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OCEAN DUMPING UNDER LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD PERMIT: A REVIEW OF PAST PRACTICES, POTENTIAL ADVERSE IMPACTS, AND RECOMMENDATIONS FOR FUTURE ACTION.

by:

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Los Angeles Region

March 1985

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State of California

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD, LOS ANGELES REGION

Resolution No. 85-4

REGIONAL BOARD ACCEPTANCE OF OCEAN DUMPING REPORT

WHEREAS:

1. Regional Board staff has prepared a comprehensive report on ocean dumping;

2. The report includes:

   a) a detailed summary of documents in Regional Board files pertaining to the practice of ocean dumping.

   b) a review of the current state of knowledge concerning the impacts of ocean discharge of hazardous substances on the marine environment and human health.

   c) a recommended plan of action for the conduct of field studies to determine the extent of any residues of hazardous materials previously dumped in the vicinity of Santa Catalina Island.

   d) other recommendations for actions by federal, state and local agencies to minimize any harmful impacts arising from the practice of ocean dumping as currently permitted under the Ocean Dumping Act.

THEREFORE BE IT RESOLVED:

1. That the Regional Board accept the Ocean Dumping Report; and

2. That specific recommendations in the report be transmitted to involved federal, state and local agencies; and

3. That the report be distributed to all interested parties; and

4. That staff be directed to implement the field studies recommended in the report to determine the extent of any threat to the marine environment or human health posed by residues of hazardous materials previously dumped in the vicinity of Santa Catalina Island.

I, Robert P. Ghirelli, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of a resolution adopted by the California Regional Water Quality Control Board, Los Angeles Region, on March 25, 1985.

Robert P. Ghirelli

ROBERT P. GHIRELLI, D.Env.
Executive Officer

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1.0 EXECUTIVE SUMMARY

Public concern has recently been focused upon ocean dumping of industrial wastes in San Pedro Channel. This practice began in the 1930's and continued until the early 1970's, and it came under State and Federal regulation in 1961. The Los Angeles Regional Water Quality Control Board prescribed waste discharge requirements for two firms engaged in the ocean dumping of industrial wastes: California Salvage Company (CSC) and the Pacific Ocean Disposal Company (PODCO). These requirements limited disposal to a single designated site (Dumpsite No. 1), approximately 10 nautical miles northwest of Santa Catalina Island. CSC and PODCO may have dumped a significant portion of their wastes short of the designated dumpsites. Large volumes of wastes were either stored or disposed at land-based sites.

No conclusive evidence directly links the ocean dumping of industrial wastes at Dumpsite No. 1 with adverse environmental effects in the Southern California Bight. Records indicate that acid wastes generated by the Montrose Chemical Company, the largest DDT manufacturer in the United States, were dumped at or near Dumpsite No. 1 prior to adoption of requirements in 1961 by the Regional Board. No DDT wastes are known to have been ocean dumped after 1961, but prior to that date up to 700 metric tons of acid sludge containing DDT were dumped by CSC. Three-fourths of the DDT found found in Southern California coastal waters appears to have originated chiefly from the Joint Water Pollution Control Plant outfall two miles offshore of Whites Point (about 1800 metric tons). Because of abundant research into the environmental behavior of DDT and concern that it may be a human carcinogen, the report discusses sources of DDT pollution, environmental transport, and possible mitigation measures for minimizing human consumption of DDT-contaminated fish.

Additional investigation and environmental monitoring are needed to assess possible effects of this past dumping practice. The investigation will consist of a historic literature review and a field study to be conducted by Los Angeles Regional Water Quality Control Board staff (outlined in Section 5.4). The report recommends a series of actions to be taken by concerned agencies and scientists with a view toward: (a) improving our understanding of pollutant transport and potential environmental impact of ocean dumping at Dumpsite No. 1, and (b) minimizing adverse environmental impacts and human health risks.

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2.0 RECOMMENDATIONS

The following recommendations are made to ensure an active follow-up to this report by the respective agencies, organizations and scientific groups. These actions will aid in acquiring information on the effects of ocean dumping at Dumpsite No. 1 upon the marine environment.

1. California Department of Fish and Game (DFG)
   National Park Service (NPS)

   a) Monitor priority pollutant levels in marine wildlife in the Channel Islands National Park to determine if elevated levels are present and what effects these substances may be having in wildlife populations.

2. Department of Health Services

   a) Place the following sites on the statewide inventory of confirmed and abandoned hazardous waste sites, and initiate remedial activities:

   * California Salvage Company harbor storage facility, Berth 115, Port of Los Angeles

   * Pacific Ocean Disposal Company harbor storage facility, Berth 116 Pier E, Port of Long Beach

   * PUDCO dry wells 914 Paul Jones Avenue, Wilmington

   * Grant Street Liquid Disposal Company, Wilmington

3. State Water Resources Control Board and Coastal Regional Water Quality Control Boards

   a) Create a coordinated marine information exchange system to provide ready access to data on waste discharges and water quality in ocean waters along the Southern California coastline.

   b) Seek additional funding to continue fish pathology studies in California harbor and coastal waters.

4. Los Angeles Regional Water Quality Control Board (LARWQCB)

   a) Seek immediate funding for the FY 1985-1986 Special Study Proposal to monitor storm drains for priority pollutants to ensure that no significant quantities of pesticides, hydrocarbons, heavy metals, etc., are entering ocean waters.

   b) Monitor storm drains and sewage effluent discharges for pesticides such as dicofol (Kelthane) which could increase the load of chlorinated hydrocarbons in ocean waters and inhibit the recovery of the Southern California marine environment.

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c) Prepare a comprehensive annual report to the Regional Board on the quality of ocean waters in the region. This annual "report card" would be used by the Regional Board to ensure that actions are taken in a timely manner to protect all beneficial uses of the ocean.

d) Incorporate effluent limitations and receiving water objectives for toxic constituents of concern into the Region's basin plans.

e) Adopt a policy and guidelines for staff review of new ocean dumping proposals and issuance of permits.

f) Report to the Board in three months on improvements needed to tighten current staff procedures for conducting inspections, maintaining in-house records, and initiating enforcement actions.

g) Conduct a study into the enviromental effects of ocean dumping at Dumpsite No. 1. This should provide firsthand information on an issue about which very little information has been collected to date (outline given in Section 5.4).

5. Appropriate Health Agencies

a) Following the release of the cancer risk assessment by the Department of Health Services, Epidemiological Studies Section, actions prescribed (if any) should be promptly followed with a view toward minimizing consumption by fishermen and others of DDT-contaminated species, which could increase the risk of developing cancer.

6. Los Angeles County Sanitation Districts

a) Evaluate the extent to which the DDT remaining in the Joint Water Pollution Control Plant outfall is contributing to the total load of DDT in the Southern California Bight.

7. Scientific Organizations and Academic Institutions

These agencies are encouraged to undertake studies to investigate:

* Transport dynamics of chlorinated hydrocarbons in the marine environment,

* Aerial fallout of DDT and other persistent compounds as a contributor of pollutants to the marine environment.

* Long term effects of DDT and other persistent compounds upon diversity and abundance of organisms comprising marine food webs.

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3.0 INTRODUCTION

The LARWQCB began regulating the practice of ocean dumping in 1961. Ocean dumping was, as stated in the permits issued at the time, limited to two designated dumpsites (Figure 1). Other known dumpsites are shown in figure 2. Today in light of our more advanced understanding of pollutant transport through sediments, water columns, and biota, this practice has largely been discontinued in California. However, pollutants dumped under RWQCB permit still may be present in considerable quantities on the ocean bottom. A reasonable effort must be made to ascertain the degree to which potentially hazardous compounds such as beryllium, cyanide, naphthalene, pesticide residues, and other materials continue to persist and adversely affect the local marine environment. The purpose of this report, then, is threefold: (1) to summarize a careful examination of Los Angeles Regional Water Quality Control Board files pertaining to the practice of ocean dumping, (2) to review the current state of knowledge on potential or actual adverse effects upon the marine environment and human health resulting from ocean dumping, and (3) to recommend actions to be taken in order to minimize any harmful impact arising from past and present ocean dumping practices.

