developed from well measurements. The nature of product (i.e. gasoline, diesel, etc.) shall be identified. This shall be done for each aquifer upon which free product pools are presently existing.

- 2) Using a methodology as designated by the Executive Officer, an imputed volume estimated or quantity of free product in each pool described in (1) above.
- 3) A locations map of an appropriate number of recovery wells to be located in each free product pool including coordinated reference based upon established datum.
- 4) A statement that applications for installation of each recovery well detailed in paragraph 3 above and for the disposition of recovered fluids shall be submitted to the appropriate federal, state and/or local authorities within 15 days of the receipt of Executive Officer approval of the program submitted by Mobil pursuant to paragraph 2.a.3, and installation of all approved wells shall commence with 45 days of receipt of all necessary permits. Recovery of the free hydrocarbon product on the Gardena Regional Aquifer in the southeast portion of the Refinery shall have the highest priority in making application for permits, and in the installation and operation of wells following permit issuance. In no case shall recovery of the free hydrocarbon product on the Gardena Regional Aquifer in the southeast portion of the Refinery begin later than September 1, 1988, without an extension of this date approved by the Executive Officer. The Executive Officer shall approve such extension if reasonably necessary to obtain necessary permits. The recovery wells shall be in place and providing significant reduction in volumes of free product from all free product plumes on all aquifers on or before March 1, 1989. Significant reduction in volumes is defined as a demonstrated and measurable reduction of total volume of free hydrocarbon liquid from plumes as determined from field measurements and calculation.
- 5) The report shall include a statement that monthly reports of progress shall be furnished to the Executive Officer of this Board on the first day of each month beginning the month following approval of the program by the Executive Officer and ending March 1, 1989.
- 6) The report shall indicate that quarterly report of progress shall be submitted to the Executive

Officer of this Board beginning April 1, 1989, thereafter until the recovery is completed. The final disposal of all free product and any associated ground water shall be detailed in the monthly and quarterly progress reports submitted to the Executive Officer under this paragraph and paragraph 5 above.

b) Off-site

- 1) A proposal for defining the dissolved hydrocarbon plume originating on the Gardena aquifer beneath the Mobil Torrance Refinery and determining to what extent such plume has migrated off-site.
- 2) The report shall include a statement that monthly progress reports be submitted to the Executive Officer beginning June 1, 1988, and continue until the dissolved hydrocarbon plume has been defined.
- 3) Mobil Oil corporation shall, within 180 days after completion of the plume definition activities under 2.b.1 above, submit to the Executive Officer for approval a report detailing what mitigation measures by Mobil Oil Corporation are considered appropriate to deal with plumes identified under 2.b.1 activities.
3. This program shall be directed and conducted by a registered civil engineer or geologist or a certified engineering geologist.
4. Any investigation and cleanup and mitigation activities required by Order 85-17, currently in progress or conducted in the past and not superceded by this current Order shall be incorporated by reference and made a part of the program undertaken pursuant to this Order.
5. The Redevelopment Agency of the City of Torrance has undertaken site assessment activities on property under their control and downgradient of the Torrance Refinery. The Board will act as liaison in making these data available to Mobil in this site assessment activity.
6. When required, it is the intent of this Board to issue Waste Discharge Requirements or other orders pursuant to Section 13260, Section 13304 and/or Section 13350 of the Water Code to facilitate these cleanup and abatement activities.
7. This order is not intended to stop or redirect any

investigation or cleanup or remediation programs ordered by this Board or any other agency.

8. The Executive Officer is authorized to take appropriate action as provided for in Sections 13268 and 13350 of the Water Code against Mobil Oil Corporation for any noncompliance with this Order including assessment of penalties in the amount of up to \$5000.00 per day for each day on which any technical data requested by this Cleanup and Abatement Order is not submitted.
9. This Order in no way limits the authority of the Board as contained in the California Water Code, to require additional investigation and cleanup pertinent to this project. This Order may be revised by the Executive Officer as additional information on this project becomes available. Upon request by Mobil, and for good cause shown, the Executive Officer may defer, delete or extend the date of compliance for any action required of Mobil under this Order.
10. Unless otherwise approved by the Executive Officer, failure to comply with the terms or conditions of this Order may result in imposition of civil liabilities either administratively by the Regional Board or judicially by the Superior Court in accordance with Section 13350, et. seq. of the California Water Code, and/or referral to the Attorney General of the State of California for such legal action as he may deem appropriate.

I, Robert P. Ghirelli, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Los Angeles Region, on March 28, 1988.

