



Palos Verdes Shelf

United States Environmental Protection Agency • Region 9 • March 2000

EPA ANNOUNCES PROPOSED PLAN

This Proposed Plan presents the United States Environmental Protection Agency's (EPA's) recommended plan to address the threats to human health posed by contaminated sediments at the Palos Verdes Shelf. The recommended plan is an initial step towards addressing site risks and may be followed by additional actions in the future. As discussed below, EPA is requesting written and oral comments on this Proposed Plan and on the information contained in the administrative record file. This document is issued by the EPA (the lead agency for the Superfund investigation at the Palos Verdes Shelf). In preparing this Proposed Plan, EPA has consulted with the CalEPA Department of Toxic Substances Control (DTSC).

The purpose of this Proposed Plan is to summarize information about the hazardous substance contamination found on the Palos Verdes Shelf, and the alternatives that EPA is considering, in order to assist the public in providing its comments. This Proposed Plan serves as a companion to the **Engineering Evaluation and Cost Analysis*** (EE/CA) report and the administrative record file. EPA will not make any final decision until all comments submitted during the public comment period are considered. Actions selected by EPA could differ from the recommended alternative (as set out in this Proposed Plan) based on EPA's response to comments. Therefore, the public is encouraged to review and comment on the alternatives presented on this Plan and on the EE/CA report, which should be consulted for more detailed information on these alternatives.

*Terms shown in **bold** are defined in the Glossary of Terms on pg 11.



Figure 1: Site map of Palos Verdes Shelf

Public Comment Period on Proposed Plan: March 29 to April 28, 2000

EPA's PROPOSED PLAN

EPA's initial recommended action to address the health risks posed by sediment contamination at the Palos Verdes Shelf over the short term is to implement institutional controls (see Alternative 2, discussed later in this fact sheet) for a period of ten (10) years, which would include the following actions:

1. increased enforcement of the commercial fishing ban and recreational

catch limit for white croaker off the Palos Verdes peninsula;

2. public outreach and education regarding the existing advisories on consumption of fish caught in this area; and

3. monitoring contaminants levels in commercially-sold fish to evaluate the effectiveness of the enforcement actions.

This proposed action would be an interim step while EPA continues its investigation of the Palos Verdes Shelf. EPA is continuing its evalua-

tion of capping the contaminated sediments and expects to undertake a pilot capping project later in 2000. EPA is also continuing to evaluate risks to the environment posed by the site. At such time as the Agency proposes to undertake any additional response actions (including continuing institutional controls for a longer time), EPA will announce them in a similar fact sheet and the public will have the opportunity to comment on them.

Mark Your Calendar

PUBLIC COMMENT PERIOD: March 29 - April 28, 2000 

EPA will accept written comments on the Proposed Plan during the public comment period. A 30-day public comment period on this Proposed Plan and information contained in the administrative record file begins on March 29 and closes on April 28. Written comments postmarked

no later than April 28, 2000 should be sent to: U.S. EPA, 75 Hawthorne St., San Francisco, CA 94105, Attn: Fred Schaffler (SFD-7-1), or via email to Schauffler.Frederick@epa.gov by the same deadline.

If requested, EPA may extend the comment period. Any request for an extension must be made in writing and received by EPA no later than April 14, 2000.

Public Meetings



EPA will hold a series of public meetings to explain and discuss the alternatives presented in this Proposed Plan and to answer questions about the information presented in the Engineering Evaluation/Cost Analysis report. Written and oral comments will be accepted at all meetings.

EPA will issue a response summary to formally address significant comments received during the public comment period if and when EPA's cleanup decision is issued.

Tuesday April 11 • 7:00 - 9:00 p.m.
 Long Beach State University
 Peterson Hall #1, Room 141
 1350 Bellflower Blvd.
 Long Beach, CA
 (Go to parking booth to obtain parking permit.)

Wednesday, April 19 • 7:00 - 9:00 p.m.
 Knob Hill Community Center
 320 Knob Hill
 Redondo Beach, CA

Saturday April 15 • 2:00 - 4:00 p.m.
 Cabrillo Marine Aquarium - Auditorium
 3720 Stephen White Drive
 San Pedro, CA

Wednesday, April 26 • 7:00 - 9:00 p.m.
 Palos Verdes Intermediate School - Multipurpose Room
 600 Cloyd Road
 Palos Verdes, CA

BACKGROUND

The Palos Verdes Shelf is located within the Southern California Bight (an area of the coastal Pacific Ocean between Point Conception and San Diego, California). The impacted portion of the Palos Verdes Shelf consists of contaminated sediments that are present on both the **continental shelf** and **continental slope**, in a 43 square kilometer (17 sq. mile) area about 1-3 miles offshore between Point Fermin and Point Vicente on the Palos Verdes peninsula (see Figure 1).

The continental shelf in the vicinity of the site is about 1.5 to 4 kilometer (km) wide and has a slope of 1 to 4 degrees. A shelf break (i.e., a zone of transition from the relatively flat shelf to the steeper continental slope) occurs at water depths of 70 to 100 meters (m). The continental slope extends seaward from the shelf, with a width of approximately 3 km and an average slope of 13 degrees, to a depth of approximately 800 m.

