

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION

ORDER NO. 91-183

SITE CLEANUP REQUIREMENTS

CHEVRON CHEMICAL COMPANY  
EVAPORATION PONDS  
RICHMOND MANUFACTURING FACILITIES  
CONTRA COSTA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, hereinafter called the Board, finds that:

1. Chevron Chemical Company, hereinafter called the Discharger, owns and operates a facility in Richmond, Contra Costa County (Figure 1) which manufactures and distributes a variety of pesticides and fertilizers.
2. The Evaporation Ponds (Figure 2), comprising approximately 70 acres of the facility, were originally constructed in the early 1960's for the evaporation of wastewaters generated by the chemical manufacture of Difolatan (a fungicide) and the formulation of various pesticides. As originally constructed, the ponds were unlined and not equipped with a leachate collection and removal system. The ponds range in size from slightly more than an acre (Spill Pond) to more than 18 acres (Pond 3A). The Evaporation Ponds are the subject of this order.
3. The Evaporation Ponds lie along the eastern side of Castro Creek, upstream of the confluence of Castro Creek and Wildcat Creek. These combined creeks flow into Castro Cove, an embayment of San Pablo Bay.
4. The Evaporation Ponds have been identified by the Discharger as being within the following County Assessor's Parcel numbers:

561-100-020	561-110-018	561-330-001
-034	-026	
	-028	561-120-009
	-032	-015
	-040	

5. The Evaporation Ponds are subject to regulation under the Federal Resource Conservation and Recovery Act (RCRA), the California Hazardous Waste Control Law (HWCL) and the California Toxic Pits Cleanup Act (TPCA). The Evaporation Ponds were identified in the facility's RCRA Part A application as hazardous waste management units. The design and operation of the ponds was documented in the subsequent

RCRA Part B application, submitted July 1983 and amended in March 1984 and June 1984. The ponds are currently regulated as interim status units.

6. The Discharger installed an Aspemix slurry cutoff wall along most of the exterior dikes during 1980, 1982 and 1983. Construction of the slurry wall was in response to a compliance time schedule set forth under Cease and Desist Order Nos. 80-27, 81-66, 82-52 (amending 80-27 and rescinding 81-66), and Waste Discharge Requirements Order No. 81-65. Aspemix consists of a mixture of emulsified asphalt, Portland cement, sand and water. The wall passes vertically through the pond dikes and is keyed into the underlying Bay Mud. There are a few small sections of the exterior dike such as along the Buried Ditch Area and the Fertilizer Recovery Well Area that do not contain an Aspemix wall. However, these sections contain low permeability clay barriers that were installed in the early 1970's. Together, the Aspemix wall and the clay barriers completely encircle the entire Evaporation Pond system.
7. In 1984, the Discharger applied for an exemption to the siting and construction requirements of RCRA and TPCA, to allow for continued operation in wastewater service without installing double liners and leachate collection systems. The exemption request was subsequently withdrawn by the Discharger, prior to formal action by the agencies. The Discharger then decided to opt for closure of the Evaporation Ponds in accordance with State and Federal regulations.
8. The Evaporation Ponds have been removed from manufacturing and formulation activities and are presently retained only for management of facility stormwater containment, in compliance with NPDES Permit #CA0005134 and Waste Discharge Requirements Order No. 81-065. The NPDES permit prohibits the direct discharge of stormwater from the manufacturing facilities or the ponds to surface waters except in the case of a high intensity rainfall event. Stormwater that collects in the ponds is either evaporated or routed to the City of Richmond's Wastewater Treatment Plant, in accordance with pretreatment requirements. The original process waste streams, that were influent to the ponds, are either incinerated or have been eliminated by discontinuing certain plant operations. The incinerator / scrubber blowdown is treated at Chevron U.S.A.'s Richmond Refinery.
9. Activities which have followed at the Evaporation Ponds involved the excavation of pond bottom sediments containing free liquids, which were then dried, stabilized and consolidated into one of the ponds, now called the Consolidation Area (Figure 2), which was lined underneath and covered with 20 mil PVC. Upon completion of this work, the

remaining Evaporation Ponds were lined with temporary 20 mil PVC liners to preclude infiltration of stormwater into the pond bottoms and contact with any remaining contaminated soil. With the liners the Discharger has been able to maintain compliance with TPCA Cease Discharge requirements. The total operating capacity of the ponds for stormwater containment is approximately 100 million gallons.