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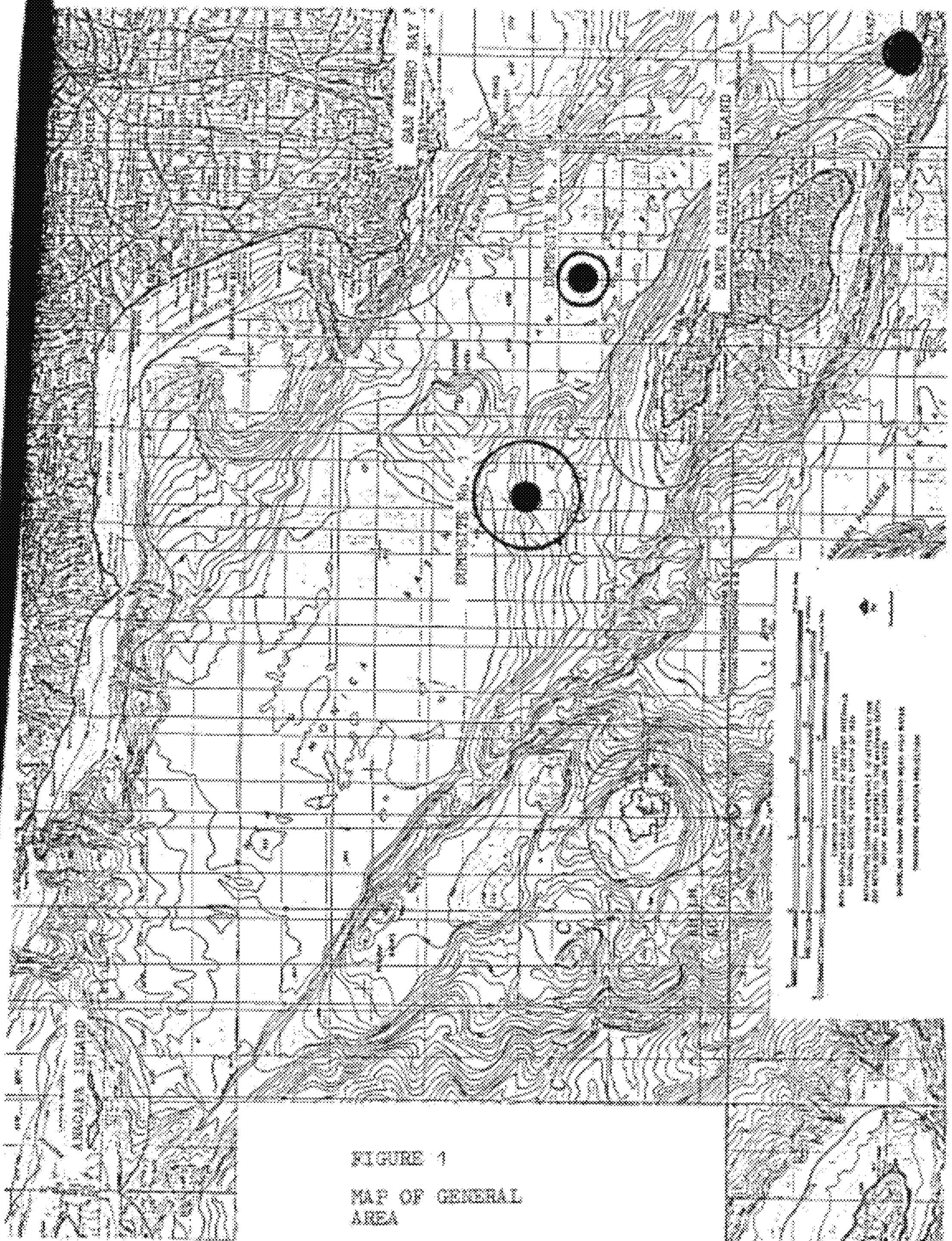
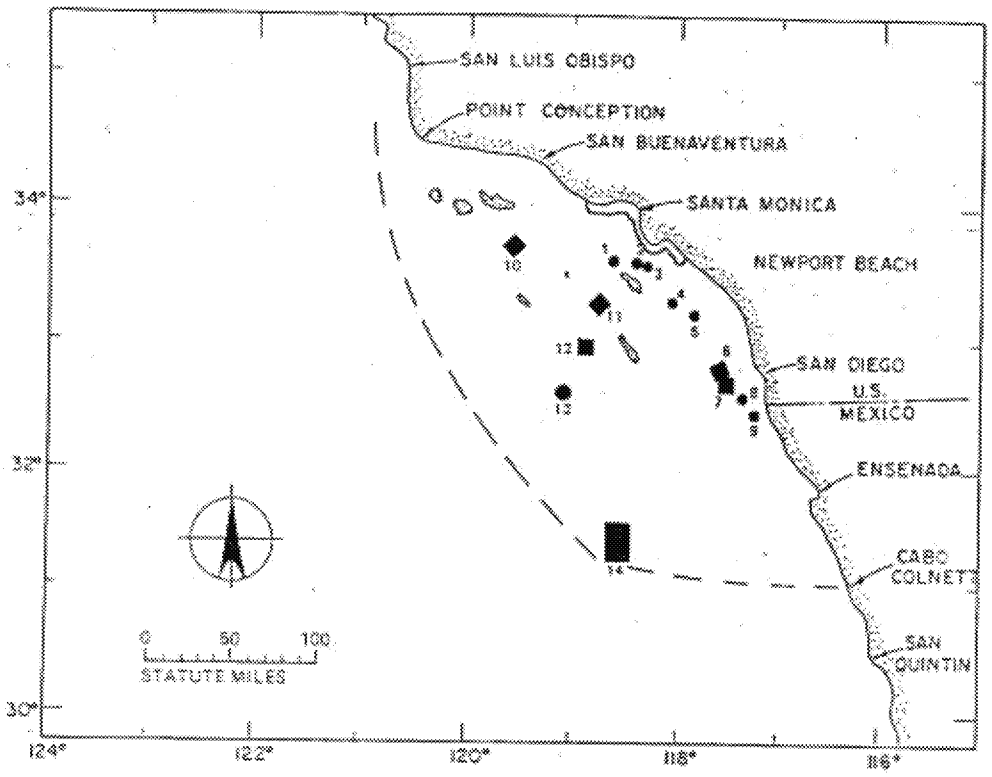


FIGURE 1

MAP OF GENERAL AREA

FIGURE 2

DESIGNATED OCEAN DUMPING SITES IN THE SOUTHERN CALIFORNIA BIGHT



Type of Wastes	Major Dumping Sites	Record Period
Refinery Wastes and Chemical Wastes	1	1967-73
	2	1963-73
	3	1966-73
	4	1967-73
	7	1960-67
Filter Cake	8	1969-70
Oil Drilling Wastes	3	1966-70
Refuse and Garbage	4	1971-73
	5	1966-70
	9	1967-68
Radioactive Wastes	10, 14	1946-68
Military Explosives	6, 11, 12	1965-70

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4.0 HISTORY OF OCEAN DUMPING

Although Federal law has regulated ocean dumping of wastes from vessels since 1886, the laws were intended to prevent any obstruction or danger to navigation. The environmental aspect of regulating ocean dumping did not come into being until the Marine Protection, Research, and Sanctuaries Act (Ocean Dumping Act) of 1972. This Act sought to regulate ocean dumping and to phase out dumping of harmful wastes.

The State since 1949 has regulated all waste discharges considered a threat to water quality in ground, surface, and ocean waters. However, this early legislation sought to regulate new and known waste dischargers that were causing a nuisance or pollution. Also, individual Regional Boards issued their own water quality control policies for their respective coastal waters. Consistent with what was known then of water quality standards, these plans relied on descriptive (qualitative) standards only. Only during the late 1960's and early 1970's were quantitative water quality objectives first established.

Major changes in the 1970's have led to present-day practices of regulating ocean dumping. In general, EPA issues permits to dischargers proposing to dump only if they can demonstrate compliance with stringent criteria. The State can assume an active role by issuing recommendations and comments on the proposed permits. For a detailed discussion of the relevant legislation on ocean dumping see Appendix A.

4.1 Ocean Dumping: Board Involvement and Regulation

In past decades, the ocean dumping of industrial chemicals and other wastes in the waters offshore of Santa Catalina Island was an accepted disposal practice. The dumping was sanctioned and regulated at various times by different governmental agencies, including the US Army Corps of Engineers, the California Department of Food and Agriculture, the LARWQCB and the Environmental Protection Agency (EPA). Ocean disposal of wastes in the vicinity of Santa Catalina Island was halted in 1975, although uncontaminated dredge materials continue to be discharged at an approved EPA site in the San Pedro Channel, approximately 7 miles from the mainland at Point Fermin.

On October 18, 1961, the Los Angeles Regional Water Quality Control Board prescribed waste discharge requirements for two waste hauling firms, the California Salvage Company (CSC) and the Pacific Ocean Disposal Company, Inc. (POOCO). On February 24, 1971, a third waste hauling firm, H-10 Water fax: Company, Ltd. (H10WFC), was placed under waste discharge requirements by the Regional Board.

The waste discharge requirements issued to these three firms established the type, location and manner in which wastes were to be dumped at sea. The requirements also established that the waste hauling firms maintain logs of all trips made to Dumpsite No. 1, and that records be kept of the quantities and types of wastes disposed. Following is a historical summary of ocean dumping under regulation by the Los Angeles Regional Water Quality Control Board. This summary primarily focuses upon California Salvage Company and Pacific Ocean Disposal Company, due to their regular disposal of industrial wastes.

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California Salvage Company

In 1947, under methods and procedures prescribed by the California Department of Fish and Game, the United States Coast Guard, and the Los Angeles Harbor Department, CSC began its ocean disposal operations (1). Between 1947 and 1961, CSC ocean-dumped over 126 million gallons of liquid wastes (1). The majority of material disposed of during this period consisted of caustic and acid wastes produced by oil refineries, although EPA has estimated that 2000-3000 gallons per day of DDT-containing acid sludge were also dumped until 1961.

The volume of wastes handled by CSC dropped from 1.2 million gallons per month in the mid 1950's to approximately 210,000 gallons per month in 1960. In a letter to the RWQCB in 1966, William Hutchinson, then president of Cal Salvage, attributed the decline to new oil refining methods or to "other uses" for the wastes (2). Figures 3 and 4 shows the volume of wastes dumped by CSC.

The LARWQCB began regulating CSC's ocean disposal activities in October 1961 when it adopted Resolution No. 61-43 as the company's waste discharge requirements. Under these requirements, CSC discharged solid and liquid containerized industrial wastes at a disposal site (Dumpsite No. 1) located within a radius of 3 nautical miles Latitude N 33° 37' Longitude W 118° 40', about 10 nautical miles northwest of Santa Catalina Island (Figure 1), at a mean depth of about 2500 feet (760 meters).

Containerized waste materials were received at the company's operation site at Berth 115, Port of Los Angeles, where they were loaded on a barge and towed to sea for disposal. To minimize navigational hazards to ships, the containers were perforated before being thrown overboard in order to insure sinking. The types and quantities of industrial wastes dumped at sea by CSC during its 12 years of operation (1961-1973) under LARWQCB requirements are listed in Figure 4.

While under regulation of the Los Angeles Regional Water Quality Control Board, CSC was observed on three different occasions dumping industrial wastes in areas other than those prescribed in Resolution 61-43. The first violation was noted by in a letter to CSC on July 20, 1966 (3). According to CSC, the company changed the disposal site to Latitude N 33° 34' Longitude W 118° 27' (Dumpsite No. 2, see Figure 1), because the disposal area designated by RWQCB was "in line with the naval weapons firing range" from San Clemente Island (4). Although CSC's waste discharge requirements were not amended to reflect this change in the disposal area, it appears from a letter CSC wrote to RWQCB on May 23, 1968, that there was a verbal agreement between Board staff and CSC to allow dumping at this location to continue.