The Joint Water Pollution Control Plant (JWPCP) **outfalls** (or discharge pipes) operated by the Los Angeles County Sanitation Districts (LACSD) discharge treated municipal and industrial wastewater at depths of approximately 60 m on the Palos Verdes shelf, offshore from White's Point.

From 1947 to 1982, the Montrose Chemical Corporation of California, Inc., ("Montrose") manufactured the

pesticide dichloro-diphenyl-trichloroethane (commonly known as **DDT**) at its plant at 20201 Normandie Avenue in Los Angeles, California. Wastewater containing significant concentrations of DDT was discharged from the Montrose plant into the sewers, flowed through the JWPCP and was discharged to the ocean waters of the Palos Verdes Shelf through the LACSD outfalls. Montrose's discharge of DDT reportedly stopped in about 1971, and the Montrose plant was shut down and dismantled in 1983.

Polychlorinated biphenyls (**PCBs**) from several industrial sources were also discharged into the sewer system. The DDT and PCBs that passed through the treatment plant mixed with the suspended solids in the discharge (or effluent) flowing out of the White's Point sewer outfalls and settled to the ocean floor to form a large sediment deposit. This deposit covers a large area of the ocean floor (see Figure 2) between Point Vicente in the northwest and Point Fermin in the southeast. The "Palos Verdes Shelf" is defined, for the purposes of this evaluation, as the area where DDT concentrations in the sediment exceed 1 **part per million** (ppm).

Historically, the waters of the Palos Verdes Shelf have been used extensively by both sport and commercial fishermen. Sport fishermen angle from party boats, private boats, rocky intertidal areas and sandy beaches. Currently, high levels of DDT and PCBs are found in the active biologic zone of the Palos Verdes Shelf sediments, and fish from the Shelf are contaminated with DDT and PCBs. Generally speaking, contaminant levels are highest in bottom-feeding fish such as the white croaker and are significantly lower in fish that live higher up in the water column.

In 1985, the State of California issued an interim health advisory recommending limitations on the consumption of sport fish and discouraging consumption of white croaker caught in Santa Monica Bay, the Palos Verdes Shelf, and the Los Angeles/Long Beach Harbor area because of DDT and PCB contamination in the fish. Based on a 1991 study, the CalEPA's Office of Environmental Health Hazard Assessment (OEHHA) issued a health advisory

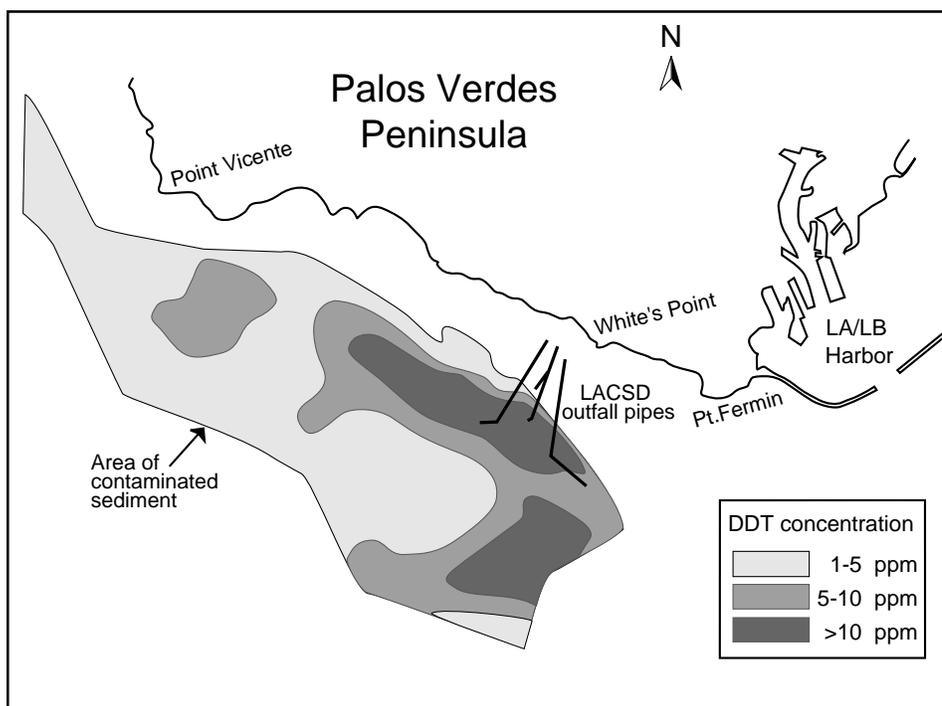


Figure 2: Area of contaminated sediment (based on DDT levels in the uppermost 4 centimeters)

recommending, in part, that recreational anglers not consume white croaker caught in most areas offshore of Los Angeles County and Orange County, and that anglers greatly limit consumption of a number of other fish species caught on or in the vicinity of the Palos Verdes Shelf due to the levels of DDT and PCBs in fish tissue. These warnings have been included in the California sport fishing regulations since March 1, 1992.