10. The soils within and around the Evaporation Ponds contain elevated levels of heavy metals, pesticides and fertilizers. The soil contamination occurs in the fill materials designated as the "A" Zone (hydrostratigraphic unit), which overlies Bay Mud. Underlying the Bay Mud are alternating sequences of alluvial and estuarine deposits of considerable thickness ("C" Zone), consisting largely of a silty clay matrix, although there are sporadic sand lenses in this material.
11. Constituents of concern that have been detected in soils of the area are Ammonia, Arsenic, Lead, Chlordane, DDD, DDE, DDT, trans-1,2-Dichloroethylene, Lindane, Nitrate and Trichloroethylene. Ground water has been impacted by these constituents, as described below in Finding 13.
12. Constituents which have been detected in soils at total concentrations that exceed hazardous thresholds are:

<u>Soil Contaminant</u>	<u>Typical Range of Total Concentrations</u> (mg/kg)	<u>Maximum Detected Concentration</u> (mg/kg)	<u>Hazardous Threshold Title 22</u> (mg/kg)
Arsenic	11 - 4140	36,061	(500)
Lead	6 - 3000	4830	(1000)
Chlordane	0.01 - 36	409	(2.5)
DDD, DDE, DDT	0.01 - 14.9	100	(1.0)
Lindane	0.01 - 4.6	5.47	(4.0)

In isolated areas within the site, other constituents have also been detected in soils in total concentrations that exceed hazardous thresholds. These include Aldrin, Endrin, Silvex, Toxaphene and Zinc. Additionally, ammonia has been detected in soils throughout the site.

13. Constituents which have impacted groundwater as a result of past operations and which exceed California Primary Drinking Water Standards (as reported in the 1990 Self Monitoring Program), are as follows:

<u>Water Contaminant</u>	<u>Maximum Detected Concentration</u>	<u>Calif. MCL*</u>
Arsenic	2.37 mg/l	(0.05 mg/l)
Lead	3.0 mg/l	(0.05 mg/l)
Nitrate (as NO <sub>3</sub> )	2000 mg/l	(45 mg/l)
Chlordane	12.0 ug/l	(0.1 ug/l)
trans-1,2-Dichloroethylene	546 ug/l	(10.0 ug/l)
Trichloroethylene	680 ug/l	(5.0 ug/l)

\* Maximum Contaminant Level.

Other constituents that have been detected in ground water in concentrations that exceed California Primary Drinking Water Standards include Benzene, Cadmium, Carbon Tetrachloride, Chromium, 1,2-Dichloroethane, Lindane, Silvex, Silver and Tetrachloroethylene. Additionally, ammonia has been detected in groundwater throughout the site.

14. The Discharger has implemented a groundwater monitoring program per the Self Monitoring Program (SMP) approved by the Executive Officer.
15. In the mid 1980's, several contaminated areas outside of the Evaporation Pond system's exterior dikes were detected. Due to the complex history of activities at this facility, it was difficult to determine if the contamination had resulted from operation of the Evaporation Ponds, or if it was associated with separate, historical activities outside of the ponds. To address this contamination, the Board issued Cleanup and Abatement Order(CAO) 86-010, requiring investigation and characterization of each specific area and the preparation of corrective action plans, if warranted.
16. In accordance with CAO 86-010, the Discharger prepared a site characterization report which delineates the areas of contamination outside of the ponds. The report identifies four specific areas of contamination (Figure 3) and they are known as; 1) Phthalic Anhydride Disposal Area; 2) Fertilizer Disposal Area; 3) Buried Ditch Area; 4) Fertilizer Recovery Well Area. The Discharger has proposed to address these areas as part of an area wide, comprehensive remediation plan that would be included with the closure plan for the Evaporation Ponds.
17. In November 1990, the Discharger submitted a plan for which dealt not only with the outside contaminant sources but closure of the Evaporation Ponds. The plan is divided into two phases.

The first phase (Figure 3) involves the installation of a slurry wall and a ground water extraction system to prevent offsite migration of contaminants from the ponds and the other four areas of contamination. It also includes reconfiguration of the ponds with underdrains and liners in order to provide for the long term management of stormwater. The use of the ponds for stormwater containment is intended to provide continued compliance with NPDES stormwater discharge prohibitions.

The second phase would occur several years after full implementation of the containment system and operation of the ground water treatment plant. Revision of the NPDES permit to allow decommissioning of the ponds for stormwater containment would begin the second phase which would involve backfilling of the ponds with soil and installing a low permeability cap over the entire area (Figure 4). An optional feature included in the second phase is the creation of a salt water marsh in the area between the closed ponds and Castro Creek.

