Site 9.1: San Diego Region, Seventh Street Channel, National City

Site Description:

The San Diego RWQCB identified one high priority toxic hot spot in their Regional Toxic Hot Spots Cleanup Plan. The RWQCB has identified several actions that are underway at the Seventh Street Channel in San Diego Bay. Should the RWQCB approaches for remediating the toxic hot spot be adopted?

Description of the Site

The remediation alternatives are applicable to Approximately three acres, encompassing the area of Stations 90009, 93227, 93228. However, the area affected could be substantially larger or smaller. Dredging activities could have occurred in this area since San Diego Bay was sampled during the period 1992 to 1994. If so, this area or parts of this area may no longer be considered for remediation.

Summary of Actions Initiated at the Site

The following is a summary of actions that have been initiated by the San Diego RWQCB to reduce the accumulation of pollutants at the THS. The following programs address water quality near the Seventh Street Channel. It is unknown whether any of the organizations or facilities named below have discharged chemical wastes at levels which could have caused the accumulation of pollutants at existing toxic hot spots.

NPDES Permits for the Naval Station

The Naval Station Graving Dock, which lies midway between Chollas Creek and the Seventh Street Channel and a half mile north of the Seventh Street Channel, currently is covered by its own National Pollutant Discharge Elimination System (NPDES) permit. Discharges from Navy industrial facilities are currently covered under the State Water Resources Control Board General Industrial Storm Water Permit. The Regional Board may issue NPDES permits for discharges from other Navy activities adjacent to San Diego Bay.

NPDES Municipal Storm Water Permit

In 1990, the RWQCB issued NPDES stormwater permits to municipalities responsible for civilian areas, including those tributary to San Diego Bay. Activities underway in the Paleta Creek watershed by the City of National City include public education, public service announcements on television, and street sweeping. The stormwater permit is now being revised.

Pacific Steel site

During the 1980s, the Regional Board took enforcement action against Pacific Steel, an automobile recycler. The company, which was located inland of the Seventh Street Channel, maintained a large "fluff" pile of non-ferrous waste. Runoff from the fluff pile was prohibited by the RWQCB from draining to San Diego Bay. The fluff pile was subsequently removed and the site cleaned up.

Military cleanups

The Regional Board has participated in Department of Defense Environmental Response Program (DERP) and Navy Installation Restoration (IR) activities to close former military hazardous waste sites on land adjacent to the Bay. Several disposal sites are located around the Seventh Street Channel.

Approach/Alternatives:

Section 13360 of the Porter-Cologne Water Quality Control Act prohibits RWQCBs, the SWRCB, and the courts from designating the means of compliance with the California Water Code. For this reason, the options presented below are not meant to influence the ultimate solution, but are presented to comply with BPTCP legislative requirements and to provide a starting point for discussion. The RWQCB could require potential responsible parties to submit California Water Code Section 13267 technical reports documenting the amounts and types of wastes discharged.

1. <u>RWQCB procedures.</u>

A first step could be to convene a meeting between potential responsible parties to discuss the data and to receive comments and information about the site. After review by staff of available information, the RWQCB Executive Officer could ask potential dischargers to submit technical reports. Subsequently, the RWQCB could require potential responsible parties to sample the site and surrounding area to document in detail the areal extent of the site and to identify specific pollutants at the site. Only after extensive review of all available information would the RWQCB require remediation actions.

2. <u>Persistence of wastes at this site.</u>

The chemical wastes found in the Seventh Street Channel and at the mouth of Paleta Creek, the pesticides Chlordane and DDT, and the class of polynuclear aromatic hydrocarbon (PAH) "ring" compounds derived from fossil fuels, are known to persist in

nature. These organic chemicals may be resistant to treatment or natural remediation processes such as oxidation, microbial degradation, and photolysis. For this reason, natural recovery or in situ treatment may not be feasible. In-place capping is presumed to be infeasible because of frequent vessel traffic in this area of the Bay. Two options which may be feasible are dredging followed by placement in an upland confined disposal facility, and dredging followed by contained aquatic disposal. There is precedent for both options in San Diego Bay. Dredging of contaminated bottom material has occurred at boat yards in north San Diego Bay and at the 24th Marine Terminal in the south Bay. A submerged aquatic disposal site has been completed in the north Bay off several storm drains known to have contributed PCBs to the Bay.