In 1990, the California Department of Fish and Game (CDFG) closed commercial fishing of white croaker on the Palos Verdes Shelf because of the threat to human health posed by the DDT and PCB contamination in these fish. The closure extends from Point Vicente to Point Fermin and from the shoreline out three miles. Concerns exist, however, that some commercial fishing operations are not adhering to the fishing closure and that CDFG does not have sufficient resources to adequately enforce the closure. A 1997 study by Heal the Bay, a local environmental organization, found elevated levels of DDT and PCBs in white croaker (also known as kingfish or tomcod) being sold in a number of Los Angeles and Orange County fish markets. As of March 1998, and in response to concerns about white croaker being illegally sold by sport fishermen to commercial fish markets, CDFG revised the white croaker recreational catch limit from unlimited to a limit of 10 fish per day.

In 1994, the results of a multi-year study by the State and Federal natural resource trustee agencies (the "Trustees") of ecological impacts caused by sediment contamination in the area offshore of Palos Verdes peninsula were completed and re-

leased to the public. In July 1996, following its review of these reports and other available information, EPA began its Superfund investigation of the Palos Verdes Shelf. Through a process known as an Engineering Evaluation/Cost Analysis (EE/CA), EPA is evaluating the need for cleanup action and the potential alternatives for cleaning up the contaminated sediment in this area.

SUMMARY OF SITE CHARACTERISTICS

In general, the ocean floor on the Palos Verdes Shelf region is characterized by (1) hard-bottom habitat, including some kelp bed areas and associated **invertebrate**, fish, and algae communities, from shore to at least 20 m deep; and (2) soft-bottom habitat, including invertebrate and fish communities, over most of the rest of the shelf and slope region to at least 600 m deep. The exceptions to this pattern are the artificial reef habitat represented by the JWPCP outfall pipes and scattered hard-bottom areas on the shelf and along some parts of the shelf break. The overlying surface waters of the Palos Verdes Shelf provide important habitat for fish, invertebrates, birds, and mammals from near the bottom to the surface.

Studies by the United States Geological Survey (USGS) in 1992 and 1993 showed that the layer of DDT-contaminated sediments is about two inches to more than two feet thick, with the highest concentrations located in a 3-square mile band near the outfall pipes. The contaminant concentrations vary with depth in the sediment deposit, with a surface layer of more recently deposited and moderately contaminated materials covering a buried layer of highly

contaminated materials deposited prior to 1980. Maximum DDT and PCB concentrations in the buried layer exceed 200 ppm and 40 ppm, respectively. On the shelf, these peak concentrations occur at depths of about 1 foot in the sediment, while on the slope they are much closer to the sediment surface. Concentrations in the surface layer on the shelf are relatively lower but still significantly elevated compared to other locations within the Southern California Bight.

The total volume of these DDT- and PCB-contaminated sediments is approximately 11 million cubic yards. The accumulated masses of DDT and PCBs in sediments at the Palos Verdes Shelf site have been estimated at 110 U.S. tons and 11 U.S. tons, respectively.

The shape of the contaminated sediment deposits on Palos Verdes Shelf is due to the fact that bottom currents in this area generally flow to the northwest, following the contours of the ocean floor. In contrast, surface currents flow predominantly south-eastward, although they shift to a westerly flow in late autumn and winter when westerly winds weaken.

SCOPE AND ROLE OF THE PROPOSED ACTION

EPA is evaluating cleanup alternatives with the goal of achieving significant, cost-effective reductions in risks to human health and/or the environment. As described below, the EE/CA report presents EPA's current evaluation of institutional controls (which can address only human health risks) and in situ capping (which addresses both human health and ecological risks). **EPA is continuing to evaluate capping options and intends to conduct a demonstration project on the Palos Verdes Shelf**

within the next year. In the interim, because of the current human health risks, EPA has decided to move forward with the consideration of institutional controls as a means for reducing the potential for consumption of fish contaminated with DDT and PCBs from the Palos Verdes Shelf. The role of this proposed action is to reduce the magnitude of the risks to human health presently associated with the site. This would be followed by a continuing evaluation of ecological risks and the need for additional response actions at the site.

SUMMARY OF SITE RISKS

The contaminated sediments appear to significantly impact the marine environment and may pose a serious risk to individuals who regularly consume fish from the area. Currently, elevated levels of DDT and PCBs are found in the organisms that live in the area of the contaminated sediments, including bottom-feeding fish such as white croaker and water-column feeders such as kelp bass.

Other organisms possibly affected through the consumption of contaminated fish include marine mammals and birds (see figure 3).

Human Health Risks

The waters of the Palos Verdes Shelf have been used extensively by both sport and commercial fishermen. Based on CDFG commercial catch data, most of the white croaker landed in Los Angeles County ports in 1996 were reported to have been caught in fishing blocks adjacent to the closure area centered on the Palos Verdes Shelf.

The streamlined human health risk evaluation focused on the consumption of contaminated fish by boat anglers as the primary exposure pathway. EPA evaluated what the risks would be if adult fishermen and/or their family members ate fish which have bioaccumulated DDT and PCBs from sediments and/or the water column. EPA also evaluated the potential risks to breast-fed infants whose mothers consume contaminated fish.

Human health risks were evaluated in terms of both cancer risk (PCBs and DDT are both classified as probable human carcinogens) and non-cancer health hazards. Potential cancer risk was estimated by calculating the increased probability of an individual developing cancer during his or her lifetime as a result of exposure to DDT and PCBs in contaminated fish. Depending on the nature of the site, EPA typically considers cancer risks at or below 1 in one million (or 1×10^{-6}) to be acceptable. Generally, response actions are required when cancer risk equals or exceeds one in ten thousand (1×10^{-4}). In addition, EPA has the discretion to select and implement response actions when the cancer risk is less than 1×10^{-4} but greater than 1×10^{-6} .