18. In the "Pond Closure Plan", dated November 1990, the Discharger provides details as to the proposed ground water extraction trench and slurry wall system and the planned liner and underdrain retrofit work for the impoundments. These measures are intended to continue compliance with the requirements of TPCA, and to prepare the site for continued management of stormwater in accordance with State and Federal regulations.
19. The Discharger has advised the Board that the above plan for Phase I will follow the following schedule:
  - o By December 31, 1992:

Completion of the remainder of the groundwater extraction trench encircling the impoundments and outside contaminate areas, inward of the Aspemix Wall

Complete installation of the 60 mil liner and underdrain system for 2 to 3 of the RCRA/TPCA ponds
  - o By December 31, 1993:

Complete installation of the 60 mil liner and underdrain system for the remaining RCRA/TPCA ponds.
20. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on December 17, 1986. This Basin Plan contains water quality objectives and beneficial uses for San Francisco Bay and contiguous surface

and ground water. This Order implements the water quality objectives for San Pablo Bay as stated in the Basin Plan.

21. The beneficial uses of San Pablo Bay, including Wildcat Creek, in the vicinity of the site are:
  - a. Industrial Service Supply
  - b. Navigation
  - c. Water Contact Recreation
  - d. Non-contact Water Recreation
  - e. Ocean Commercial and Sport Fishing
  - f. Wildlife Habitat
  - g. Preservation of Rare and Endangered Species
  - h. Fish Migration
  - i. Fish Spawning
  - j. Shellfish Harvesting
  - k. Estuarine Habitat
  - l. Warm Fresh Water Habitat
  
22. The existing and potential beneficial uses of ground waters near the Discharger's property include:
  - a. Limited Domestic Supply
  - b. Limited Agricultural Supply
  - c. Industrial Supply
  
23. This Order is a regulatory enforcement action, categorically exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to Section 15321 of the Resources Agency Guidelines.
  
24. The Board has notified the Discharger and interested agencies and persons of its intent to issue this Order and has provided them with the opportunity for a public hearing and to submit their written views and recommendations.
  
25. Based on the available evidence, the Evaporation Ponds and associated areas of known contamination at the Discharger's Richmond facility are threatening to pollute or degrade the quality of the waters of the State.
  
26. The Board has notified the Discharger and interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the discharge and has provided them with an opportunity to submit their written views and recommendations.
  
27. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, that Chevron Chemical Company and any other persons that currently or in the future own this land or operate this facility, shall meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder and shall also comply with the following:

A. Prohibitions

1. The operation of this facility shall not create a condition of pollution or nuisance as defined in Sections 13050 (l) and (m) of the California Water Code.
2. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect the beneficial uses of the waters of the State is prohibited.
3. The storage of liquid hazardous waste or hazardous wastes containing free liquids in the surface impoundments is prohibited. The facility shall continue compliance with TPCA Cease Discharge Requirements.
4. Further migration of pollutants through subsurface transport to waters of the State is prohibited.
5. Activities associated with subsurface investigation or cleanup which will cause adverse migration of pollutants are prohibited.
6. The direct discharge of any excavated or recovered waste constituents from the contaminated soils, into ground waters or surface waters is prohibited.
7. The discharge of hazardous wastes to the surface impoundment(s) is specifically prohibited.

B. Specifications

1. The Discharger shall conduct the following remedial activities outlined in the "Pond Closure Plan", dated November 1990 and any subsequent amendments to the Closure Plan as approved by the Executive Officer:
  - a. Installation of the proposed subsurface barrier wall, adjacent to Castro Creek.
  - b. Installation of the ground water extraction system on the interior side of the above mentioned barrier wall.

- c. Installation of the remainder of the ground water extraction system along the north, east and southerly perimeter of the site, on the interior side of the existing aspemix barrier wall.
  - d. Reconfiguration of the eleven existing RCRA/TPCA ponds into stormwater management ponds, number of which will be determined during the course of remediation work.
  - e. Replacement of the existing 20 mil PVC RCRA/TPCA pond liners with the proposed 60 mil HDPE liner system, to include an underliner ground water drainage network.
  - f. Replacement of the temporary PVC cover over the consolidated RCRA/TPCA pond bottom materials in the Consolidation Area with the 60 mil HDPE liner.
  - g. Treatment of extracted ground water for removal of heavy metal contaminants and discharge of the treated water to the local POTW, in accordance with the POTW's pretreatment requirements.
2. After completion of the aforementioned activities, the Discharger shall conduct monitoring activities to verify the effectiveness of ground water treatment, containment and/or closure systems. The Discharger's monitoring activities shall be in accordance to the standards established by the existing ground water monitoring program. The Discharger shall coordinate the monitoring program to establish Water Quality Protection (WQPS) according to the requirements of Article 5 of Chapter 15 for, at a minimum, the parameters established for the Discharger's Groundwater Assessment Program and Part B RCRA Application. The WQPS shall take into account the existing levels of contamination in groundwater associated with the Evaporation Ponds and any other contaminate sources at the facility, which are currently undergoing corrective action.
  3. The concentrations of the indicator parameters or waste constituents in waters passing through Points of Compliance shall not exceed the WQPS.
  4. Compliance with Prohibition 3 shall be implemented as per the Closure Plan, dated November 1990 and any subsequent amendments to the Closure Plan as approved by the Executive Officer. The Discharger shall maintain compliance with the Cease Discharge Requirements of TPCA.