3. Dredging and upland disposal.

Stations 90009, 93227, and 93228 are located in a heavily-used dredged channel frequented by barges, boats, and tugs. Navigation charts show depths of between 18 to 21 feet at mean lower low water, although the depths may be shallower or deeper due to sedimentation or recent dredging. There may be suitable sites on land nearby to build settling ponds to receive hydraulic dredge spoils. Sediment removal activities could include clamshell dredging or hydraulic dredging, and transportation to a suitable disposal site by barge, rail, or truck, or to settling ponds next to the Channel.

4. Dredging and contained aquatic disposal.

Another method could involve dredging a disposal site at another location in San Diego Bay, depositing the contaminated dredge spoil from the candidate toxic hot spot site, and capping the site with suitable material. The following conditions would have to be met if this option were to be implemented:

- Clean Water Act Section 404 dredging permits would be obtained from the U.S. Army Corps of Engineers for the contaminated site and for the aquatic disposal site
- State waste discharge requirements would be obtained from the Regional Board for the disposal site
- The cap would provide adequate coverage to prevent the spread of contaminated material
- Burrowing organisms would be prevented from mixing polluted sediments (i.e., bioturbation must not occur)

- The contaminated material covered would be able to support the cap
- The bottom slope would be able to support the cap during seismic events
- The cap would be well marked and protected against erosion or destruction from anchors, propellers, and strikes by vessels
- The site would be located away from major navigation lanes
- The exact location of the site would be noted on maps, charts, and deeds

Estimate of the Total Cost to Implement the Cleanup Plan

This preliminary cost list is based on the schedule found in the 1997 guidance document (see Table 14). High and low costs are provided. It is assumed that if ocean disposal at the 100 fathom site is chosen, the U.S. Army Corps of Engineers would require extensive testing of the material removed from the Seventh Street Channel to be transported to the LA-5 site 6 miles from Pt. Loma. Costs were not able to be estimated for California Environmental Quality Act (CEQA) compliance, Section 404 dredging permit and state waste discharge requirements acquisition, or sampling to determine the areal extent of the candidate toxic hot spot.

Costs for dredging and upland disposal.

High costs: Assume that 14,520 square yards (three acres) need remediation and that sediment to a depth of one yard would be removed. The 14,520 cubic yards of dredge spoil would then be placed on a barge, offloaded onto trucks, and transported to a suitable upland landfill. Low costs: Assume that the wastes are transported to a Class III site. Cost estimates are presented in Table 14.

TABLE 14: COMPARISON OF HIGH AND LOW COSTS FOR DREDGING AND UPLAND DISPOSAL

High Cost per Cubic Yard		Low Cost per Cubic Yard	
Clamshell dredging	$10	Clamshell dredging	$10
Unloading from barge	TBD	Unloading from barge	TBD
Transport by truck	200	Transport by truck	200
Disposal at Class I site	300	Disposal at Class III site	30
Sub total per cubic yard	$510	Sub total per cubic yard	$240
14,520 cubic yards X $510 = $7,405,200 (not including permits)		14,520 cubic yards X $240 = $3,384,800 (not including permits)	

Costs for dredging and contained aquatic disposal.

Cost estimates are presented in Table 15. High costs: Assume that 14,520 square yards (three acres) need remediation and that sediment to a depth of one yard would be removed. An aquatic disposal site would be dredged and suitable material obtained for use as a cap. Another suitable cap to prevent burrowing animals from penetrating into the underlying contaminated sediment would be provided as well. The 14,520 cubic yards of dredge spoil would be placed on a barge and transported to the aquatic disposal site. The caps would then be constructed. Low costs: Assume that confinement at the disposal site is not necessary.

TABLE 15: COMPARISON OF HIGH AND LOW COSTS FOR DREDGING AND CONTAINED AQUATIC DISPOSAL

High Cost per Cubic Yard		Low Cost per Cubic Yard	
Excavation of disposal site	TBD	Clamshell dredging and disposal (assuming confined disposal is not needed)	$10
Clamshell dredging	$10		
Barge transport of waste (assume high truck costs)	TBD		
Disposal at aquatic site	$9		
Cap at disposal site	TBD		
Monitoring at disposal site	TBD		
Sub total per cubic yard	$19	Sub total per cubic yard	$10
14,520 cubic yards X $19 = $275,880 total (not including creating and maintaining disposal site or acquiring permits)		14,520 cubic yards X $10 = $145,520 total (assuming a confined site is not needed)	

Estimate of Recoverable Costs From Potential Dischargers

No attempt has been made to ask potential responsible parties to participate in any remediation activities, so projected participation by responsible parties is based on conjecture. If fifty percent of the costs were recovered and the cleanup were to cost $7.4 million, the following schedule may be possible. Assume that $3.7 million is not recoverable.