Other dumping violations were observed on March 5 and March 12, 1968, when the Los Angeles County Sanitation Districts reported that CSC illegally disposed of industrial wastes near the Whites Points outfall (5). On March 18, 1968 in response to these complaints RWQCB issued a letter to the company informing them that this was a violation of the Board waste discharge requirements. CSC was ordered in the letter to immediately cease its illegal dumping. There was no formal investigation into the problem by Board staff; it is therefore not known for how long or how much waste was dumped near Whites Point.

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The California Salvage Company operated until early 1973 (Appendix B). In order to clear the record of closed cases, RWQCB rescinded CSC's waste discharge requirements on April 27, 1981. The total volume of industrial wastes dumped by CSC appears to be about 128 million gallons.

Pacific Ocean Disposal Company, Inc.

On May 22, 1961, the Pacific Ocean Disposal Company, Inc. (PODCO) filed with RWQCB for an ocean dumping permit. Waste discharge requirements (Resolution No. 61-44) for PODCO were adopted on October 18, 1961 and the company began ocean dumping on November 1, 1961.

Both liquid and solid industrial wastes were received at PODCO's facilities located at Berth 116, Pier E, Port of Long Beach. Bulk liquid wastes were pumped into a 45,000-gallon tank mounted on the company's barge. In addition to the bulk wastes, smaller amounts of containerized solid and liquid wastes were received by PODCO and towed by motor vessel to the disposal area located within a three nautical mile radius of center coordinates Latitude N 33° 37' Longitude W 118° 40'. The volumes and types of wastes discharged into the ocean by PODCO are given in Figures 3 and 4.

For various reasons such as ship repair, bad weather and oil in the wastes, PODCO at times disposed of materials at the Elkins Ranch Disposal Plant located in Fillmore or at the Grant Street Liquid Disposal Company located in Wilmington (6). Between 1961 and 1964, PODCO disposed of 684,000 gallons of liquid wastes at Elkins Ranch and 149,000 gallons of liquid wastes at Grant Street Liquids Disposal Company.

Although PODCO's waste discharge requirements for ocean dumping remained in effect until December 1969, PODCO conducted ocean disposal operations only between November 1961 and January 1964 (Figure 3). Beginning in April 1964, industrial wastes received by PODCO were disposed of in the firm's dry wells. The dry wells, located at 914 Paul Jones Avenue, Wilmington, were issued a permit for operation by the Los Angeles City Health Department on November 7, 1963. The conditions for operation set forth in the City's permit were adopted as waste discharge requirements by RWQCB on December 11, 1963.

From 1965 to 1976 PODCO, through these wells, discharged 450,000 gallons (1.7 million liters) of liquid waste per month into the ground (7). The liquid wastes percolated into the salt water-intruded Gaspur water-bearing zone of the West Coast Basin. From there it eventually flowed into the Pacific Ocean (8).

On April 4, 1975, the State Water Resources Control Board, Division of Planning and Research, determined that PODCO's dry wells did not meet the requirements set forth in Subchapter 15 of the California Administrative Code for Class 1 disposal (8). Based upon the evaluation of the Division of Planning and Research, RWQCB rescinded PODCO's waste discharge requirements for land disposal of wastes on October 10, 1976.

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YEARLY VOLUMES OF WASTES

OCEAN DUMPED BY CSC AND PCOCO

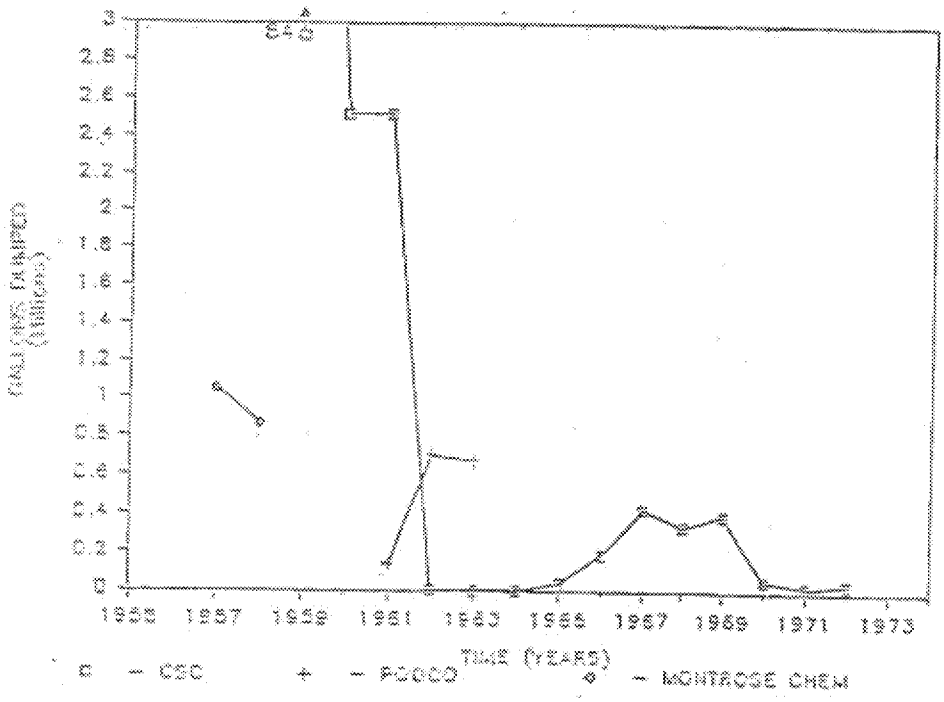

FIGURE 3

VOLUMES OF WASTES OCEAN
DUMPED BY CSC AND PCOCO

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Figure 4

SUMMARY OF OCEAN DUMPED LIQUID WASTES
BY THE CALIFORNIA SALVAGE COMPANY
BETWEEN THE YEARS 1965 TO 1972

Type of Wastes	Volume (gallons)	Percent (%)
Aluminum Chloride	776,000	50.5
Cyanide	273,000	17.8
Solvent Wastes	55,000	3.6
Acid Wastes	24,000	1.6
Beryllium	5,000	0.3
Misc. Chemical Wastes (e.g., cesium, bromine, film processing materials)	403,000	26.2
	1,536,000	100.0

SUMMARY OF OCEAN DUMPED LIQUID WASTES
BY THE PACIFIC OCEAN DISPOSAL COMPANY, INC.
BETWEEN THE YEARS 1961 TO 1964

Type of Wastes	Volume (gallons)	Percent (%)
Caustic Wastes (NaOH)	1,382,000	85.4
Calcium Fluoride	103,000	6.4
Polymer Acid Sludge	78,000	4.8
Acid Wastes	16,000	1.0
Misc. Chemical Wastes (e.g. nitric-hydrofluoric acid, paint and lacquer, hydrolyzed aluminum chloride solution)	39,000	2.4
	1,618,000	100.0

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H-10 Water Taxi Company, Ltd.

H-10 Water Taxi Company, Ltd. (H10WTC) began operations in 1931 when the company was issued a permit for Vessel and Aircraft Garbage Collection by the State Department of Food and Agriculture. Between the years 1931 to 1975, H10WTC dumped at sea up to 50 tons per week of garbage and trash collected from ships in the Los Angeles and Long Beach Harbors. In addition to disposing of vessel refuse, H-10WTC also dumped minor amounts of industrial wastes (in weighted, sealed containers) and diseased meats prohibited from entering the United States.

The LARWQCB began regulating H10WTC ocean disposal operations on February 24, 1971 when it adopted Resolution No. 71-10 as the company's waste discharge requirements. The H10WTC disposal site is located within a one nautical mile radius of center coordinates at Latitude N 33° 17' Longitude W 118° 10' (See Figure 1). RWQCB designated a second disposal site, although it was rarely used.

In 1973, EPA required H10WTC to file for a garbage and trash ocean disposal permit. EPA regulated H10WTC's ocean-dumping until 1975, when the company ceased its disposal operations.

Los Angeles Regional Water Quality Control Board Inspections of Dumpsite No. 1

In general, trip logs to the disposal area submitted by CSC and PODCO are not well documented. On several occasions, the companies were delinquent in submitting the required trip logs. Logs were often submitted only when specifically requested by Board staff. On July 20, 1966, and again on March 18, 1968, Board staff issued letters to CSC stating that trip logs must be filed with the records of material disposed (3, 9). PODCO was issued similar letters on May 3, 1962, July 29, 1962, and September 25, 1964 (10, 11, 12).

Although Board staff inspected both CSC and PODCO harbor facilities during their years of operation, the companies' disposal activities were not closely monitored. Board staff never accompanied PODCO on any of its disposal runs. Board staff observed CSC disposal operations only once, on March 30, 1973. According to a report filed by the Regional Board Staff, navigation to the designated dumpsite was accomplished by dead reckoning:

> "From my estimate we were approximately on location, based on time of run and relative position between the mainland and [Santa Catalina] island" (13).

Upon arriving at Dumpsite No. 1, the disposal operation was carried out in the following manner:

> "Disposal of the chemicals was very thorough; none of the glass bottles or jars were left floating on the surface [of the ocean]. Each container was individually broken before disposal overboard. Drums containing chemicals were emptied and allowed to sink after holes were placed in the top, bottom and sides"(13).

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Due to the imprecise method of navigation and the poor record keeping by CSC and POOCO, it is not possible to determine how many times the companies actually discharged their wastes at the designated dumpsite. A disposal run to and from the prescribed limits of Dumpsite No. 1 took 12 hours. This inconvenience, combined with infrequent RWQCB compliance inspections, presents the possibility that industrial wastes were frequently "short-dumped" (i.e. closer to San Pedro Bay).