### C. Provisions

1. The Discharger shall comply with all Prohibitions, Specifications, and Provisions of this Order immediately upon adoption of this Order (in accordance with the time schedules contained within the Order).
2. All submittals of hydrogeological plans, specifications, reports, and documents (except progress and self monitoring reports), shall be signed by and stamped with the seal of a registered geologist, registered engineering geologist, or registered professional engineer.
3. Reports documenting progress and completion of the necessary tasks related to the Evaporation Pond remedial activities as outlined in the "Pond Closure Plan", dated November 1990 shall be submitted according to the following schedule:

FIRST PROGRESS REPORT DUE: No later than April 30, 1992\*

SECOND PROGRESS REPORT DUE: No later than October 31, 1992

THIRD PROGRESS REPORT DUE: No later than April 30, 1993\*

FOURTH PROGRESS REPORT DUE: No later than October 31, 1993

FIFTH PROGRESS REPORT DUE: No later than April 30, 1994\*

\* Report to include as-built drawings

4. The reports submitted by the Discharger, in compliance with the Prohibitions, Specifications, and Provisions of this Order, shall be submitted to the Board on the schedules specified. The reports shall be in a business letter format that includes the following:
  - a. A summary of work completed since submittal of the previous report and work projected to be completed by the time of the next report;
  - b. Identification of any obstacles which may threaten compliance with the schedule of this Order and what actions are being taken to overcome these obstacles;

- c. In the event of non-compliance with any Prohibition, Specification, or Provision of this Order, written notification which clarifies the reasons for non-compliance and which proposes specific measures and a schedule to achieve compliance. This written notification shall identify work not completed that was projected for completion, and shall identify the impact of non-compliance on achieving compliance with the remaining requirements of this Order.
5. Submit a technical report certifying completion of remediation construction activities in accordance with the approved remediation plan. The report shall contain the as-built construction drawings of the impoundments and the groundwater extraction and containment system.

Report Due: No later than October 31, 1994

6. Pursuant to California Water Code Section 13267 the Discharger shall maintain a well and surface discharge monitoring program which shall be acceptable to the Executive Officer, to detect any releases of contaminants in ground and surface waters, and to verify the efficacy of any treatment methodology, contaminant removal, and containment or closure systems utilized at the site.
7. The Discharger shall submit proposals for revising the existing Self Monitoring Program (SMP), as necessary to accommodate construction activities and to verify the effectiveness of ground water containment systems. The proposal shall indicate the locations of any newly proposed monitoring wells and identify any existing monitoring wells that are proposed for abandonment. The proposal shall also recommend any appropriate additions or deletions to the list of constituents being analyzed in each well and any appropriate changes to the frequency of sampling.
8. The Discharger shall maintain a copy of this Order so as to be available at all times to project operating personnel.
9. All samples shall be analyzed by State certified laboratories using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control records for Board review.
10. The Discharger shall maintain in good working order, and operate as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.

11. Copies of all correspondence, reports, and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order, submitted by the Discharger, shall also be provided to the following agencies:
  - a. State Water Resources Control Board
  - b. Cal-EPA Department of Toxic Substances Control
  - c. United States Environmental Protection Agency
  - d. Contra Costa County Health Services
12. The Discharger shall permit the Board or its authorized representative, in accordance with Section 13267 (c) of the California Water Code, the following;
  - a. Entry upon the premises in which any pollution sources exist, or may potentially exist, or in which any required records are kept, which are relevant to this Order;
  - b. Access to copy and to view records required to be kept under the terms and conditions of this Order;
  - c. Inspection of any monitoring equipment or methodology implemented in response to this Order; and
  - d. Sampling of any ground water or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the Discharger.
13. The Discharger shall remove and relocate properly any wastes which are discharged at this site in violation of these requirements.
14. If the Executive Officer finds that the Discharger has failed to comply with the provisions of this Order, he is authorized, after approval of the Board Chairman, to request the Attorney General to take appropriate action against the Discharger, including injunctive and civil remedies, if appropriate, or to issue a complaint for Board consideration of Administrative Civil Liabilities.
15. The Board considers the property owner and site operator to have a continuing responsibility for correcting any problems within their reasonable control which arise in the future as a result of the ongoing presence of contaminants at this property.
16. These requirements do not authorize the commission of any act causing injury to the property of another or of the public, do not convey any property rights, do not remove liability under

Federal, State or Local laws, and do not authorize the discharge of waste without the appropriate federal, state, or local laws, and do not authorize the discharge of waste without the appropriate federal, state, or local permits, authorizations, or determinations.