Two-Year Expenditure Schedule Identifying Funds to Implement the Plans That Are Not Recoverable From Potential Dischargers

Assume that a total of more than $3.7 million would be needed, and that more than two years would be needed to remediate the Seventh Street Channel site.

Activity		Deficit
Year 1:		
- Meeting with responsible parties - Request for technical information - Discharger response - Staff review of response - Cleanup and abatement order - Sampling plan to characterize areal extent - Request for bids for chemistry sampling and analysis - Lab contract	estimate	$800,000
Year 2:		
- Site characterization - Engineering report - Section 404 dredging permit application - State waste discharge requirements application - NEPA and CEQA environmental documentation	estimate	$900,000

Recommendation: Adopt the alternatives, cost estimates and expenditure plan as presented.

ENVIRONMENTAL BENEFITS OF THE PROPOSED CONSOLIDATED TOXIC HOT SPOTS CLEANUP PLAN

In the next section of the FED short-term adverse effects resulting from the remediation activities and possible mitigation strategies are discussed. This section summarizes the types of long-term benefits anticipated to result after remediation occurs. The Water Quality Control Policy for Guidance on the Development of Regional Toxic Hot Spots Cleanup Plans (SWRCB, 1998a) required that the RWQCBs consider the benefits that would be derived by remediating known Toxic Hot Spots. The Policy acknowledged that the benefits derived from remediation would be qualitative in nature and that any assessment of benefits should be based on the SWRCB established beneficial uses of water.

Quantitative information on the benefits derived from remediation are generally not available to make a specific assessment of the economic and biological benefits of remediation. Only a qualitative description of the potential benefits resulting from improvements in ecosystem health as a result of implementing remediation measures is possible because of: (1) the complexity and diversity of California aquatic systems, and the diversity of ecological receptors for toxic pollutants; (2) pollutants and exposure conditions; (3) the complexity of ecosystem structure and function, and uncertainty in the interaction between factors involved in ecosystem recovery and responses; and (4) uncertainty regarding the extent to which remediation will result in toxic loadings reductions or concentrations significant enough to generate appreciable changes in ambient concentration and ecosystem health. The RWQCBs used the beneficial use information presented in the Guidance Policy to assess the beneficial effects of remediation in each known THS (Table 16). The benefits of remediating the high priority toxic hot spots are presented in each Regional Cleanup Plan (Appendix B).

Ecological Benefits

Toxicity may occur with either acute or chronic exposure to pollutants. Current concentrations of pollutants in the identified THSs pose a risk not only to humans through consumption of fish and shellfish but also to resident and migratory biota. Exposure to chronic low levels of pollutants can adversely affect resources by causing physiological and behavioral impairments in organisms or

reduction of food-web resources and alteration of habitats. Reduction of pollutant concentration through remediation would reduce the risk of disturbances to the ecological integrity and important habitats of the biological resources.

TABLE 16. BENEFICIAL EFFECTS OF REMEDIATION

Beneficial effect	Values quantifying these beneficial effects	Beneficial use affected
Lower toxicity in planktonic and benthic organisms	Greater survival of organisms in toxicity tests.	MAR, EST
Undegraded benthic community	Species diversity and abundance characteristic of undegraded conditions.	MAR, EST
Lower concentrations of pollutants in water	Water column chemical concentration that will not contribute to possible human health impacts.	MIGR, SPWN, EST, MAR, REC 1, REC 2
Lower concentrations of pollutants in fish and shellfish tissue	Lower tissue concentrations of chemicals that could contribute to possible human health and ecological impacts.	MAR, EST, REC 1, COMM
Area can be used for sport and commercial fishing.	Anglers catch more fish. Impact on catches and net revenues of fishing operations increase.	REC 1, COMM
Area can be used for shellfish harvesting or aquaculture	Jobs and production generated by these activities increase. Net revenues from these activities are enhanced.	SHELL, AQUA
Improved conditions for seabirds and other predators	Increase in populations. Value to public of more abundant wildlife.	WILD, MIGR, RARE
More abundant fish populations	Increase in populations. Value to public of more abundant wildlife.	MAR, EST
Commercial catches increase	Impact on catches and net revenues of fishing operations.	COMM
Recreational catches increase, more opportunities for angling	Increased catches and recreational visitor-days.	REC 1
Improved ecosystem conditions	Species diversity and abundance characteristic of undegraded conditions.	EST, MAR
Improved aesthetics	Value to public of improved aesthetics. In some cases, estimates of the value to the public of improved conditions may be available from surveys.	REC 2
More abundant wildlife, more opportunities for wildlife viewing	Impact on wildlife populations. Impact on recreational visitor-days.	MAR, WILD, RARE, REC 2