4.2 Current Ocean Dumping in the Los Angeles Region

THUMS Long Beach Company

In November 1982, THUMS Long Beach Company of Long Beach, California, applied to EPA for an ocean dumping permit for disposal of drilling muds and cuttings in a specific site that meets EPA requirements. The muds and cuttings wastes proposed for ocean disposal will result from THUMS' drilling activities at four islands within Long Beach Harbor and will be hauled to the dumpsite by a 220-foot (67-meter) motor vessel.

As provided in the Marine Protection, Research and Sanctuaries Act of 1972, EPA proposed to issue an ocean dumping permit after formally designating the site, pursuant to the EPA Ocean Dumping Regulations (40 CFR, Chapter I, Subchapter H, Section 228.4). EPA issued a public notice on December 8, 1983 (FR, Vol. 48, No. 237, pp 55000-55004) announcing a tentative determination of its proposal to designate an appropriate site at which THUMS muds and cuttings may be ocean dumped, and to issue a permit for the disposal of specific types and amounts of material for a specified period of time.

The proposed site is about 16 nautical miles (29.6 km) from Long Beach Harbor within a 1.5 mile (2.8 km) radius of latitude 33° 34' 30" N and longitude 118° 27' 30" W near the center of San Pedro Basin. It lies about 8 miles north of Isthmus Cove on Santa Catalina Island. The water depth is about 485 fathoms (2,910 feet).

EPA proposes to issue a 3-year permit and to limit the disposal to a maximum of 628,900 barrels (100,000 cubic meters) per year. The average load will be about 6,000 barrels, and dumping will occur at a frequency of between 6 and 26 times per month.

Similar waste materials had been dumped for three years in the vicinity of the proposed site from 1966-69 under the cognizance of State and Federal agencies without any reported significant effect.

The drilling muds to be used by THUMS will be water-based and chromium-free. Soybean oil will be used as a lubricant instead of the more toxic diesel or mineral oil. The drilling muds formulations are similar to the "generic" muds which have been approved by EPA on the basis of bioassay tests for use in the EPA general permits.

Board staff has reviewed the EPA proposed site designation Environmental Impact Statement (1983), and the THUMS application document. A water quality monitoring program will be incorporated into the permit.

If at some future time evidence appears that militates against continued discharge, the Board could request termination of the permit.

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Star-Kist Foods, Inc.

Star-Kist Foods, Inc. has applied to EPA for a special permit to transport and dump waste materials resulting from the operation of its fish processing facility at Terminal Island, California. The materials to be dumped consist of unprocessed wastewaters (i.e., brine water, unloading water, croaker juice and press liquor) and Dissolved Air Flotation (DAF) sludge. Because the unprocessed wastewaters are considered fish waste, they may be excluded from permit requirements pursuant to 40 CFR 220.1(c)1 apply(14). However, the DAF process sludge which is derived from the floatable solids obtained in the wastewater treatment process at each cannery does require a permit and formal site designation (15).

The proposed discharge site is 3.5 nautical miles (6.5 km) from the Los Angeles Harbor breakwater at a depth of over 120 feet (37 meters), and will be designated with a diameter of 1.5 nautical miles (2.8 km) centered at 33° 38.7' N latitude and 118°14.3'W longitude. Since the site is on the edge of State waters, the Regional Board required Star-Kist Foods to file a report of waste discharge. EPA has prepared a Draft Environmental Impact Statement on the proposed site and on June 14, 1984, issued a draft permit, fact sheet, and public notice. EPA has made a tentative determination to issue a Research Ocean Dumping permit for a six month period. The six month limit is necessary to determine the fate of the waste material during full-scale disposal operations and to allow for additional field monitoring (15). To date, EPA has not issued the final permit. LARWQCB will issue waste discharge requirements after reviewing the final EPA permit.

Other Currently Accepted Practices

With the recent closure of BKK landfill, there are currently no Class I hazardous waste disposal sites existing in Los Angeles County. Industrial wastes produced in the Los Angeles area are now trucked to either the Casmalia Resources Facilities in Santa Barbara County, or Kettleman Hills waste disposal site in Kings County.

Garbage and trash from foreign vessels moored in Los Angeles and Long Beach Harbors are compacted or stored in holding tanks for disposal at sea. By international agreement, the refuse may be dumped or incinerated once the vessel is 50 miles offshore. The disposal activities are regulated by EPA and the United States Coast Guard.

When brought ashore for disposal, the California Department of Food and Agriculture requires that refuse such as diseased meats be double-bagged and sealed. The waste is then transferred by sealed trucks to a plant where it is sterilized and buried in a landfill.

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5.0 ENVIRONMENTAL AND HEALTH EFFECTS OF OCEAN DUMPING

5.1 Montrose Chemical Company

Recent public attention has focused upon a potential health hazard associated with consumption of fish taken from Southern California coastal waters, many of which have been found to contain high concentrations of DDT. Though other environmental toxicants are also widespread and the subject of great concern (e.g. heavy metals, synthetic organic compounds, etc.) DDT and PCB's have been subjected to more scientific scrutiny through the years than any other pollutants in history. This is due in part to the persistence of these compounds which enables them to remain for years in marine sediments and tissues of living organisms. They have both been declared by the Environmental Protection Agency (EPA) to be potential human carcinogens, and it is this fact in conjunction with their high toxicity profiles and their potential for "biomagnification" that has caused EPA to discontinue registration of both compounds. DDT is of primary environmental and public health concern both because of the amounts barged to Dumpsite No. 1, and because of its discharge through the ocean outfalls of the Joint Water Pollution Control Plant (JWPCP) of the Los Angeles County Sanitation Districts (LACSD).

Montrose Chemical Company of Torrance, California, was for 35 years (1947-1982) the sole manufacturer of DDT in California and the largest manufacturer in the United States (16). Records from the years 1957-1958 show that 2000-3000 barrels a month of waste acid sludge (estimated to contain 5,000-10,000 ppm (0.5-1.0%) total DDT) were barged to ocean Dumpsite No.1*. These records show about 2,000,000 gallons (7.6 million liters) dumped during the two-year period; from this it is inferred that Montrose Chemical barged at least 10,000,000-14,000,000 gallons (37-53 million liters) of waste DDT-containing acid sludge during the years 1947-1961.

At the time Los Angeles Regional Water Quality Control Board assumed responsibility for the issuance of ocean dumping permits (1961), records indicate that Montrose Chemical Company was already diverting its caustic wastes to the JWPCP at Whites Point, and had begun transporting its acid wastes to a Class I landfill (Figure 7). It is therefore reasonable to assume that whatever DDT was dumped at ocean Dumpsite No. 1 has been there for at least 24 years.

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* Based on quantities of acid sludge disposed through CSC for 1957-1958, the following calculation for the fourteen-year dumping period of Montrose Chemical Company has been made: average no. of bbl/mo = 2416. Estimated concentration of DDT in acid sludge is 0.5% - 1.0%. For an average 0.5% DDT concentration in the acid waste stream, Montrose would have dumped about 348 metric tons over the fourteen year period, and for 1.0% about 696 metric tons (1 metric ton = 2205 lb.)

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Examination of the records on DDT waste being generated from Montrose Chemical Company reveal some very startling numbers with respect to quantities discharged from the JWPCP outfall at Whites Point. During the 1960's up to 290 kg (over 600 lb.) per day were being discharged through the outfall. As public awareness grew, the LACSD responded by taking samples which eventually traced virtually all of the DDT waste to a single point source; Montrose Chemical. Following is a brief chronology leading to the curtailment and eventual removal of Montrose Chemical Company influent to JWPCP (17):

* March 30, 1970	LACSD sampling showed discharge of close to 290 kg per day.
* April 1970:	Initiation of caustic waste landfill disposal (together with acid sludge).
* July 27, 1970:	LACSD sampling showed discharge of "only" 20 kg (44 lb.) per day.
* August 4, 1970:	Analysis of liquid waste still issuing from Montrose showed a DDT concentration of 3400 ppm.
* July 15-16, 1971:	Sampling of 200 meter section of sewage pipe between two sampling stations downstream of Montrose showed 32% and 39% (320,000 and 390,000 ppm, respectively) DDT by total weight in the sediment.
* June, 1971:	Influent from Montrose Chemical is completely shut off, and all DDT wastes (acid and caustic) are trucked to a Class I landfill.
* 1975:	Five years after termination of Montrose discharge to JWPCP the mass emission rate (MER) is still 15 times higher than the MER to Hyperion Treatment Plant, (1 metric ton/yr vs. 0.06 metric ton/yr, respectively).

An estimate made later of the total caustic waste emission through JWPCP was some 22,000 gallons (83,000 liters) per day which corresponds to approximately 270 kg (595 pounds) per day total DDT discharged through the outfall(18). Therefore, it can be estimated that during the 18 years of discharging caustic waste, about 1800 metric tons of DDT was discharged through the JWPCP outfall. The upper 30 cm.(1 foot) of sediment in the 48 km^2 (18 square miles) around the JWPCP outfall were found to contain 180-250 metric tons total DDT (19), and, in another study, the 28 km^2 (11 square miles) of sediment around the outfall were estimated to contain 200 metric tons (20). It should be noted that all studies done to date which measure DDT in sediments off Southern California show a clear gradient of declining DDT concentrations as a function of distance from the Whites Point outfall. Evidence suggests that because there is relatively high uptake of DDT by marine biota, DDT in the sediment is "bioavailable".

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Though as much as 700 metric tons of waste DDT may have been dumped at Dumpsite No. 1, very little is known about environmental transport or biodegradation of DDT at such depths (about 2500'). DDT is thought to be more readily metabolized to DDE and other metabolites in sediments underlying shallower waters, due in part to increased levels of dissolved oxygen (19). Additionally, because water movement at such depths is far less than along shallower coastal ocean bottoms the mixing of DDT in the deep water column is not likely to be as thorough as in shallower waters. In various studies bacteria have been found which are involved in the biodegradation of halogenated hydrocarbons. However, in the absence of dissolved oxygen aerobic bacteria would not readily survive (21). It therefore follows that even if substantial quantities of DDT have been dumped and are still present, their low bioavailability due to the extreme depth may limit effects on marine biota.