The non-cancer health hazards of DDT and PCBs include effects on the nervous system, liver, reproduction and infant development. The potential for non-cancer effects is measured by what is called a hazard quotient (HQ). An HQ above 1

Table 1. Summary of Health Risks

FISH SPECIES	ADULTS			BREAST-FED INFANTS	
	CANCER RISK (DDT & PCBs COMBINED)	NON-CANCER HQ		NON-CANCER HQ	
		DDT	PCBs	DDT	PCBs
Barred sand bass	5×10^{-5}	0.1	3	-	-
California halibut	1×10^{-4}	1	3	-	-
California sheephead	7×10^{-5}	0.4	2	-	-
Kelp bass	5×10^{-5}	0.3	2	3	16
Surfperches	2×10^{-4}	1	5	-	-
White croaker	2×10^{-3}	17	32	220	370
Other species	$\leq 3 \times 10^{-5}$	≤ 1	≤ 1	-	-

For Adults: the risk estimates are based on a single species diet and assume a 30-year period of consumption, with fish consumption rates varying by species. For white croaker, the consumption rate is about 28 grams per day, equivalent to about 6 meals per month. The figures also assume that all the fish of that species eaten during the 30-year period come from the Palos Verdes Shelf area.

For Breast-fed Infants: the risk estimates assume the infant's mother has been eating contaminated fish for several years prior to breast feeding and continues to eat one meal per month of contaminated fish.

means that toxic effects may occur, and the chance of occurrence will increase as the HQ increases. EPA typically considers non-cancer risks to be acceptable when the HQ is less than 1.

Health risks due to fish consumption will vary depending on which fish a person eats, how much of it and for how long a given fish species is eaten. For example, white croaker are typically more contaminated than other fish at the Palos Verdes Shelf, and the more of these white croaker you eat (and the longer you eat them), the higher your risk of adverse health effects. Assuming an individual eats an average of 6 white croaker per month for 30 years, the estimated cancer risk for white croaker is 2 in one thousand (2×10^{-3}) and the corresponding HQ for non-cancer effects is 32 (based on PCB levels in the fish). Cancer risks and HQ's for several other species of fish are also high enough to justify a response action (see Table 1), as are the potential risks to breast-fed infants whose mothers consume just one meal per month of contaminated fish.

Ecological Risks

The presence of high DDT concentrations in overlying waters and in fish from the Palos Verdes Shelf demonstrates that site contaminants are mobile, susceptible to transport, and available for biological uptake. Potential adverse effects include chronic toxicity and reproductive impairment that may occur as a result of the biological transfer and accumulation of contaminants (particularly DDT) in the marine food chain. For example, DDT levels in kelp bass at the Palos Verdes Shelf would be sufficient to pose a significant risk to raptorial birds (such as bald eagles) feeding on fish from this area. In addition, there is information documenting that DDT and PCB levels in the water overlying the Palos Verdes Shelf exceed both the EPA water quality criteria and the California Ocean Plan standards, suggesting significant ecological risks. EPA is continuing to evaluate the ecological risks stemming from the contaminated sediments, but such risks would not be addressed by the recommended alternative described in this Proposed Plan.

SUMMARY OF TECHNOLOGY SCREENING

As an initial step in its Superfund investigation, EPA identified and screened possible response action technologies for contaminated sediments on the Palos Verdes Shelf. Results of EPA's screening evaluation are presented in a

1997 EPA report titled *Screening Evaluation of Response Actions for Contaminated Sediments on the Palos Verdes Shelf*. This initial screening considered three general response actions: (1) institutional controls; (2) *in situ* containment; and (3) removal (i.e., dredging) followed by various options for treatment or disposal of the dredged material.

Based on the results of EPA's screening evaluation, two categories of response action alternatives (along with the no action alternative) were retained for further evaluation: 1) institutional controls and 2) *in situ* containment (i.e., in-place capping). The other potential response actions were considered impractical or infeasible, given the site conditions and constraints on disposing of the contaminated sediments, and were eliminated from the more detailed evaluations performed in the EE/CA. Of the response actions that survived the screening process, only capping has the potential to address both ecological and human health risks.

The findings to date of EPA's evaluation of *in situ* capping are found in the EE/CA report, including Appendix C, "Options for In-Situ Capping of Palos Verdes Shelf Contaminated Sediments." In summary, a cap can effectively eliminate the movement of contaminants into the marine food web and prevent their accumulation in fish consumed by humans. However, fish with existing body burdens of DDT and PCBs would continue to pose ecological and human health risks even after a cap is constructed, and institutional controls would be needed to minimize the risks to people until these contaminated fish are no longer present. EPA is continuing to evaluate capping options.

RESPONSE ACTION OBJECTIVES

Based on the threats to human health and the environment posed by the contaminated sediments, the general response action objectives for the Palos Verdes Shelf are defined as:

- reduce the flux of DDT and PCBs from the sediments into the water column,
- reduce the migration of contaminated sediments,
- reduce the DDT and PCB concentrations in surface sediments,
- reduce the DDT and PCB concentrations in fish tissue,
- prevent the entry of contaminated fish from the site into local commercial markets, and
- educate recreational anglers about the fishing advisories and the risks of eating contaminated fish.