Adverse effects of toxic pollutants include increased susceptibility to disease, reduced growth and development, altered physiology and behavior, impaired reproductive health and behavior, and if concentrations are high enough, death. Any one of these adverse effects can ultimately affect the survival, reproductive success, and overall health of a population, which may affect ecosystem health. These adverse effects can impact ecosystem function and integrity through direct and indirect effects on the biota by altering system processes such as impaired decomposition of organic matter and disruption of predator-prey interactions.

The aquatic ecosystems of California's bays and estuaries include food webs of phytoplankton, invertebrates, fish, birds, mammals, and other organisms that interact with each other through a complex flow of matter and energy. When remediation takes place ambient water and sediment quality improves through reductions in the concentrations of pollutants in the aquatic system and improvement in biological response. Because all components of this ecosystem are linked, improved survival, growth, productivity, and reproductive capacity translate to improved ecosystem stability, resilience, and overall health. Overall, this improvement in ecosystem health results in an enhancement of beneficial uses of the waters of the enclosed bays and estuaries of California.

Human Health Benefits

Bays and estuaries are natural sinks for the toxic pollutants. Concentrations of pollutants in the identified THSs pose a risk to humans through consumption of fish and shellfish. Tissues from fish and shellfish found in sites have been found to contain pollutant loads that exceed FDA and NAS action levels or have an advisory for the consumption of fish and shellfish. These are sites that are influenced by past and present accumulation of pollutants from point and nonpoint source discharges.

Fish consumption advisories are an acknowledgment that the beneficial uses associated with commercial and sport fishing are impacted greatly or lost. Concerns about the health effects of eating contaminated fish reduces the value of the fishery. It also increases the cost of commercial fishing because the fishermen may need to travel longer distances to make their catch. As a result, the sport angler makes fewer fishing trips because of health concerns. Likewise, the overall cost per fish in commercial catches goes up because of increased costs associated with the commercial fishing operation.

In addition, knowledge of toxic pollution and contamination of aquatic organisms at a specific site, regardless of consumption concerns, may not only reduce angler uses of coastal resources but also may decrease participation in non-consumptive uses of water such as water contact and non-contact recreation. A decrease in the level of toxic pollution and contamination through either implementation of remediation measures or active source control may increase ecosystem stability, resilience and overall health. This should translate into fish and shellfish with lower contaminants, possibly higher catch rates and increased angling efforts. An improved perception of water quality will also have a positive impact on the other non-consumptive water-associated recreational uses of water.

POTENTIAL ADVERSE ENVIRONMENTAL EFFECTS OF THE PROPOSED CONSOLIDATED TOXIC HOT SPOTS CLEANUP PLAN

The previous section of this FED summarizes the environmental benefits of remediation of the high priority Toxic Hot Spots. However, CEQA requires public agencies to consider the potential adverse environmental effects of an action. In this case, the proposed action is SWRCB adoption of the proposed Consolidated Cleanup Plan as policy for water quality control. Consideration of potential adverse effects of remediation should be considered in the context of the fact that overall environmental conditions at these sites will be improved by remediation; and that potential adverse effects of remediation can be lessened by proper site-specific planning, site-specific compliance with laws protecting the environment, and application of mitigation measures outlined in the Consolidated Plan.

Potentially Adverse Significant Impacts

Analyzing the potential adverse impacts of adoption of an environmental policy or plan is considerably different in nature than the analysis of actions described in a more typical, public facility or private development environmental impact report. The environmental effects of a policy or plan do not occur directly as a result of the action (i.e., adoption of the document), but as an indirect consequence of the practices used to comply with the policy. The analysis of actions due to the SWRCB adoption of the proposed Consolidated Cleanup Plan should compare a baseline description of remediation practices under the existing regulatory framework (no Consolidated Cleanup Plan) with practices that would result from adoption of the Cleanup Plan.