Concentrations of DDT in surficial sediments, the water column, and in biota appear to be declining. In 1983 the total quantity of DDT discharged through the Whites Point outfall (from sediments in the sewage line) was less than 500 kg. (1102 pounds) for the first time since the 1950's (30). Figure 5 depicts the decline of DDT emissions over time which appear to be presently declining at the rate of 20-30%/yr. Figure 6 depicts mass emission rates from various Southern California sewage treatment plants, clearly showing that the Los Angeles County outfall (LACSD) has contributed far more DDT residues than have the other sewage treatment plants. Young et al.(31) have stated that aerial fallout may be a major source of DDT in Southern California. Other non-point sources of DDT include storm drain runoff and agricultural return waters. Recently, the pesticide dicofol (Kelthane) has been the recipient of much attention due to the fact that DDT, DDE and other metabolites constitute a significant portion of its formulation (32). When "fresh" DDT is found in environmental samples it is therefore difficult to trace the source, as dicofol continues to be registered and widely used in California.

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FIGURE 5

DDT AND PCB EMISSIONS (1971-1983) FROM MAJOR MUNICIPAL WASTEWATER DISCHARGE OUTFALLS INTO THE SOUTHERN CALIFORNIA BIGHT

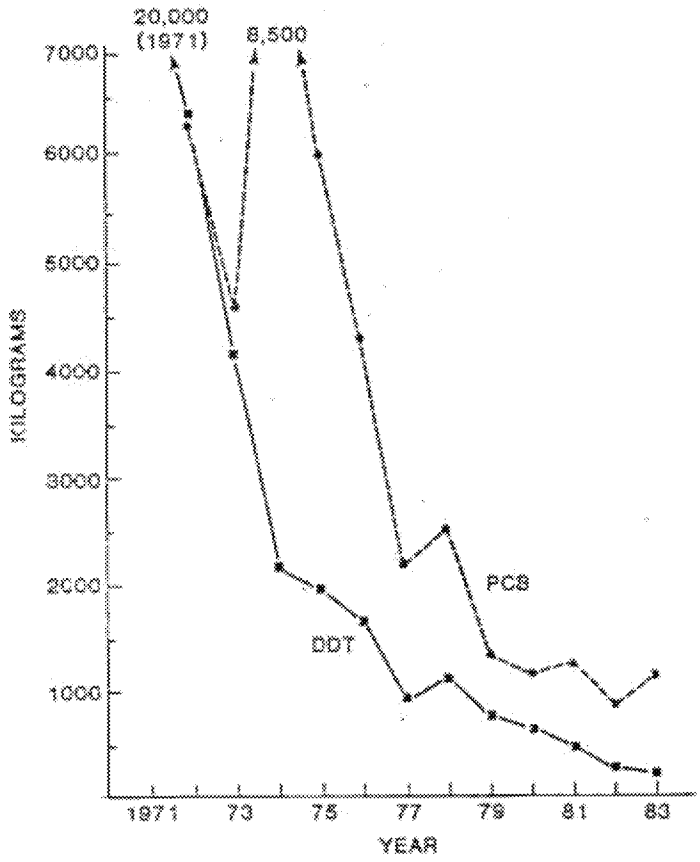

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Figure 6

DDT Mass Emission Rates from Various Southern California Sewage Treatment Outfalls, 1975-1978 (after SCCWRP 1979-1980)

Sewage Treatment Plant	Total DDT (kg/yr)
Hyperion Treatment Plant	
5 mile outfall	18 ± 4
7 mile outfall	12 ± 3
LACSD	870 ± 150
OCSD	15 ± 5
San Diego City TP	24 ± 10
Oxnard TP	1.4 ± 0.3

Figure 7

DDT Wastes from Montrose Chemical Company: Description of the Wastes and the Nature of their Disposal, 1947-1961

YEAR	ACID SLUDGE	CAUSTIC WASTE
1947-1951	Barging to Ocean Dumpsite No. 1	Barging/Storm Drain
1951-1961	Barging to Ocean Dumpsite No. 1	Storm Drain/Sewer (permit issued 1953)
1961-1970	Class I Landfill	Sewer (LACSD)
1970-1982	Class I Landfill	Class I Landfill
1982	MONTROSE SHUTS DOWN	

DESCRIPTION OF WASTE GENERATION:

Acid Waste: Monochlorobenzene, chloral and sulfuric acid are reacted to form DDT, DDE and other related compounds. As a result of this reaction process an acid waste is generated containing a mixture of sulfuric acid, organic substances and water. Montrose Chemical Company produced up to 10,000 gal/day of acid waste.

Caustic Waste: In order to remove impurities created during the reaction process, DDT is washed with a sodium hydroxide-based caustic solution. The amount of caustic waste produced by this step was approximately three times that of acid waste generated.

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5.2 Impact on Marine Bird Populations in Southern California

High total DDT concentrations in wild birds are believed to cause eggshell thinning, which resulted in the decline of the California brown pelican population in the late 1960's (21, 22, 23). Virtually all eggs laid in Southern California in 1969 did not survive the initial period of incubation (24). Due to these highly visible manifestations, DDT is a convenient pollutant indicator in determining waste transport and environmental effects, as the pelicans are of DDT pollution.

The effects of DDT from deep ocean dumping should be most apparent in areas of upwelling. One such area, located 75 kilometers (41 nautical miles) down current (Figure 8) of Dumpsite No. 1 is the Channel Islands National Park (Figure 1). The upwelling of nutrient-rich waters from 2400-meter (7900') deep basins to the south and west of the park contribute to exceptionally productive food webs (25). This supports large schools of northern anchovy, which in turn sustain the pelican during its breeding season. These birds nest in colonies on Anacapa, a group of small islands within the National Park. The pelicans, however, are not confined to the Southern California Bight beyond the nesting season (26).

Historic records (Figure 9) of the Anacapa pelican populations exist from 1884 (25). These records show a population of between 200 and 5000 breeding pairs each year between 1910 and 1941. There is a 21-year gap in the record from 1941 to 1962. Records do not indicate when eggshell thinning was first observed, but fledglings were reported as late as 1962. Up to a thousand breeding pairs were observed in 1963 and 1964. In the late 1960's and early 1970's population decline caused by DDT induced eggshell thinning became apparent (23). By the mid 1970's the pelicans of Anacapa had begun to recover.

The pelicans quickly responded to the curtailment of Montrose Chemical Company's process wastes from the LACSD system in April 1970 (24). There is little doubt that DDT pollution contributed to the decline of the pelican population on Anacapa during the late 1960's. However, no compelling evidence presently exists which links this decline with the ocean dumping of DDT wastes (1947 to 1961).

Other bird populations from California offshore islands have also declined in recent decades. These include the bald eagle, peregrine falcon, osprey, and double-crested cormorant (27). All these birds are dependent upon the marine ecosystem.

No documentation has been found linking population decline of local island birds to waste disposal at ocean Dumpsite No. 1. The disappearance of the bald eagle from Santa Catalina Island, however, may coincide with the initiation of dumping operations. This bird has historically nested on the island. Though egg collecting, shooting, trapping and other human pressures have contributed to its decline in the early 20th century (28), evidence suggests that the eagle population was healthy in the mid 1940's, by which time such activities had diminished. The bald eagle became locally extinct on Santa Catalina Island between the late 1940's and mid 1950's (29).

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factors contributing to the bald eagle disappearance from Catalina Island are presently under investigation. The bird was reintroduced onto the island in 1980. Though apparently healthy, they have not yet successfully reproduced (29).

The National Park Service conducts an ongoing marine biota monitoring program with the California Department of Fish and Game in the Channel Islands National Park (25). The analysis of priority pollutants such as DDT should be incorporated into this program to provide valuable information on the distribution of these substances and their environmental effects. Similar programs should be developed for other islands in the Southern California Bight.

5.3 Overview of Scientific Literature

Figure 10 is a partial summary of findings from various studies in the Southern California Bight which attempt to demonstrate the effects of DDT upon marine wildlife.

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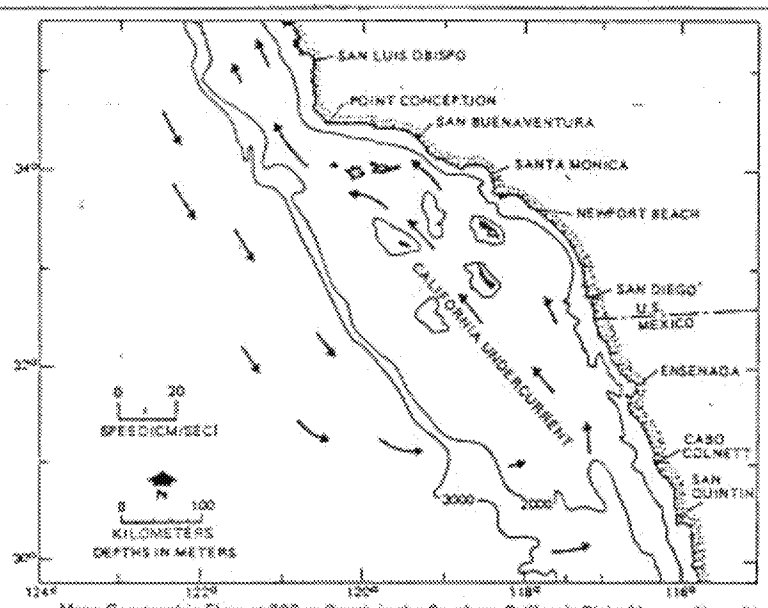

Mean Geostrophic Flow at 200 m Depth in the Southern California Bight (Arrows Show Direction and Magnitude of Flow).