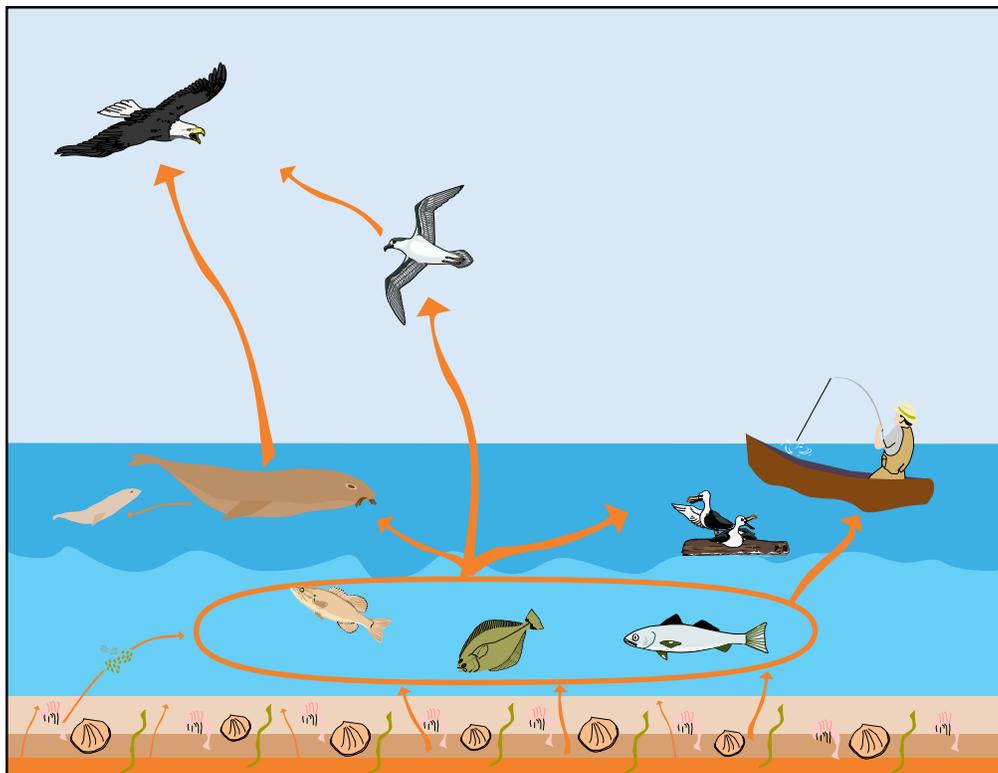


Figure 3. Possible pathways for DDT and PCBs in sediment to move through the marine food chain.

The recommended alternative (described in this Proposed Plan) would only address the last two of the general response action objectives set out above. The recommended alternative would not achieve total site cleanup or complete elimination of contaminant exposures. More specifically, the last two of the general response action objectives set out above have the following subgoals:

- ensure compliance with the commercial fishing ban for white croaker in the closure area off the Palos Verdes peninsula;
- ensure compliance by sport fishermen with the white croaker daily bag limit;
- educate the public about the fish consumption advisories that apply to this area of the California coast and the potential health risks associated with the consumption of DDT and PCB-contaminated fish; and
- minimize or eliminate the illegal sale of white croaker by sport fishermen to local markets and restaurants.

The scope of the proposed response action would also include monitoring contaminant levels in fish sold in retail outlets and in fish caught in ocean waters adjacent to the closure area to evaluate the effectiveness of the institutional

controls. The results will then be used in determining the need to modify the response actions and/or conduct further cleanup actions.

It is important to recognize that the alternatives described here and in the EE/CA are being evaluated in the context of taking an interim Superfund action (i.e., EPA is not selecting a final action). As such, even if EPA selects the recommended action, there would be a continuing evaluation to assess the need for and feasibility of additional response actions.

The environmental conditions at Palos Verdes Shelf are distinctly different than typical near shore or in-harbor contaminated sediment sites, and thus any response actions selected for Palos Verdes Shelf

should not be interpreted as a precedent or example for other contaminated sediment sites.

Alternative 1: No Action

Under the No Action alternative, no response action would be performed, and contaminated sediments would be left in place. Periodic monitoring (e.g., chemical analyses of surface sediments and fish tissue) would be conducted to evaluate whether significant changes in contaminant concentrations occur over time.

The ongoing release of DDT and PCBs from the sediment into the environment and the resulting accumulation of DDT and PCB in food chain organisms are likely to persist if no action is taken. Significant levels of DDT and PCBs are likely to remain in near-surface sediments and in ocean waters on the Palos Verdes Shelf. In addition, under the No Action alternative, EPA is assuming that the existing restrictions on commercial and recreational fishing on the Palos Verdes Shelf would continue until such time as the State chooses to modify them, and that no dedicated State resources would be provided for enforcement of the commercial or recreational catch restrictions, public education or monitoring.