17. Pursuant to, or unless otherwise stated in, the requirements of California Water Code Sections 13271 and 13272, if any hazardous substance is discharged in or on any waters of the state, or discharged or deposited, or probably will be discharged in or on any waters of the State, the Discharger shall report such discharge to the following:
  - a. The Regional Water Quality Control Board, San Francisco Bay Region at (510) 464 - 1255 on weekdays during office hours from 8 a.m. to 5 p.m.; and
  - b. The Office of Emergency Services at (800) 852 - 7550.

A written report shall be filed with the Regional Board within five working days of discharge event or when the event is discovered and shall contain information relative to the following:

- 1) The nature of the waste or pollutant;
  - 2) The quantity involved and the duration of incident;
  - 3) The cause of the spill;
  - 4) The estimated size of the affected area;
  - 5) The corrective measures that have been taken or planned, and a schedule of these measures; and
  - 6) The persons/agencies notified.
18. Providing the impoundments are properly completed so as to meet Class II requirements for surface impoundments, the Board may issue updated Waste Discharge Requirements for the facility, to reflect their operation as contaminated stormwater containment ponds.
  19. If upon review of the Pond Closure Plan (November 1990) and any subsequent amendments to the Closure Plan as approved by the Executive Officer, the United States Environmental Protection Agency or the Department of Toxic Substances Control requires remedial activities at the site that vary with this order, then the Discharger shall promptly notify the Executive Officer.

20. The Board will review the Order periodically and may revise the requirements when necessary.
21. If the Discharger is delayed, interrupted, or prevented from meeting one or more of the completion dates specified in this Order, the Discharger shall promptly notify the Executive Officer and the Board shall consider revision of this Order.
22. Pursuant to Section 13304 of the Water Code, the Discharger is hereby notified that the Regional Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Regional Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this Order. Upon receipt of a billing statement for such costs, the Discharger shall reimburse the Regional Board.
23. This Order supercedes CDO Nos. 80-27 and 82-52. CDO Nos. 80-27 and 82-52 are hereby rescinded.
24. This Order supercedes CAO Nos. 85-021, 86-006, 86-010, and 91-073. CAO Nos. 85-021, 86-006, 86-010, and 91-073 are hereby rescinded.

I, Steven R. Ritchie, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region on December 11, 1991.

  
STEVEN R. RITCHIE  
Executive Officer

Attachments

- Figure 1: Location Map
- Figure 2: Evaporation Pond System - Current Configuration
- Figure 3: Lined Ponds System
- Figure 4: Fill and Cap Closure Cell