FIGURE 8

200-METER DEEP CURRENTS
IN THE SOUTHERN CALIFORNIA
BIGHT

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Figure 9

Historic Record of Brown Pelican Numbers on Anacapa Island

BROWN PELICAN

Colony Location	Breeding Pairs	Date
	Breeding birds reported	1884
E island	Nesting birds	1889
E island	None	4-6 June 1899
E island	500 nests w/eggs, yng	5 June 1910
	(200), a few w/nests	12 March 1911
	Mending old nests; no eggs	May 1911
	(200); 2 nests w/1 egg each	May 1912
E island	"At least 1000"	11 June 1914
	1500	March 1916
	2000	March 1917
	(5000+)	March 1920
	Colony of several hundred (birds?)	8 March 1922
N end (?)	2000-3000	28 March 1927
	500	5 March 1928
W island	Colony reported	24 Feb 1929
W island	200 nests w/eggs, yng	9 March 1930
W island	2000	April 1935
	(2000)	1 March 1936
W island	2000+; 1000 + yng	16 April 1939
Middle island	None	16 April 1939
E island	None	16 April 1939
W island	Same as for 1939	1940, 1941
	500 w/eggs & yng	27 May 1962
W island	Several hundred "or perhaps 1000"	1963, 1964
W island	Nesting birds	1967, 1968
W island, N side	None	13 May 1968

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BROWN PELICAN (cont.)

Colony Location	Breeding Pairs	Fledglings	Fledglings Per Nest	Year
W island	750	4	0.005	1969
W island	552	1	0.002	1970
W island	540	7	0.013	1971
W island	149	26	0.17	1972
W island	247	34	0.14	1973
W island	311	230	0.74	1974
W island	212	182	0.86	1975
W island	417	279	0.67	1976
W island	76	39	0.51	1977
W island	210	37	0.18	1978
W island	1258	980	0.78	1979
W island	2147	1438	0.67	1980
W island	2946	1805	0.61	1981

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Figure 10: Summary of Studies on Marine Wildlife Relating to Effects by DDT

Author/Year	Species	Relevant findings
Gossett, et al. 1982	Sportfish	DDT in white croaker from Whites Point 7.6 ppm - Exceeds FDA guidelines for seafood
Schafer, et al. 1983	Marine Mammals	DDT in blubber of coastal bottlenose dolphin up to 2000 ppm
Gossett, et al. 1983	White Croaker	Levels of DDT and PCB's may present possible health hazard when these fish are consumed from Whites Point
Puffer, et al. 1983	Fish	DDT and PCB's dissolve in oil during pan-frying, thereby reducing concentration
Burnett 1971	Sandcrabs	DDT in sandcrabs from Palos Verdes are 50-100x greater than concentrations in adjacent areas
SCCWRP 1973	Dover Sole	66% of Dover sole from Palos Verdes exceeded FDA limits of 5 ppm DDT in edible fish flesh
Macgregor 1974	Lanternfish	Liver/flesh DDT ratio decreases with an increase in percent oil in flesh
McDermott/Sherwood 1975	Dover Sole	fin erosion associated with high DDT concentrations near outfalls
Young/Szpila 1975	Mussels	DDT in mussels reflects a decrease in input to Palos Verdes coastal waters
Risebrough 1967	Seabirds	Links chlorinated hydrocarbons to Pacific seabird decline
LACSD 1979	Fish and Invertebrates	DDT concentration in the muscle tissue of fish and invertebrates are one to three orders of magnitude lower for Catalina Island than for Palos Verdes

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Figure 10 (cont.)

Author/Year	Species	Relevant findings
Mearns 1977	Sport fish	Half the annual commercial party boat catch on the southern California mainland shelf is taken within 10 to 20 kilometers of sewage outfalls.
DeLong 1973 Gilmartin 1976	Calif. Sea Lion	Premature birth of sea lions shows possible predisposition to infection possibly linked with high chlorinated hydrocarbon concentrations

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5.4 PROPOSED STUDY REGIONAL BOARD OF OCEAN DUMPING AT DUMPSITE NO. 1 AND ITS ENVIRONMENTAL EFFECTS

Los Angeles Regional Water Quality Control Board will seek funding to study into the effects of historic ocean dumping upon the local marine environment. A study of this nature could contribute very significantly to what little information is already available [e.g. Macgregor 1976 (19)]. This proposed study would approach the problem as follows:

1) a grid will be developed for the approximately 28 square mile area of ocean Dumpsite No. 1.

2) Regional Board staff (along with cooperating agencies) will take water and sediment core samples from designated sites along the grid. For example, a television camera mounted on a "sled" could be used to transmit a visual image from the ocean bottom in order to facilitate visual identification of barrels or other evidence of wastes dumped at ocean Dumpsite No. 1.

3) Fish will be taken throughout the water column in the area of Dumpsite No. 1, and examined for priority pollutants.

4) Biota, water, and sediments around the Santa Catalina Island shoreline, and perhaps those of other offshore islands will be monitored to detect any evidence of pollution originating from the dumpsites. Any shoreline surveillance data already compiled from other agencies and researchers will be incorporated into the study.

5) Soils from former storage areas of CSC and PODCO will be thoroughly analyzed, with a view toward "fingerprinting" the types of wastes likely to be retrieved with sea bottom sediment samples.

6) A significant number of trips made by CSC to Dumpsite No. 1 may never have reached the designated dumpsite area. Several violations have been documented, but there is no way of estimating how many other trips may have ended in dumping of industrial wastes just offshore, or enroute, and this possibility must be realized. Therefore, sampling will be done along a "transect" from Palos Verdes to Ocean Dumpsite No. 1.

7) RWQCB records indicate that CSC may have also disposed of industrial wastes at Dumpsite No. 2 (figure 1). The proposed study will include an investigation into possible contamination at this site.

8) If a "hotspot" is found in the sediments, samples will be taken in surrounding areas in an effort to trace the migration and transport of contaminated sediments.

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5.5 Cancer Risk Assessment of DDT

DDT analyses of sediments, water, and biological tissues have been made from many areas throughout the San Pedro Channel and Santa Monica Bay during the past two decades, and results have clearly shown that DDT has been present in very high concentrations. Though concentrations have significantly declined since 1970 due to diminished DDT input into coastal waters, its persistence and capacity for biomagnification has led to a gradual ascent through the various trophic levels of the marine ecosystem. Man, as the primary consumer of local seafood must be aware of the health risks associated with consumption of this seafood, which may contain DDT and similar pollutants.

The primary issue of concern is not acute toxicity: It would require an estimated 237 years for a 70 kg. Fisherman consuming 85.2 g (0.19 lb)/day in order to accumulate enough DDE (the primary metabolite of DDT) to attain the rat LC_{50} (the estimated concentration required to kill half a study population) (33, 34).

The major issue is rather the potential for DDT to induce cancer in humans which, based on a number of studies completed over recent years, has become a matter of major concern (35). For example, the half-life of DDT stored in human tissues has been found to be 10-20 years, while that of DDE is 60-70 years (36). This persistence in addition to its well-documented tendency to bioaccumulate requires careful attention to the potential for DDT and its metabolites to act as human carcinogens. Animal-based evidence for DDT as a human carcinogen is rather inconsistent, as summarized in a table from a 1985 report issued by the EPA Carcinogen Assessment Group (36):

Animal test species	Evidence for (+) or against (-) DDT carcinogenicity
mice	adequate (+)
rats	limited (+)
hamster	adequate (-)
fish	limited (+)
dogs	inadequate
monkeys	limited (-)

Additionally, there is only limited evidence based on human epidemiological studies. DDT has not been found to be mutagenic in bacterial test systems, and evidence of carcinogenicity from mammalian tissue culture systems is also inconclusive. However, from the regulatory perspective this evidence is sufficiently compelling to consider DDT a potential human carcinogen and to assign a "carcinogenic potency factor" based on available information. The upper confidence limit of risk can be approximated based on this factor.

Puffer et al. (37) investigated patterns of sportfishing and seafood consumption from Southern California waters. They found white croaker to be the most commonly caught and consumed fish. Other studies (e.g. 33) have shown white croaker to be among the most DDT-contaminated fish in local coastal waters. Dover sole likewise has been found to harbor high

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DDT concentrations (33, 38). The federal Food and Drug Administration has stated that the 5ppm safety tolerance limit for DDT in edible fish tissue would be inadequate to protect sport fishermen who consume large quantities of contaminated species (34). According to a 1980 report issued by the Sludge Management Program for the Los Angeles/Orange County Metropolitan Area (LA/OMA), consumption of contaminated white croaker from Whites Point presents a 23-fold risk over the US average for those consuming 36 g/day (50th percentile), and 180-fold over those consuming 280 g/day (about half a pound) (90th percentile) (34). This report calculated other potential health risks based on concentrations of DDT and PCB's found in local fish. It found, for example, that for the fish containing the highest DDT concentrations at Whites Point, consumption of "only 550 grams...would result in a single dosage equivalent to that projected for the U.S. average diet for a period of...30 years in the case of DDT". In contrast the report states that consumption of seafood from the areas around Hyperion Treatment Plant (City of Los Angeles) or Orange County Sanitation Districts outfalls pose no significantly greater risk from DDT than from control areas.

The California Department of Health Services, Epidemiological Studies Section has been commissioned to conduct a carcinogenic risk assessment for Southern California coastal waters based on local studies of DDT contaminated fish (37,33,39). The recommendations generated from this assessment, pending review by EPA Region IX, will be closely followed with a view toward prompt action by appropriate local, state, and federal agencies. In addition, work already in print such as the LA/OMA 1980 risk assessment study will be considered seriously, as it may accurately estimate human risks. If all findings are consistent, immediate action should be taken to limit the intake of fishermen fishermen consuming contaminated species. Mitigation measures for minimizing the cancer risk from consuming DDT-contaminated seafood could include:

* Pan-frying of contaminated fish. This may help to reduce concentrations of chlorinated hydrocarbons, which partition into solution with hot cooking oil (40).