Alternative 2: Institutional Controls

This alternative consists of institutional controls that include the following:

- Increase enforcement of the white croaker commercial fishing ban off Palos Verdes peninsula and the 10-fish daily bag limit for recreational fishermen;
- Conduct public outreach efforts to increase awareness of the seafood consumption advisories and the risks associated with the consumption of contaminated fish; and
- Monitor tissue contaminant concentrations in locally harvested fish sold for human consumption.

The activities described above (i.e., enforcement, outreach and monitoring) are tools that EPA could use with varying levels of intensity to reduce existing health risks. While EPA has made certain assumptions about the scope of these activities for the purpose of developing cost estimates, there would nonetheless be an opportunity to vary the intensity of such actions if EPA decides to select the proposed institutional controls as a response action.

Effective enforcement would be achieved by providing a dedicated staff of CDFG game wardens to patrol the Palos Verdes Shelf area by boat and to conduct spot checks at boat ramps, unloading points and fish markets. EPA's cost estimate assumes a full-time program of continuous enforcement activity.

The public outreach program would be designed to ensure that information is disseminated throughout the diverse communities where the fish (particularly white croaker) are caught and/or purchased. The goal is to ensure that anglers and the consumers are aware of and understand the State's fish consumption advisories. These communities are ethnically and economically diverse, and effective communication with them would require in many cases working with existing community-based organizations and using a variety of media and culturally-appropriate materials that explain the recreational fishing advisory as well as the benefits of eating clean fish.

Similar outreach and education to commercial fishermen and fish distributors could help increase their awareness and understanding of the commercial fishing restrictions for white croaker and thereby help ensure that contaminated fish are not sold in retail markets or to restaurants.

Data from the fish monitoring program would be used to evaluate the effectiveness of fishing restrictions and enforcement actions in eliminating the presence of contaminated fish in the public market. These data could also be used in conjunction with efforts by local, state and other federal agencies designed to

identify commercial catch blocks in the Los Angeles/Long Beach area where "clean" white croaker are present (should such agencies become interested in developing a "clean catch certification" program). Commercial fishermen taking white croaker (or other fish being monitored) from these areas could then have their catch certified as clean, and that information would be passed along to retailers and consumers to encourage the purchase of clean fish and reduce the market for the illegal sale of sport-caught (and potentially contaminated) white croaker. Such a program would benefit not only the consumers but also the commercial fishermen.

EVALUATION OF ALTERNATIVES

In accordance with EPA guidance, each of the alternatives is evaluated with respect to the three primary criteria for non-time-critical **removal actions**: effectiveness, implementability and cost.

Effectiveness: The effectiveness of a response action alternative is measured by its ability to protect human health and the environment in the context of specific criteria and related EPA guidance. Other factors, including long-term effectiveness and permanence, short-term effectiveness and compliance with requirements of other environmental laws (referred to in the Superfund program as **ARARs**), are also addressed.

Implementability: The implementability criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation. State and community acceptance are also addressed.

Cost: Each response action alternative is evaluated to determine its projected costs. This discussion includes information about each alternative's capital and annual (i.e., operation & maintenance) costs. Direct capital costs include, for example, purchase of equipment, whereas annual costs include items like monitoring costs.

The present worth costs for each alternative are also listed. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.

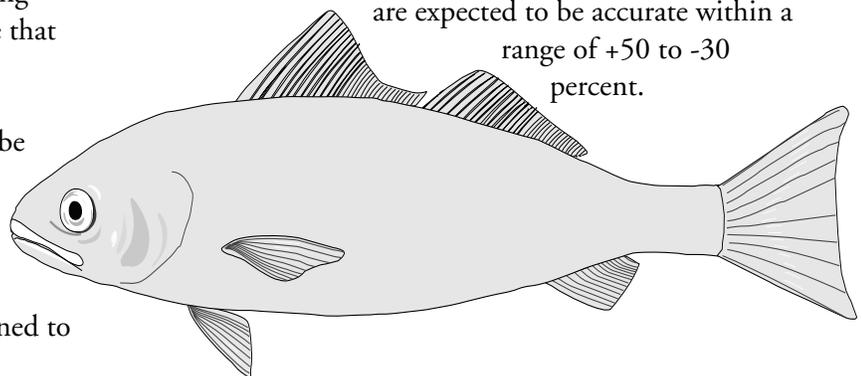


Table 2. Summary of the Evaluation of Alternatives

Alternative	Effectiveness	Implementability	Cost*
#1: No Action	Negligible risk reduction because predicted changes in contaminant availability are minimal	No significant concerns.	Approximately \$1,500,000 for site monitoring
# 2: Institutional Controls	Will reduce human health risks but not risks to the environment	Would require services and materials that are readily available	\$22,000,000 for enforcement, outreach and monitoring

* Present worth of capital and annual costs for a 10-year period.

Effectiveness

The No Action alternative does not include a response action, other than environmental site monitoring. Consequently, the No Action alternative does not provide for protection of human health or the environment, or achieve compliance with ARARs. The human health risk evaluation prepared as part of this EE/CA indicates that existing site conditions present a significant risk to the people consuming certain fish from the site. Further, the rates of change in contaminant levels in these fish are expected to be small, particularly over the next ten years (i.e., the proposed duration of the institutional controls that make up the recommended alternative). Thus, the No Action alternative is not expected to reduce current or future risks or offer significant protection from those risks.