*Robert P. Ghirelli*

ROBERT P. GHIRELLI, D.Env.  
Executive Officer

# **EXHIBIT B**

State of California  
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, LOS ANGELES REGION

CLEANUP AND ABATEMENT ORDER NO. 89-116  
AMENDING CLEANUP AND ABATEMENT ORDER NO. 88-43

REQUIRING MOBIL OIL CORPORATION TO CLEANUP AND ABATE  
THE GROUND WATER POLLUTION CAUSED BY THE UNCONTROLLED  
RELEASE OF HYDROCARBON PRODUCT FROM ITS TORRANCE FACILITY

(File No. 85-007)

The California Regional Water Quality Control Board, Los Angeles Region, finds:

1. Order No. 88-43 adopted by this Board on March 28, 1988, directed Mobil Oil Corporation to cleanup and abate a condition of ground water pollution caused by the uncontrolled release of hydrocarbon product from its Torrance Refinery at 3700 West 190th Street, Torrance, California. Order No. 88-43 required, among other items, definition of the offsite migrating dissolved gasoline plume, submittal of an investigation and cleanup workplan, and ultimately the significant recovery of free phase hydrocarbon product from the aquifer(s) beneath the Mobil Torrance site.
2. The initial May 1, 1988, investigation and cleanup workplan was modified in August 1989 to incorporate additional offsite hydrogeologic characterization and investigation and onsite dissolved hydrocarbon plume remediation. A time schedule to implement further required activities is now necessary and is provided in this Cleanup and Abatement Order. The investigation and cleanup workplan set forth below may be modified and updated as necessary to ensure optimal cleanup and mitigation of ground water contamination.
3. Approximately 80,000 gallons of free phase hydrocarbon product has been recovered from the perched water and the Gardena Aquifer underneath the Mobil facility according to Mobil's October 1989 report. Mobil has essentially completed delineation of the offsite dissolved gasoline plume migrating in the Gardena Aquifer from the southeast corner of their site to the property owned by the Redevelopment Agency of the City of Torrance (RACT) and American Honda. Based on the latest ground water quality data from the two newly installed offsite

December 4, 1989

monitoring wells, it has been determined that Mobil is the primary source of a cigar shape dissolved gasoline plume approximately 200 acres in area and extending at least 3500 feet southeast of the Mobil site.

4. Since the primary responsible party for this dissolved gasoline plume has been identified, it is now necessary to amend Order 88-43 to develop a workplan to initiate mitigation of this ground water contamination in the strategically important regional Gardena Aquifer in an appropriate and expeditious manner. It is also necessary to complete identification of the leading edge of this dissolved gasoline plume.
5. Site assessment and investigations by RACT are in progress within areas including the RACT/American Honda site and Torrance Center II site (formerly Araco site). Staff has concluded that past operations at the RACT/American Honda and the Torrance Center II site may have contributed chlorinated hydrocarbon contamination to the Regional Aquifer. Staff has also determined that the chlorinated hydrocarbon plume present underneath the RACT/American Honda site overlaps a portion of the Mobil dissolved gasoline plume. This Board will consider issuing a separate Cleanup and Abatement Order to RACT and American Honda to require complete definition and remediation of the chlorinated hydrocarbon plume.
6. The Board adopted a Revised Water Quality Control Plan for Los Angeles River Basin on November 27, 1978. The Plan contains water quality objectives for ground water in Central Basin, Coastal Plain Subunit.
7. Ground water in the Coastal Plain is beneficially used for municipal and domestic supply, agricultural supply, and industrial service and process supply. Ground water in lower Gardena, Lynwood, and Silverado aquifers are usually of best quality and quantity.
8. This project involves an action taken for the protection of the environment and as such is exempt from the provisions of the California Environmental Quality Act in accordance with California Code of Regulations, Title 14, Chapter 3, Section 15321.

The Board has notified Mobil Oil Corporation of its intent to issue an Order requiring Mobil Oil Corporation to cleanup and abate condition of ground water pollution caused by the uncontrolled release of hydrocarbons from their properties and has provided them with an opportunity to submit their written views and recommendations.

The Board in a public meeting heard and considered all comments pertaining to this Order.