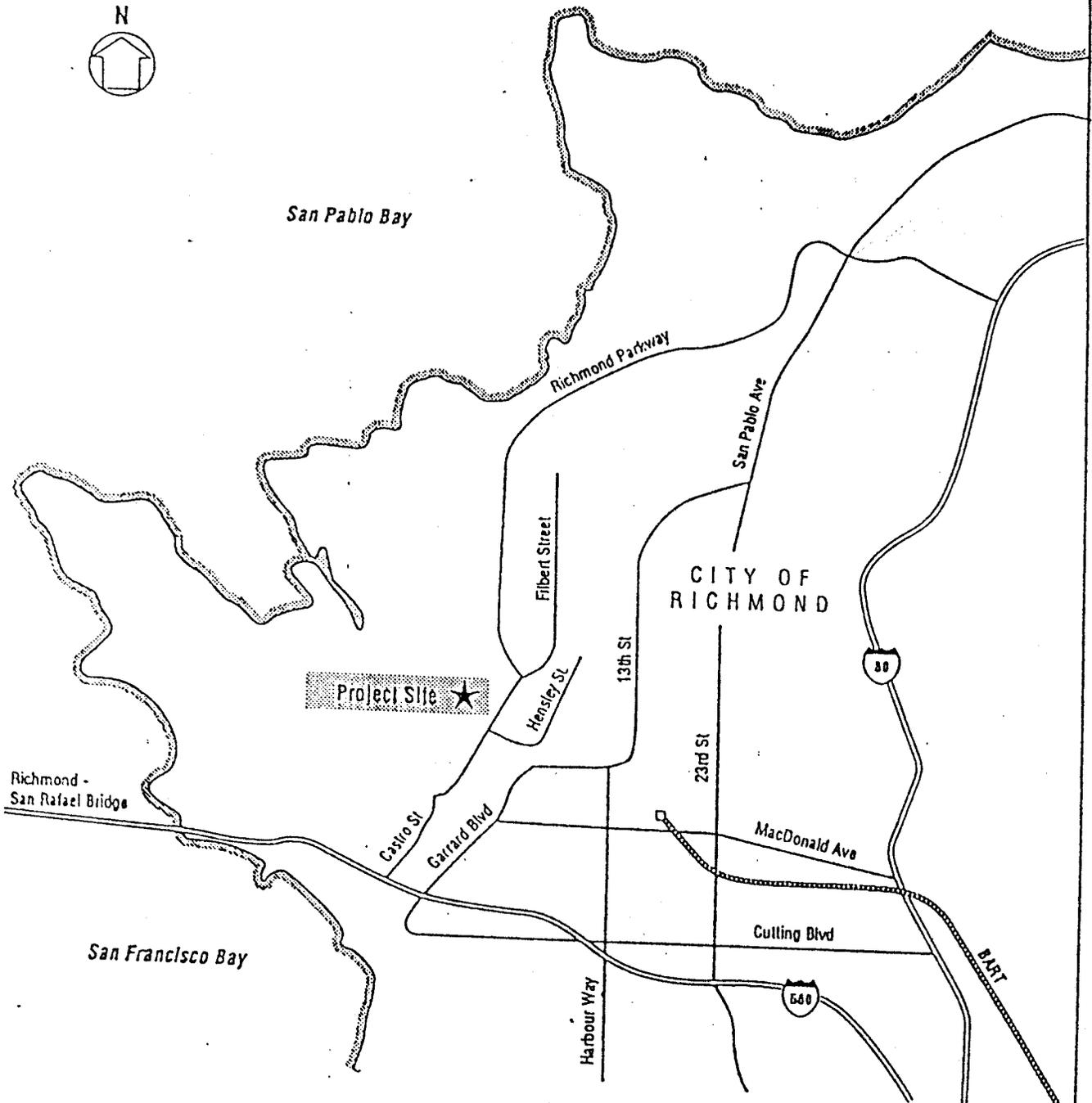
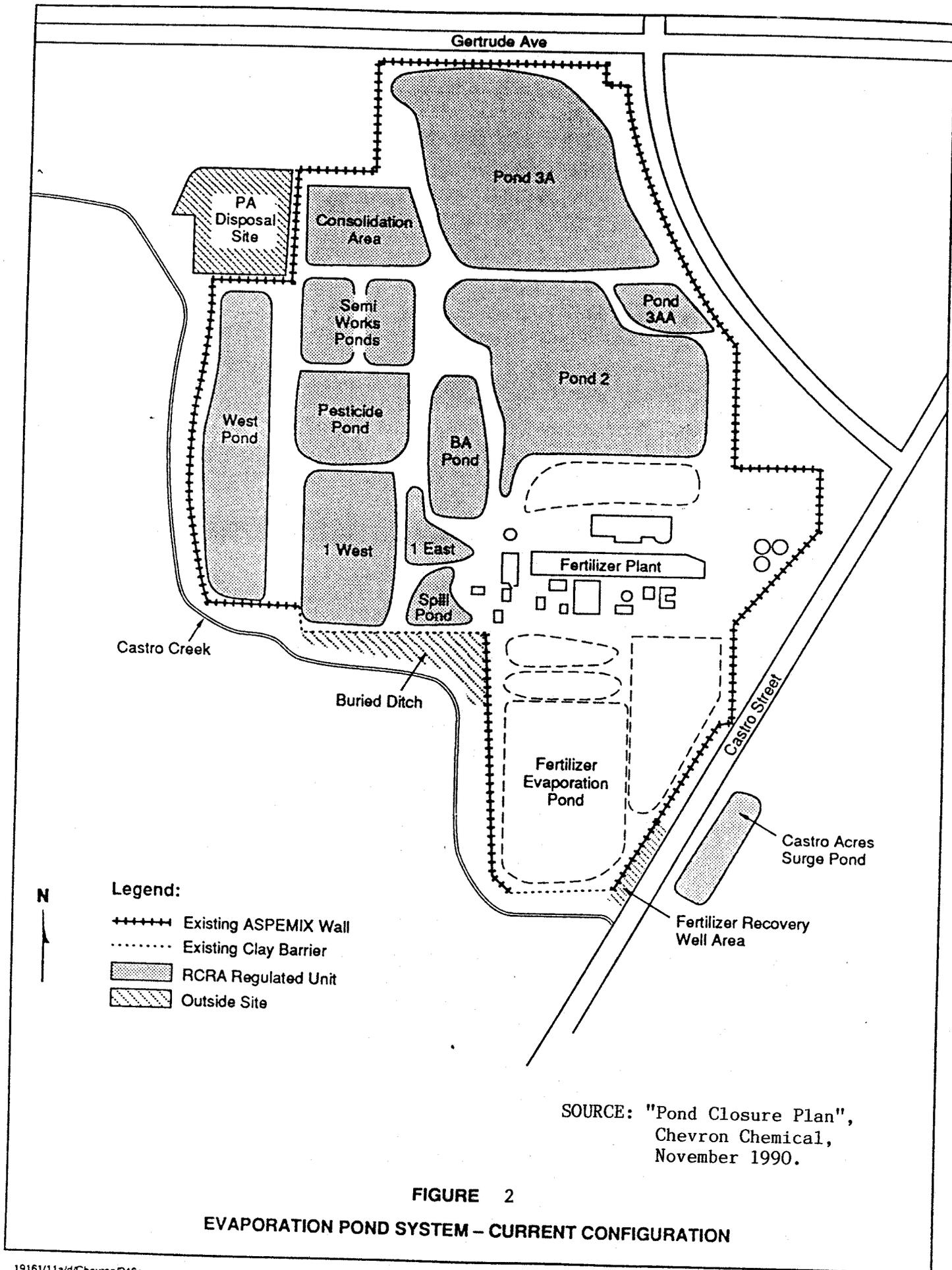