* Advising recipients of sportfishing licenses (by the Department of Fish and Game) regarding areas closed to or not recommended for fishing, at the time of license issuance,

* Posting warnings on piers or other seafood-gathering areas for limiting consumption of contaminated species,

* Designating the area surrounding the Whites Point (JWPCP) outfall off limits to sportfishing, at least for the two most potentially hazardous species (thought to be white croaker and Dover sole).

* Limiting the commercial availability of the most contaminated species caught in or near San Pedro Channel on Santa Monica Bay.

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APPENDIX A: OVERVIEW OF LEGAL HISTORY

Federal Legislation

Federal law has regulated ocean dumping of wastes from vessels since the 19th century (1). The River and Harbor Act of 1899 declared that it was not lawful to dispose refuse from floating crafts into navigable waters of the United States. However, the same Act provided that the Secretary of War, after the Chief of Engineers determined that anchorage and navigation would not be injured thereby, could permit the deposit of such material in navigable waters, within limits and conditions defined and prescribed by him, provided application was made to him prior to the disposal (2). More specific language is contained in the River and Harbor Act of 1905, which authorized the Secretary of War to prescribe regulations to govern the transportation and dumping into navigable waters of dredgings, earth, garbage, and other refuse materials whenever such regulations are required in the interest of navigation (3). These two excerpts indicate that the thrust of regulating ocean dumping in the past was to prevent any obstruction or danger to navigation. In turn, the U.S. Corp of Engineers, (COE) who seemed be the agency with regulatory authority to control dumping of a broad class of materials, relied on these sections for ocean dumping in the territorial seas.*

In the 1950s and 1960s, ocean waste disposal increased markedly. Sewage sludge and industrial wastes from sources in the northeast coastal area of the U.S., where land disposal had proved expensive and impractical, composed much of these wastes. This increased ocean dumping led directly to the Marine Protection, Research, and Sanctuaries Act of 1972 (commonly known as the Ocean Dumping Act (1)).

The Ocean Dumping Act was signed into law on October 23, 1972 (P.L. 92-532). It prohibited the transportation and dumping of material into ocean waters except as authorized by an Environmental Protection Agency (EPA) permit. The Corps of Engineers regulates the disposal of dredged material.

An important definition in the Act was that "dumping" does not include disposal from any outfall to the extent that such disposal is regulated under the Federal Water Pollution Control Act, Section 13 of the River and Harbor Act of 1899 or the Atomic Energy Act of 1954. Section 106 of the Ocean Dumping Act provides that after its effective date, "all licenses, permits, and authorizations other than those issued pursuant to the Act are to the extent that they authorize any activity regulated by the Act, and whether issued before or after the effective date of the Act" (4). Under the Ocean Dumping Act, EPA developed criteria to govern dumping permits and dumping sites. These criteria take into account, among other matters, the need for dumping, availability of alternative disposal methods and effects on water quality. "In principle, ocean dumping is not entirely foreclosed by the Act, but only controlled" (4).

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* For Dredged Material Permits, 40 CFR, Parts 225-228 contain the relevant information.
(Federal Register, Vol. 42, No. 7, 1977)

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The EPA published the final revision of regulation and criteria for ocean dumping, which implemented sections of the Ocean Dumping Act and the federal Water Pollution Control Act in the Federal Register, Vol. 42, No.7 1977 (3). These regulations provide for several types of permits (6):

1. General - "For the dumping of certain materials which will have a minimal adverse environmental impact and are generally disposed of in small quantities, or for specific classes of materials that must be disposed of in emergency situations."

2. Special - "For the dumping of materials which satisfy the criteria and shall specify an expiration date no later than three years from the date of issue".

3. Emergency - for any of the materials listed in Section 227.6," (i.e. organic halogen compounds, mercury and mercury compounds, cadmium and oil of any kind or in any form, and human or suspected carcinogens, mutagens, or teratogens) "except as trace contaminants,...which poses an unacceptable risk relating to human health and admits of no other feasible solution."

4. Interim - "Prior to April 23, 1978, interim permits may be issued in accordance with Subpart A of Part 227."

5. Research - "For the dumping of any materials specified in Section 227.5 or for any of the materials listed in Section 227.6 except as trace contaminants, unless subject to the exclusion of Section 227.6(g), into the ocean as part of a research project when it has been determined that the scientific merit of the proposed project outweighs the potential environmental or other damage that may result from the dumping."

The Corps of Engineers issues "Dredged Material Permits" under Section 103 of the Ocean Dumping Act but EPA Regional Administrators have the authority to review, to approve, to disapprove, or to propose conditions upon these Permits for ocean dumping of dredged material at locations within the respective Regional jurisdictions (6).

State Legislation

The Water Pollution Control Act (also know as the "Dickey" Act) was added to the California Water Code by Chapter 1549, Statutes of 1949 (7) and it provided for the establishment of the State Water Pollution Control Board* and nine Regional Water Pollution Control Boards.** Section 13022 authorized the State Board to formulate a statewide policy for the control of

* The State Water Pollution Control Board was later changed to the State Water Quality Control Board and finally to the present State Water Resouces Control Board. State Board will be used to represent all three names.

** The nine Regional Water Pollution Control Boards were changed to the present nine Regional Water Quality Control Boards.

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water pollution. Under Section 13052 the regional boards were directed to formulate and adopt long-range plans with respect to water pollution, to request enforcement of laws concerning water pollution or nuisance by appropriate federal, state and local agencies, and to prescribe requirements relative to any particular condition of pollution existing in the region.

The Act also required that any person proposing to discharge sewage or industrial waste within any region, other than into a community sewer, file with the appropriate regional board a report of such proposed discharge. The Regional Board, after any necessary hearing, prescribe requirements as to the nature of such discharge (7).

This new legislation did not limit the power of local agencies to deal with disposal of sewage or industrial waste or to abate nuisances; therefore, cooperation and coordination with local agencies having ordinances controlling water pollution had to be obtained. In the Los Angeles Region, copies of waste discharge reports received were forwarded to other state and local agencies interested in the proposed waste discharge (8).

In accordance with provisions of Sections 13000 and 13052(a) of the California Water Code, the LARWQCB adopted Resolution No. 54-3, "Adopting Long Range Waste Disposal and Water Quality Objectives for Los Angeles County and Ventura County Coastal Waters of the Pacific Ocean within the Boundaries of the Los Angeles Region, excluding Waters of Harbors, Rivers, and Tidal Estuaries", in 1954. This Resolution recognized that one of the then present uses of the coastal waters was for the disposal of sewage and industrial wastes, as well as process waters to certain industries and that "the total interests" of the Regional Board "encompass both economical waste disposal and preservation of the beneficial uses of the waters of the State."(4) The objectives applicable to ocean dumping contained in Resolution 54-3 prohibited discharged wastes to:

1) cause the appearance of grease, oil or oily slicks, objectionable color, or of visible solids of waste origin in the receiving waters,

2) cause odors in the receiving waters or along adjacent beaches or shores such that they may constitute a nuisance,

3) cause concentrations of toxic materials in the receiving waters which would be detrimental to human, animal, fish, plant, or bird life, and

4) cause the formation of sludge banks or deposits on the ocean floor or along adjacent shores or beaches to the extent that they would significantly interfere with development of marine life or cause nuisance due to odors or unsightliness.

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The objectives in Resolution 54-3 were intended to prevent impairment of the quality of coastal waters for beneficial uses, while reserving a reasonable amount of the capacity of these waters for sewage and industrial waste disposal. The objectives outlined in the Resolution do not in themselves constitute LARWQCB's requests as to any specific waste disposal, the requirements may be more severe, and under certain conditions could be less restrictive than the objectives would seem to indicate (9).

In Resolution 55-16, adopted in 1955, LARWQCB adopted a "General Policy with Regard to the Application of the Board's Resolution No. 54-3 in Los Angeles County." Resolution 55-16 listed existing and proposed recognized recreational beaches and coastal waters in Los Angeles County that are open to the public; therefore, the Resolution resolved that the quality of the coastal waters adjacent to those beaches shall comply with the Coastal Water Quality Objectives contained in the Board's Resolution No. 54-3.

Resolution 57-62, adopted by LARWQCB in 1957, correspondingly adopted the same general policy as Resolution 55-16 with regard to the coastal waters in Ventura County.

In accordance with the provisions of the Federal Water Quality Act of 1965 (PL 89-234) and Section 13052(e) of the California Water Code, by Resolution 67-5, in 1967 established the "Water Quality Control Policy for Pacific Ocean Coastal Waters, Rincon Point to San Gabriel River", as standards of water quality for the coastal waters.(11) The LARWQCB held two public hearings on the policy prior to its adoption for the purpose of determining the nature, extent and locations of beneficial uses of the coastal waters and the appropriate levels of water quality indicators necessary to protect the beneficial uses.

This Water Quality Control Policy described the boundaries of State Waters (Coastal Waters) as those waters between the mean high tideline and three nautical miles (5.5 km) offshore of the outermost channel islands. Today, State waters extend three nautical miles (5.5 km) from the mean high tideline and three miles around each channel island. The discussion on "Present Compliance" stated that all direct discharges of wastes into the Pacific Ocean Coastal Waters within this Region were conforming to waste discharge requirements and were not creating any known water quality problems and that every <u>known</u> direct discharge of wastes into the Coastal Waters within LARWQCB jurisdiction were under requirements prescribed by the Board.

Starting in 1970, the State implemented major revisions to its policy on water quality control paralleling the major revisions brought about by the creation of EPA, and the adoption of the Federal Water Pollution Control Act and the Ocean Dumping Act. The Porter-Cologne Water Quality Control Act completely revised water quality provisions of the California Water Code in 1969. Important points of the new law specified (12):

1. The State Board is the state water pollution control agency for all purposes stated in the Federal Water Pollution Control Act and any other federal act.

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2. State Board shall formulate and adopt State policy for water quality control which shall include water quality control plans adopted by the State Board for interstate or coastal waters of inter-regional or statewide interest.