The Institutional Controls alternative would reduce the potential for consumption of contaminated fish, although it would have no effect on whether or not fish become contaminated in the first place. It therefore offers a higher degree of protectiveness than the No Action alternative and would help to insure that the fish (particularly white croaker) sold in commercial markets is safe to eat. The effectiveness of institutional controls would not be realized immediately because it will take 12-18 months to hire the necessary game wardens and set up the public outreach and education programs.

Implementability

The No Action alternative involves only site monitoring, and thus technical feasibility and implementation schedules are not issues for the No Action alternative.

The various components of the Institutional Controls alternative are not limited or constrained by technical

feasibility. Similarly, the recommended monitoring would use standardized protocols and equipment, and would not face technical feasibility limitations.

Implementation of the site and fish monitoring work under the No Action and Institutional Controls alternatives relies on equipment, personnel, and other services, including laboratory testing, that are readily available within the southern California area.

Personnel (i.e., game wardens) required for the enforcement component of the Institutional Controls alternative would generally be available within one year. The required six-month training academy for game wardens is offered only once per year, so there could be a slight delay in fulfilling the staffing needs of the enforcement component.

Administrative feasibility is not a significant issue for the No Action alternative. Implementation of the Institutional Controls alternative would require administrative oversight for coordination and management of planning tasks. While the requirements are not insignificant, the administrative feasibility would not be an obstacle for implementing that alternative.

Cost

Costs for the No Action alternative (i.e., site monitoring) are estimated at \$0.2 million per year, which results in a present worth cost of \$1.5 million for a 10-year period.

The Institutional Controls alternative involves three major cost components: (1) enforcement; (2) public outreach; and (3) fish monitoring. The present worth costs for these components of the Institutional Controls alternative are \$19.9 million, \$0.43 million and \$1.7 million over a 10-year period, respectively. The combined

present worth cost for institutional controls is approximately \$22 million.

Summary

With the current absence of engineering measures to remove or contain the contaminated sediments, the significant human health risks posed by contaminated fish will persist. The No Action alternative would fail to be effective in terms of protecting human health, particularly with regard to the proposed duration of the recommended alternative (i.e., the next ten years). In comparison, Alternative 2 would reduce human health risks associated with both recreationally-caught and commercially-sold fish, although it is impossible to completely eliminate the risks as long as contaminated fish are present.

With respect to implementability, there are few significant differences between the two alternatives. The most important issue for the Institutional Controls alternative is the availability of game wardens in the near term.

There are significant differences between the alternatives with respect to cost. The present worth costs of the institutional controls (\$22 million) are appreciably higher than those associated with the No Action alternative (\$1.5 million).

SUMMARY OF THE PREFERRED ALTERNATIVE

EPA's recommended alternative is Alternative 2, Institutional Controls. As a threshold matter, EPA believes that the existing threats to human health are significant and do not represent an acceptable condition, nor one that is likely to change appreciably in the near term. The potential cancer and non-cancer risks to adults from consumption of contaminated fish need to be addressed, as do the potential non-cancer risks to breast-feeding infants whose mothers consume contaminated fish from the site. Alternative 2 is preferred by EPA over the No Action alternative because it is significantly more effective in addressing these risks.

In proposing institutional controls, EPA is not making a final remedy decision for the contaminated sediments on Palos Verdes Shelf. Implementation of Alternative 2, in conjunction with other ongoing data collection and risk evaluation, should provide a significant degree of health protection while EPA determines if additional response actions, such as capping, are needed. For these

reasons, EPA is recommending the implementation of Alternative 2.

As part of proposing Alternative 2, EPA is also proposing to waive the ARARs for surface water quality standards (for DDT and PCBs) as they would otherwise apply to the recommended action based on the waiver provision for removal actions that serve as interim measures. See 40 C.F.R. Section 300.415(j) and 40 C.F.R. Section 300.430(f)(1)(ii)(C). This means that EPA's proposed response action would not be required to meet these two ARARs and also that EPA will continue to evaluate whether additional response actions (such as capping) could, if implemented, achieve the ARARs. EPA is proposing to waive the water quality standard ARARs as they would apply to the recommended action because:

- i) the recommended alternative is intended to serve as an interim measure (with a limited duration of 10 years) while EPA completes its investigation of the Palos Verdes Shelf;
- ii) the institutional controls which make up the recommended alternative will not affect environmental conditions on the Palos Verdes Shelf and will not cause any additional migration of contaminants found on the Palos Verdes Shelf; and
- iii) the recommended interim action will not interfere with any final response action should any additional and final response action be selected by EPA. As discussed earlier, based on EPA's screening analysis, the only remaining cleanup action that EPA plans to continue to evaluate at this time is the option of capping all or a portion of the contaminated sediments on the Palos Verdes Shelf. (In this context, EPA would also continue to evaluate the No Action alternative as well.) The recommended alternative would prevent or limit the catch

Information Repositories

The Administrative Record file, which contains the information (including the human health risk evaluation report) that EPA used to develop its recommended action, is available at the following locations:

San Pedro Public Library
931 South Gaffey St.
San Pedro, CA 90731
(310) 548-7779

Hrs: Mon. - Thur: 10 a.m. to 8 p.m.
Fri. & Sat: 10 a.m. - 6 p.m.
Sun: 1 p.m. to 6 p.m.