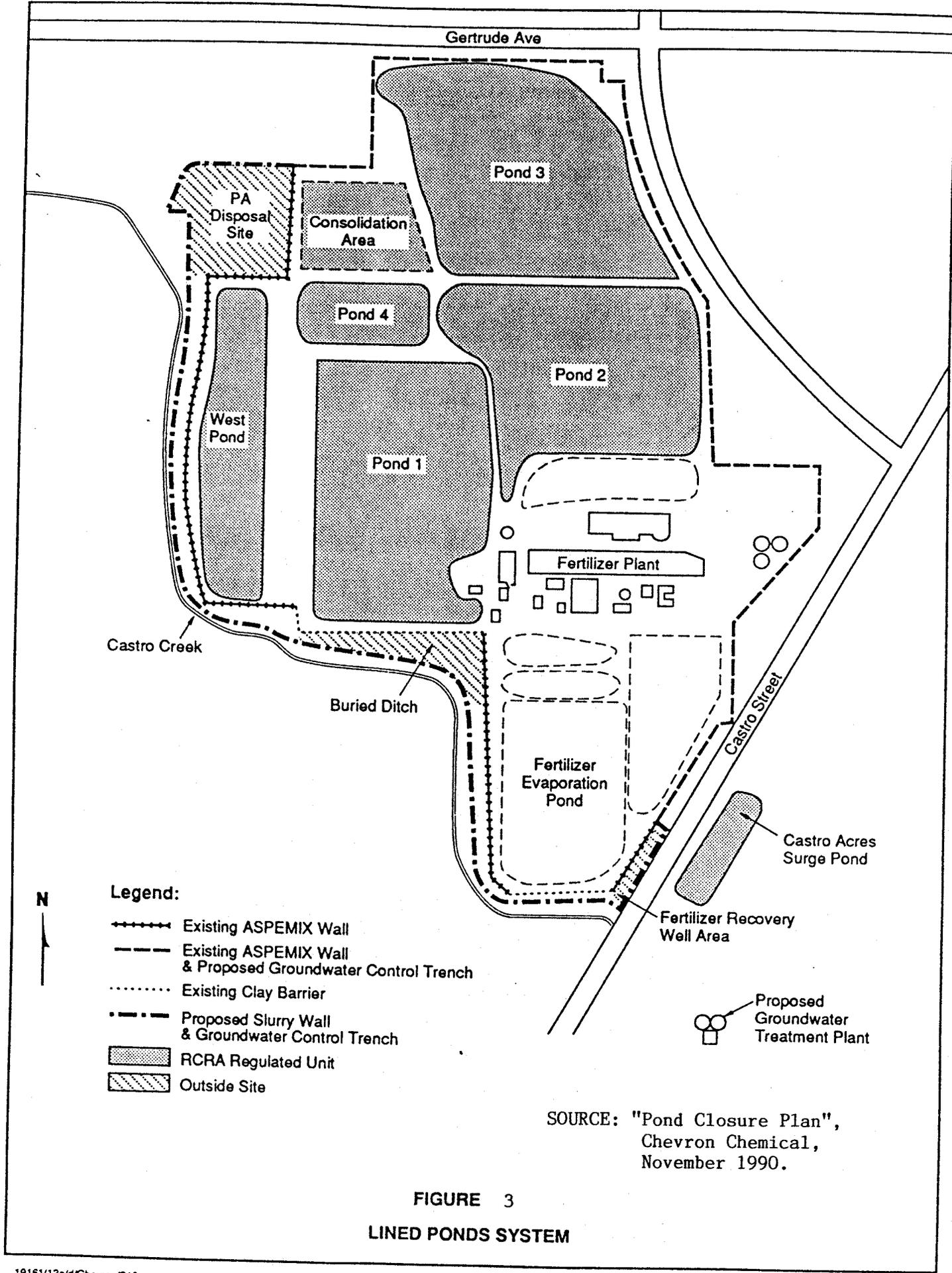