3. Any person discharging waste or proposing to discharge waste within any region that could affect the quality of the waters of the state, other than into a community sewer system, and any entity of this state discharging waste or proposing to discharge waste outside the boundaries of the state in a manner that could affect the quality of the waters of the state within any region, shall file with the regional board of that region a report of the discharge.

The State Board in March of 1971, approved a report on the "Disposal of Wastes Transported by Vessels to the Tidal Waters of California" (13). The report recognized that "industries, municipalities, federal agencies, and militaries of the U.S. dispose of wastes by dumping them from vessels into the open ocean and into specified areas of bays and estuaries." In 1971, there were 71 active disposal sites along the Pacific Coast operating under permits issued by the U.S. Corps of Engineers. Of these, 42 sites were located in the federal offshore waters of California. The largest category of wastes was dredge spoils (80%) the majority of which were derived from activities of the Corps of Engineers. The second largest category was industrial waste dumped at sites 5-75 miles (8-121 km) off the Pacific Coast. The Report recommended that the State Board and the affected Regional Board be guided in use of their respective authorities and responsibilities by a set of policies which essentially viewed ocean dumping as an interim means of disposal to be terminated in the future.

In 1972 the State Board adopted Resolution No. 72-45, (14) a "Water Quality Control Plan for Ocean Waters of California" (the Ocean Plan) to further legislative policy set forth in Section 13000 of Division 7 of the California Water Code. The Ocean Plan, which is applicable to point and non-point sources but not to vessel wastes or the control of dredge spoil, promulgated water quality objectives and effluent quality requirements to govern the disposal of waste into the coastal waters of California. The Plan contained discussions of beneficial uses and water quality objectives for ocean waters effluent quality requirements for waste discharges, and discharge prohibitions. Regional boards were given the option to establish more restrictive water quality objectives and effluent quality requirements than those set forth in the Plan.

The Ocean Plan was revised in 1978 (15) and again in 1983 (16) to reflect new information on the beneficial uses, water quality objectives, effluent quality requirements, discharge prohibitions and general provisions. The LARWQCB has adopted the Ocean Plan as part of the Regional Water Quality Control Plans (17) for the Los Angeles and Santa Clara River Basins.

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Present Day Procedures for Obtaining Ocean Dumping Permits

As contained in 40 CFR Parts 221-222, 1977 the present procedures (6) for processing an ocean dumping permit are as follows:

1. The applicant submits a permit application to EPA in the form of a letter (18) containing pertinent information such as names of applicant, person or firm transporting the material to be dumped, the producer or processor of the material; information on the conveyance to be used for transporting the material; adequate physical and chemical description of the material; the number, size, and physical configuration of any containers to be dumped; quantity of material to be dumped; proposed dates and times of disposal; proposed dump site; proposed method of releasing the material at the dump site and means of controlling the disposal rate; description of past disposal methods of the material; an evaluation of short and long term alternative means of disposal, treatment or recycle of the material with an analysis of the availability and environmental impact of such alternatives; and an assessment of the anticipated environmental impact of the proposed dumping on the marine environment, navigation, living and non-living marine resource exploitation, scientific study, recreation and other uses of the ocean (16).

2. EPA reviews the permit application for completeness and accuracy and requests further information as necessary within 30 days of receipt of the initial application.

   Within 30 days after receipt of a completed application, the EPA Regional Administrator publishes a notice of such application including a tentative determination with respect to the issuance or denial of the permit. A tentative determination of issuance includes
   (a) proposed time limitation
   (b) proposed rate of discharge from the vessel
   (c) proposed dumping site
   (d) a brief description of any other proposed conditions appropriate for inclusion in the permit (6).

   The notice also includes a summary of the information included in the applications, a brief description of the procedures for requesting a public hearing, and a brief statement of the factors considered in reaching the tentative determination with respect to the permit.

4. EPA sends copies of the notice to various persons including:

   (a) Any person, group of federal, State or local agency upon request. These requests may be standing requests for copies of such notices submitted in writing to EPA;
   (b) The state water pollution control agency;
   (c) The office of the appropriate District Engineer of the U.S. Army Corps of Engineers;
   (d) The appropriate district office of the U.S. Coast Guard for review and possible suggestion of additional conditions in the permit to facilitate surveillance and enforcement;
   (d) The agency exercising administrative jurisdiction over the fish and wildlife resources of the states;
   (e) The Food and Drug Administration, Shellfish Sanitation Branch

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5. Within 30 days of the date of publication of the notice, any person may request a public hearing to consider the issuance or denial of, or the conditions to be imposed upon, such permit.

6. After such a request, the Regional Administrator determines whether a public hearing is necessary or appropriate. The date of this hearing shall be no less than 30 days after receipt of the request or after a determination by the Regional Administrator to hold such a hearing without a request.

7. At the public hearing, the Presiding Officer will be the Regional Administrator or his designee and the hearing will be informal and allow the presentation of public comments.

8. Within 30 days following adjournment of the public hearing, the Presiding Officer will prepare and forward to the Regional Administrator written recommendations relating to the issuance or denial of or conditions to be imposed upon, the proposed permit.

9. Within 30 days following the receipt of the Presiding Officer's recommendations or where no hearing has been held, following the close of the 30-day period for requesting a hearing, the Regional Administrator shall make a determination with respect to the issuance, denial, or imposition of conditions on any ocean dumping permit applied for.

10. EPA will give notice to the applicant and all interested agencies and persons. Ten days after notice of the determination, any person may request an adjudicatory hearing. Please see Section 222.9-222.12 for details of the procedures for requesting an adjudicatory hearing and the appeal procedure following the adjudicatory hearing.

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18. Environmental Protection Agency 1973
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APPENDIX B: SELECTED CORRESPONDENCE

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Ocean Fish Protective Association, Inc.
Affiliated with California Wildlife Federation, Inc.
P. O. BOX 8851 :: CRENSHAW STATION
LOS ANGELES 8, CALIFORNIA

L. C. LAPLANT
OCT 18 1961

R. M. HERTEL
OCT 18 1961

October 16, 19

REGIONAL WATER POLLUTION CONTROL BOARD
OCT 18 1961
LOS ANGELES

State of California
Regional Water Pollution Control Board No. 4
Room 504, Spring Arcade Building
541 S. Spring St.
Los Angeles 17, California

Regarding your requirements (dated 10/5/61) which must be followed by California Salvage Company and Pacific Ocean Disposal Co. in dumping their extremely noxious industrial wastes (not including any radio-active materials) in the Pacific Ocean.

Dear Sirs:

1. The Ocean Fish Protective Association, as a general principle, does not recognize that one of the beneficial uses of the waters of the Pacific ocean is a place to dump wastes.

2. At this time the Ocean Fish Protective Association will not object to the requirements (dated 10/5/61) which you propose to issue the above two companies. We will reserve the rights to at any time in the future, to strenuously request changes in the requirements.

3. If at any future time there is found any other means of disposal of these wastes, the O.F.P.A. will insist that these wastes not be dumped in the Pacific ocean.

Very truly yours,

Nevin R. Shade
Assistant to the President

J. H. HANSON
OCT 18 1961

OCT 18 1961

L. A. MEYERSON

R. M. GREENFIELD

OCT 18 1961

STATE OF CALIFORNIA—RESOURCES AGENCY

RONALD REAGAN, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION
107 SOUTH BROADWAY, SUITE 9026
LOS ANGELES, CALIFORNIA 90012

April 25, 1973

Environmental Protection Agency
Region IX
100 California Street
San Francisco, California 94111

ATTENTION: Mr. Frank M. Covington, Director
Air and Water Program Division

Subject: Regulations for Ocean Dumping (A I a 5 & 6)

Gentlemen:

This is in response to your letter of March 28, 1973, enclosing for our review and comment a draft copy of interim regulations for ocean dumping.

We believe that fish wastes, as referenced in Paragraph 220.1(b), should be more thoroughly defined. Will this term include, for example (and we believe it should), fish parts trimmed away and thrown overboard from party fishing boats?

There are two ocean dumping firms operating in this Region. Both are regulated by waste discharge requirements adopted by this Board. These requirements prohibit dumping either directly into waters of the state or where waters of the state may be affected.

One of the firms, H-10 Water Taxi Company, collects wastes from vessels in Los Angeles - Long Beach Harbor and disposes of them offshore at a point several miles east of Santa Catalina Island. The reason for this discharge is because Federal Regulations (U. S. Department of Agriculture) prohibit the removal of garbage from any vessel for dumping into any territorial waters or onto land except for immediate incineration, approved treatment or disposal under the supervision of the State Department of Agriculture, or delivery to a garbage collector licensed by the State Department of Agriculture or the federal government. No approved arrangements of these types are available in the Los Angeles - Long Beach Harbor, although the Navy has been cooking and landfilling its vessel garbage for several years. There appears to be no reason why onshore collection facilities could not be provided by the firm, with disposal of the wastes at an approved land site. We therefore recommend that any permit for this operation be issued only as a temporary permit and the discharge be terminated as soon as possible when land disposal facilities are available.

The second firm is California Salvage Company. It receives principally chemical wastes and barges them out to the same general area as H-10 Water Taxi Company for dumping.

The State of California recently adopted a very stringent Water Quality Control Plan for Ocean Waters of California. This Plan will require a program of close source control on trace elements and other constituents in discharges to municipal sewerage systems which discharge to the ocean. This will result in greater quantities of these materials being transported from the point of origin at the industry, for example, to the disposal site.

If the present method of ocean dumping by California Salvage Company is allowed to continue, a significant portion of the materials removed in the source control program would undoubtedly find its way to the ocean for ultimate disposal. This would be a short-circuit of the Ocean Plan.

We therefore feel that this type of discharge must be prohibited also and request that this be done at the earliest possible time.

Thank you for the opportunity to comment on this matter.

Very truly yours,

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Executive Officer

cc: State Water Resources C
Executive Officers, Bos