

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

Att. Gen. 10-22-92

In the Matter of Request for Review
of Progress in Abatement of Gasoline
Spill - Glendale, California

Order No. 70-8

A special meeting was held by the State Water Resources Control Board on August 10, 1970, in Los Angeles to review the pollution problem caused by the presence of gasoline in groundwater in the Los Angeles-Glendale area. Due notice of the meeting was given to all interested persons and agencies known to the Board. Appearances were made and information was presented by or on behalf of the following:

California Regional Water Resources
Control Board, Los Angeles Region

Western Oil and Gas Association

Forest Lawn Memorial-Park, Inc.

California Department of Water Resources

City of Los Angeles, Department of
Water and Power

City of Glendale

Ellen Stern Harris

David B. Stanton, Deputy Attorney General

In addition to oral presentations at the meeting, a written report was received from a Task Force of the State Board of which Board Member E. F. Dibble was chairman.

The Board finds and concludes as follows:

1. HISTORY

This gasoline spill is located near Forest Lawn Cemetery in Glendale in what is called the Narrows of the Los Angeles River where it flows out of the San Fernando Valley. It has been estimated that there are about 250,000 gallons of gasoline floating on the groundwater table about 60 to 90 feet below the surface. It was first discovered in September of 1968 when gasoline was detected in a well used by Forest Lawn for irrigation and drinking water supply.

The City of Los Angeles has two municipal well fields in the area, one located less than a mile south of the Forest Lawn well and the other about three miles to the northwest. The City of Glendale's Grandview well field is located about five miles northwest of the Forest Lawn well.

There are two petroleum pipelines in the area and numerous service stations and other individual small storage tanks. The Atlantic Richfield Company owns one of the pipelines and uses it exclusively for transmission of crude oil. Mobil Oil Corporation owns the other transmission line which was constructed in 1914 and first used to transport crude oil, then in 1964 converted to transport gasoline. This line had a long history of leaks and was ordered shut down by the Regional Board in December 1969.

The Western Oil and Gas Association is expending funds provided by Mobil Oil Corporation and providing manpower for abatement. The California Department of Water Resources has been providing geological engineering guidance to the Regional Board.

2. SOURCE OF GASOLINE

A. Findings

- (1) The origin of the gasoline in the groundwater basin could only have been from two sources, either leakage from storage tanks in the area or from gasoline pipelines passing through the area.
- (2) Storage tanks in the area are of limited capacity and testing indicated no leakage of any significance. There are no large storage facilities in the area.
- (3) There are two petroleum pipelines that pass through this general area. One is owned by Atlantic Richfield Company but reportedly transports crude oil and has never been used for transportation of gasoline. The other is owned by Mobil Oil Corporation and has been used exclusively for the transportation of gasoline since 1964. This line has had a history of several breaks resulting in some leakage. Reported breaks occurred in 1964, 1966 and 1967. The amount of gasoline which escaped was reported to be considerably less than that estimated to be floating on the water table.

B. Conclusions

- (1) It is highly improbable that a leak of this magnitude could have occurred from storage tanks in the area.

- (2) The known facts logically result in the compelling conclusion that the most likely source of the gasoline was from the Mobil Oil Corporation gasoline pipeline. It appears that leakage was either not detected over a long period of time, or the amount of leakage reported at the time of the pipeline breaks has been grossly underestimated.
- (3) The presumed fact that 250,000 gallons of any potentially environmentally harmful substance could escape from a transmission system undetected by the operator is of grave concern. If indeed an escape of this purported magnitude did occur without detection by the operator, it casts doubt on the ability within the present state of the art of pipeline transmission to adequately protect the environment.

In response to a question by the Board at the hearing: "Could a pipeline operation lose as much as a quarter of a million gallons and not know from operational controls?" the representative of the Western Oil and Gas Association answered that he did not know; however, he promised to furnish an answer by letter. An answer was received by letter of August 27, 1970, from the Western Oil and Gas Association. A significant paragraph thereof reads as follows:

"It is highly unlikely that a quarter of a million gallons of gasoline could be lost from a pipeline without it being detected by operational controls."

- (4) The State Board should initiate the impaneling of a task force to consider measures needed to prevent future breaks or leaks in pipelines carrying toxic substances, to promptly detect and remedy such breaks and leaks as do occur, and to recommend appropriate legislation. Such task force should coordinate its activities with the Pipeline Standards Subcommittee of the State Interagency Oil Spill Committee and include the subcommittee chairman and other appropriate members.

3. HAS THE LEAKAGE OF GASOLINE BEEN STOPPED?

A. Findings

- (1) All gasoline storage tanks in the general area have been inspected and tested for leakage. A few minor leaks were detected under special test conditions and have been corrected.

- (2) The Mobil Oil Corporation gasoline pipeline was taken out of service by order of the Regional Board in December 1969 and filled with water to insure that it did not continue to hold gasoline.

B. Conclusions

- (1) It is reasonable to conclude that the leakage of gasoline has been stopped.
- (2) The movement of gasoline downward through the soil is very slow because of extensive clay lenses. It is possible that some gasoline may still be percolating downward through the soil formation toward the water table.