FIGURE 1

LOCATION MAP

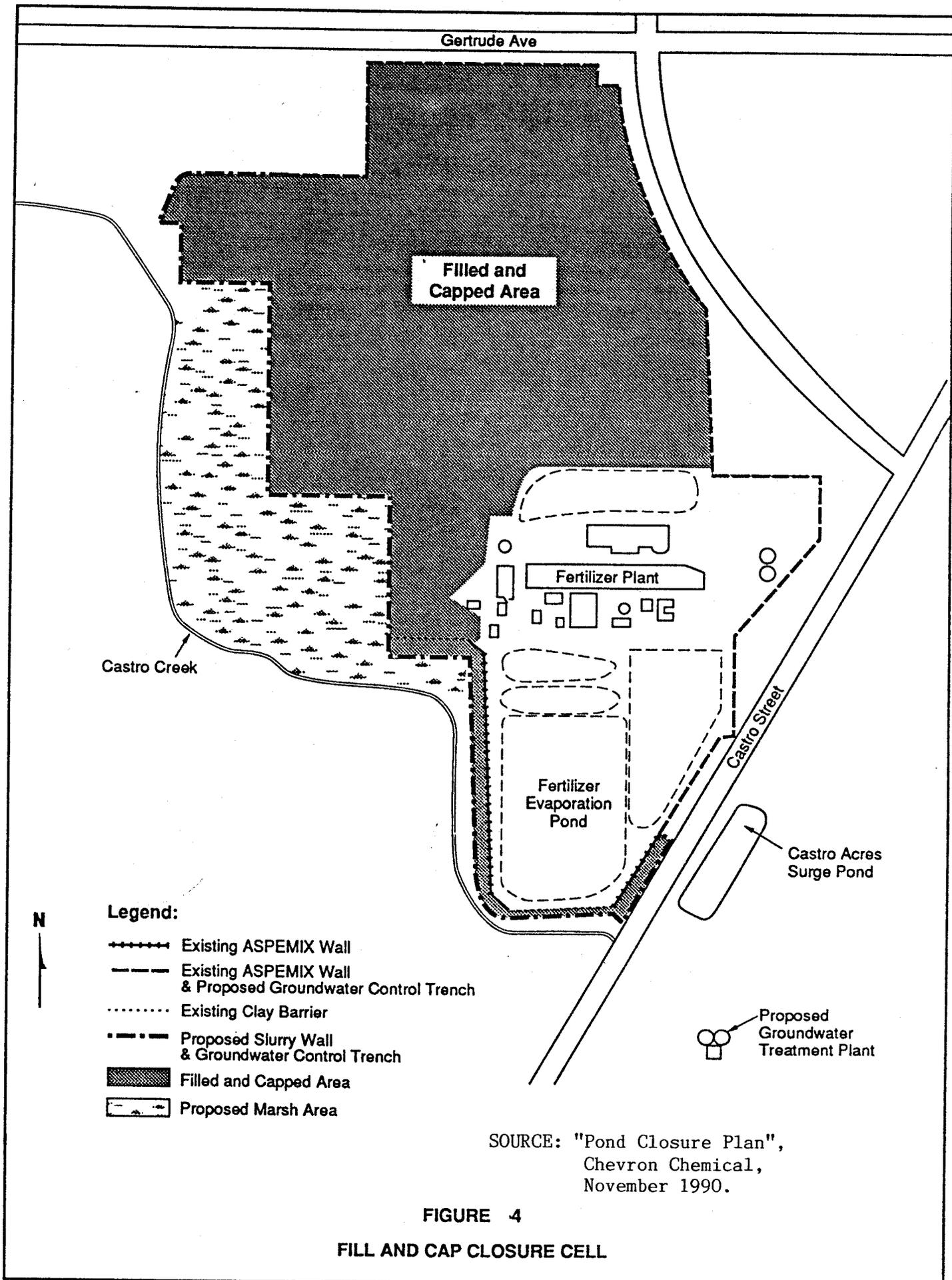
SOURCE: " Report of Waste Discharge for Chevron Chemical Company, Richmond Plants, SMU 1", January 1991





SOURCE: "Pond Closure Plan",  
Chevron Chemical,  
November 1990.

FIGURE 3  
LINED PONDS SYSTEM



**Legend:**

- +—+—+— Existing ASPEMIX Wall
- - - Existing ASPEMIX Wall & Proposed Groundwater Control Trench
- ..... Existing Clay Barrier
- · - · - Proposed Slurry Wall & Groundwater Control Trench
- ▨ Filled and Capped Area
- ▨ Proposed Marsh Area

SOURCE: "Pond Closure Plan",  
Chevron Chemical,  
November 1990.

**FIGURE 4**

**FILL AND CAP CLOSURE CELL**