Redondo Beach Public Library
303 N. Pacific Coast Highway
Redondo Beach, CA 90277
(310) 318-0675

Hrs: Mon - Thur: 10 a.m. to 8 p.m.
Friday: 10 a.m. to 6 p.m.
Sat: 9 a.m. to 5 p.m.

U.S. EPA Superfund Records Center
95 Hawthorne Street, 4th Floor
San Francisco, CA 94105
(415) 536-2000

Hrs: Mon. - Fri: 9 a.m. - 5 p.m.

and human consumption of contaminated fish but would not affect conditions at the Palos Verdes Shelf which cause the fish to become contaminated. As such, the recommended alternative would not preclude, delay or interfere with the implementation of any capping of the contaminated sediments, should EPA subsequently select a cap as a further response action for the Palos Verdes Shelf.

Community Participation

EPA invites your participation in selecting a response action for contaminated sediments for the Palos Verdes Shelf. There are a number of ways you can become involved. Public meetings will be held on April 11, 15, 19 and 26 to hear your comments on the alternatives explained in this fact sheet (see box on page 2) as well as the underlying EE/CA report. You may provide your comments at these meetings either orally or in writing. The meetings will contain two segments. First, EPA will explain the site background, alternatives, and EPA's preferred alternative. EPA will then answer questions and accept formal comments from the community.

In addition, EPA welcomes comments submitted directly to our office. Please send them to the attention of Fred Schaufler (SFD-7-1), U.S. EPA, 75 Hawthorne Street, San Francisco, CA 94105 or by email to Schauffler.Frederick@epa.gov no later than April 28.

To learn more, you will find an extensive amount of information at EPA's information repository at the San Pedro and Redondo Beach Public Libraries. These repositories contain the documents, known as the Administrative Record file, that EPA used to identify its proposed response action. The Administrative Record is housed in the library on microfilm. In addition, selected important documents are also available in hard copy. The Administrative Record file is also available at EPA's Region 9 offices in San Francisco (see address and hours listed on page 10).

GLOSSARY OF TERMS

Specialized terms used in this Proposed Plan are defined below:

ARARs - this acronym stands for "applicable or relevant and appropriate requirements," which are requirements of other federal and state environmental laws including the Resource Conservation and Recovery Act, the Federal Clean Water Act, and the Safe Drinking Water Act that EPA has identified for any onsite response action, consistent with the requirements of Section 121(d) of the Superfund law (42 U.S.C. Section 9621(d)).

bioaccumulate - to accumulate contaminants in the tissues of an organism through any route, including respiration, ingestion, or direct contact with contaminated water, sediment or prey.

continental shelf - the relatively flat, offshore area between the shoreline and the continental slope

continental slope - the relatively steeper, offshore area beyond the continental shelf

DDT - in this fact sheet, the term DDT is used to refer to DDT (dichloro-diphenyl-trichloroethane, a pesticide that is very persistent in the environment) and its primary metabolites, DDE and DDD. Most of the DDT at the Palos Verdes Shelf site is present in the form of DDE.

Engineering Evaluation/Cost Analysis (EE/CA) - a term used in the Superfund program to describe the process EPA uses to

evaluate response actions for a non-time-critical removal action. It is similar in scope to a Remedial Investigation/Feasibility Study (RI/FS), though less detailed.

in situ - in the natural or original place or location (e.g., an *in situ* cap is one placed over sediments in their original location)

invertebrates - animals without spinal columns, such as worms, eels, mollusks (including clams, snails and squid), sea stars and shrimp.

outfalls - large diameter sewer lines on the ocean floor through which the treated wastewater is discharged. The outfalls include both solid pipe sections and diffusers (pipes with regularly spaced opening, or ports, through which the wastewater is discharged)

PCBs - polychlorinated biphenyls, which are a large group of chemicals with similar components. PCBs were used in many industrial applications, including capacitors, transformers and other electrical components.

part per million (ppm) - a unit of measurement equivalent to one milligram per kilogram or one milligram per liter.

removal action - a cleanup action taken over the short term pursuant to EPA's removal authority under section 104 (a) of the Superfund law [42 U.S.C. Section 9604 (a)] and the requirements of 40 C.F.R. Section 300.415.

Palos Verdes Shelf Proposed Plan

EPA Contacts

If you would like further information on the Palos Verdes Shelf, or if you did not receive this fact sheet in the mail and would like to be added to our mailing list for the site, please contact:

Fred Schauffler, SFD-7-1
Remedial Project Manager
(415) 744-2359

Jackie Lane, SFD-3
Community Involvement Coordinator
(415) 744-2267

U.S. EPA
75 Hawthorne Street
San Francisco, CA 94105

You may leave a message for Jackie Lane by calling the Community Involvement toll-free line at
1-800-231-3075
or by e-mail: lane.jackie@epa.gov

Printed on 30% Postconsumer



Recycled/Recyclable Paper

U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street (SFD-3)
San Francisco, CA 94105
Attn: Jackie Lane

Official Business
Penalty for Private Use, \$300
Address Correction Requested

FIRST CLASS MAIL
POSTAGE & FEES PAID
U.S. EPA
Permit No. G-35