IT IS HEREBY ORDERED that Mobil Oil Corporation shall comply with the following:

1. This Order supplements the investigation, cleanup and mitigation activities required by Order 88-43, which are currently in progress or have been conducted in the past. The requirements of Order No. 88-43 are made a part of the program undertaken pursuant to this Order. Free phase hydrocarbon recovery shall continue to be a high priority activity as required in the Order No. 88-43.
2. Mobil is directed to implement the required activities according to the time schedule listed in Attachment A.
3. A ground water model shall be developed to characterize and predict the horizontal and vertical movement of the dissolved gasoline plume. This modeling shall ultimately provide data necessary for the optimization of the plume cleanup.
4. Monthly progress reports detailing all activities implemented and results obtained during the previous month, as required by this Cleanup and Abatement Order, shall be submitted to this Board by the 15th day of the following month. A final report describing all the activities and results with recommendations for offsite ground water remediation shall be submitted to this Board when this phase of ground water cleanup and investigation is completed according to the time schedule in Attachment A. The frequency of all previously required quarterly sampling and monitoring submittals is hereby revised to semiannual.
5. If contamination from the dissolved gasoline plume is found to be present at the lower portion of the Gardena Aquifer, a proposal and time schedule to install monitoring wells to detect any impact from such contamination on the Lynwood Aquifer will be prepared for the Executive Officer's approval. The proposal shall be submitted to the Executive Officer of this Board within

sixty days after the contamination of the lower Gardena Aquifer is confirmed.

6. In addition to the proposed activities detailed in the August 1989 revision to the workplan, Mobil is directed to complete dissolved gasoline plume definition (mainly aromatic components) by identifying the leading edge of the southern end of the plume, through installation of additional offsite monitoring wells south, southwest, and west of the RACT/American Honda property in Gardena Aquifer. The Executive Officer shall act, as coordinator in approving workplans for plume definition activity in the overlap area.
7. In order to achieve the goal of optimal ground water cleanup in the regional aquifer in an effective manner, this Board believes full cooperation with all responsible parties during the course of investigation and cleanup is essential. Therefore, in areas not owned or controlled by Mobil, Mobil is directed to seek access in order to accomplish the tasks set forth in this Order. The Executive Officer shall act as coordinator in these joint activities.
8. The investigation and cleanup program shall be directed and conducted by a registered civil engineer or geologist or a certified engineering geologist.
9. When necessary, it is the intent of this Board to issue Waste Discharge Requirements or other orders pursuant to Section 13260, Section 13304 and/or Section 13350 of the Water Code to facilitate these cleanup and abatement activities.
10. This Order is not intended to stop or redirect any investigation or cleanup or remediation programs ordered by this Board or any other agency.
11. The Executive Officer is authorized to take appropriate action as provided for in Sections 13268 and 13350 of the Water Code against Mobil Oil Corporation for any noncompliance with this Order including assessment of penalties in the amount of up to \$5000.00 per day for each day on which any technical data requested by this Cleanup and Abatement Order is not submitted.
12. This Order in no way limits the authority of the Board as contained in the California Water Code, to require additional investigation and cleanup pertinent to this project. This Order may be revised by the Executive

Mobil Oil Corporation.

File 85-007

Officer as additional information on this project becomes available. Upon request by Mobil, and for good cause shown, the Executive Officer, with Board approval, may delete or extend the date of compliance for any action required of Mobil under this Order.

13. Unless otherwise approved by the Executive Officer, failure to comply with the terms or conditions of this Order may result in imposition of civil liabilities either administratively by the Regional Board or judicially by the Superior Court in accordance with Section 13350, et. seq. of the California Water Code, and/or referral to the Attorney General of the State of California for such legal action as he or she may deem appropriate.

I, Robert P. Ghirelli, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Los Angeles Region, on December 4, 1989.

*Robert P. Ghirelli.*

ROBERT P. GHIRELLI, D.Env.  
Executive Officer

## ATTACHMENT A

## CLEANUP AND INVESTIGATION ACTIVITY SCHEDULE

Activities	Completion Date
<b>OFFSITE</b>	
Hydrogeologic Characterization	January 1, 1990
. grain size analyses	
. slug testing	
. analytical model	
Vertical Contamination Characterization	January 22, 1990
. vertical well installation	
. vertical well sampling	
Additional Hydrogeologic Characterization	August 2, 1990
. aquifer test well installation	
. aquifer tests	
. numerical model	
Ground Water Remediation Workplan and Schedule	October 2, 1990
Begin Remediation	January 1, 1991
<b>ONSITE</b>	
Extraction Wells	July 16, 1990
. pilot hole formation testing	
. onsite well field design	
. well installation	
. wells to be completed	
Remediation Facilities	November 1, 1990
. technology review	
. design	
. permits	
. procurement	
. construction	
. start-up	