4. MAGNITUDE OF PROBLEM

A. Findings

- (1) Forest Lawn Memorial-Park, Inc. initially made an estimate based on limited information, that approximately 250,000 gallons of gasoline had leaked into the area. No subsequent refinement of this estimate has been made.
- (2) The general extent of the area affected is known. However, even though Western Oil and Gas Association has drilled a total of over 60 wells in the area of the gasoline spill, the precise area where gasoline is present has not been delineated in detail.
- (3) Sampling of several of the earlier test wells did not show the presence of gasoline and led several of the agencies involved to conclude that the outer limit of the gasoline migration had been determined. More recent sampling has shown the presence of gasoline in wells that originally showed negative results. Inspection of well logs, discussion by staff with drillers, review of drilling techniques, and well development indicate that gasoline was present in the area of these wells originally but was undetected in subsequent periodic tests probably because of a heavy coating of clay left in the well during drilling.
- (4) If the overall hydraulic gradient remains unchanged and an intervening depression is not created within the area of gasoline, movement would likely be at a rate less than one and one-half feet per day. At this rate of movement it would take three and one-half years to travel 2,000 feet.

B. Conclusions

- (1) The technical experts involved agree that the magnitude of the gasoline involved may be approximately 250,000 gallons.
- (2) The known areal extent of groundwater affected and covered by gasoline is at least 40 acres.
- (3) Drilling of additional wells and redevelopment of some existing wells should give information on the exact limits of the gasoline.
- (4) The present program to develop a positive depression within the affected area should create an inward gradient which will effectively prevent the gasoline from spreading.

5. EFFECT ON WATER SUPPLIES

A. Findings

- (1) The only water supply affected to date is Forest Lawn Well No. 4 where the initial gasoline discovery was made. Presence of gasoline required the temporary abandonment of this well. Subsequently the well was modified by sealing off the upper aquifer so that extraction is from only the lower aquifer. This well is now back in production.
- (2) Other than the Forest Lawn supply, the other major threat is to the City of Los Angeles, Pollock Well Field, located 2400 feet southwest of the affected area. It is also conceivable that the City of Los Angeles Crystal Springs well field and the City of Glendale Grandview well field located to the northwest could be affected. These fields are 14,000 and 26,000 feet respectively from the affected area and are not being immediately threatened because of the flat hydraulic gradient.
- (3) Since November 1969 the City of Los Angeles has discontinued pumping of the Pollock wells to minimize the hydraulic gradient between the well field and the adversely affected area. The City has sufficient flexibility in its total system so that the temporary loss of these wells has not yet seriously affected its operations. Nor will it adversely affect the City's water rights.

- (4) Should gasoline reach a well field, it would be possible to provide treatment to a degree that would make the water satisfactory for domestic use. The City of Los Angeles estimated the cost at approximately \$70 per acre foot.
- (5) Since domestic water supplies are not now affected, the spill does not at this time constitute a threat to public health.
- (6) Limited sampling by the Department of Public Health in the affected area indicates tetraethyl lead does not pose a threat to public health.

B. Conclusions

- (1) The quality of the water being produced at this time is not being adversely affected.
- (2) The presence of gasoline has caused production to be curtailed by the City of Los Angeles from this ground-water source.
- (3) The presence of gasoline poses a continuing threat to this extensive and valuable groundwater resource.

6. ABATEMENT PROGRAM

A. Findings

- (1) The cleanup program is based on the following priorities:
 - (a) Containment of the gasoline and stopping its spread;
 - (b) Removal of the free gasoline to the extent physically possible;
 - (c) Observation and monitoring;
 - (d) Removal of residual fractions.
- (2) Over 60 skimming, containment, and observation wells have been constructed.
- (3) Western Oil and Gas Association reported that approximately \$600,000 has been expended in the last year and one-half on cleanup activities, and has improved and accelerated its drilling program in the last five months.

- (4) So far about 50,000 gallons of the estimated 250,000 gallons involved have been removed.
- (5) Circumstances are such that cleanup can only proceed through a process of exploration and trial and error of various methods. All parties concerned have been somewhat disappointed with the progress made during the early stages of the abatement program.
- (6) Data are not available to project the time required to remove the free gasoline. It is reasonable to expect that it may require several years.
- (7) Subsequent to complete removal of the liquid gasoline now floating on the water table, some gasoline will be retained in soil particles above the water table. The amount retained will be sufficient to impart taste and odor to the water when the groundwater surface fluctuates or leaching occurs. A program to remove this retained gasoline must be developed. This will probably require research to develop new techniques and might take several additional years to accomplish. If this is not possible, it may be necessary to provide a small pumping depression in this area for many years to prevent odor and taste producing substances from migrating from the area.
- (8) The Regional Board staff has assisted by coordinating the actions of affected agencies and has prepared detailed reports on progress.

B. Conclusions

- (1) The abatement program priorities are appropriate.
- (2) Substantial abatement progress has been realized.
- (3) There is need to maintain and expedite construction of additional containment, observation, and skimming wells.

The California Regional Water Quality Control Board, Los Angeles Region, is directed to take the following actions:

1. Promptly undertake appropriate proceedings for issuance of an order requiring Mobil Oil Corporation to clean up and abate the effects of the gasoline spill.
2. Require Mobil Oil Corporation to submit to the Regional Board quarterly progress reports of cleanup and abatement activities, the first report to be filed by December 1, 1970, and to be made available by the Board to the public.

3. Obtain from Mobil Oil Corporation records of the transmission inventory pertinent to the incident.

Adopted as the order of the State Water Resources Control Board at a meeting duly called and held at Sacramento, California.

Dated: September 3, 1970

KERRY W. MULLIGAN
Kerry W. Mulligan, Chairman

ABSENT
E. F. Dibble, Vice Chairman

NORMAN B. HUME
Norman B. Hume, Member

RONALD B. ROBIE
Ronald B. Robie, Member

W. W. ADAMS
W. W. Adams, Member