Because of the extensive existing authority vested in the RWQCBs and the SWRCB by the Porter-Cologne Water Quality Control Act, all of the remediation alternatives identified in the Consolidated Cleanup Plan can take place regardless of whether the Plans are adopted by the RWQCBs and the SWRCB. At each of the high priority Toxic Hot Spots, beneficial uses have been shown to be adversely affected. The RWQCBs and the SWRCB

currently have the authority to issue and revise waste discharge requirements, and issue and implement enforcement actions to require remediation of these sites. Adoption of the Consolidated Cleanup Plan does not change RWQCB authority or responsibility to remediate the identified high priority Toxic Hot Spots, nor does adoption of the Plans change the physical way in which the sites might be remediated. The Consolidated Cleanup Plan is a response to a legislative requirement to identify sites, rank sites and plan for their cleanup. Because of this legislative mandate, remediation may be more likely to proceed.

The Consolidated Cleanup Plan provides both a number of alternatives for cleanup and a generic description of the remediation alternatives. Responsible parties may select among the identified remediation alternatives, or they may reject them all and propose another method to remediate the Toxic Hot Spot. (See Water Code Section 13360, which provides that the SWRCB and RWQCBs shall not specify the manner in which compliance may be had with a requirement, order, or decree. Persons shall be permitted to comply with the order in any lawful manner.)

A description of the existing environmental setting is provided in a previous section of this FED. However, a quantitative evaluation of environmental effects can only be done when site-specific remediation is selected and specific cleanup orders are developed. The exact timeframe for implementation of remediation alternatives is not known for many of the high priority Toxic Hot Spots.

For the above reasons, the potential environmental effects of identified remediation alternatives on the environmental setting at the time of remediation will be addressed in this FED in a generic, policy-level manner.

It is possible that the quality of the environment could be degraded or biological resources adversely impacted, at least temporarily, if cleanup and mitigation efforts are not carefully planned and executed. This FED is not intended to provide CEQA compliance of the individual remediation projects. Appropriate CEQA compliance is required when site-specific remediation plans are developed. The FED

also provides policy-level mitigation measures that must be considered by the RWQCBs to lessen or avoid potential adverse environmental impacts of remediation.

Finally, it should be noted that the remediation alternatives identified in the Consolidated Cleanup Plan are regulated to protect against adverse impacts to the environment. Compliance with applicable laws, and local and State regulations will reduce the potential for significant adverse impacts to the environment. These regulatory programs are discussed in this section of the FED.

This section of the FED focuses on discussions of potential impacts to water resources, wetlands, air quality, fish and wildlife, and the handling and potential for release of pollutants. Other issues were evaluated and determined not to be significant based on the environmental checklist and supporting analysis included in a subsequent section of this FED.

The following table (Table 17) lists the high priority Toxic Hot Spots, and the remediation alternatives currently identified by the RWQCBs.

TABLE 17. IDENTIFIED REMEDIATION ALTERNATIVES

Site	Dredging/Excavation and Disposal	Capping	No Action Natural Recovery	Source Control[14]	Education-Institutional Controls[15]	Study[16]
Humboldt Bay Eureka Waterfront H Street	X					
San Francisco Bay (entire)				X	X	X
S.F. Bay - Peyton Slough	X	X				X
S.F. Bay - Castro Cove	X	X	X	X		X
S.F. Bay - Stege Marsh	X	X	X	X		X
S.F. Bay - Point Potrero	X	X	X		X	
S.F. Bay - Mission Creek	X	X	X	X		X
S.F. Bay - Islais Creek	X	X	X	X		X

[14] Includes watershed management, TMDLs, best management practices, the SWRCB and RWQCB storm water programs, treatment, pretreatment.

[15] Includes education to reduce use of products that are sources of pollutants; signs; warnings.

[16] Includes monitoring, investigation, feasibility studies, subsequent development of TMDLs independent of the cleanup plan (cf. Central Valley RWQCB pesticide cleanup plans).

Site	Dredging/Excavation and Disposal	Capping	No Action Natural Recovery	Source Control[14]	Education-Institutional Controls[15]	Study[16]
Moss Landing and tributaries	X			X	X	X
Cañada de la Huerta	X	X				X
Santa Monica Bay/Palos Verdes Shelf		X			X	
Mugu Lagoon	X		X			
McGrath Lake	X			X		
Los Angeles Inner Harbor/ Dominguez Channel Consolidated Slip	X					
Los Angeles Outer Harbor/ Cabrillo Pier	X	X				
San Joaquin River/ Sacramento River Delta, Mercury				X		X

Site	Dredging/Excavation and Disposal	Capping	No Action Natural Recovery	Source Control[14]	Education-Institutional Controls[15]	Study[16]
San Joaquin River/ Sacramento River Delta, Dissolved Oxygen				X		X
San Joaquin River/ Sacramento River Delta, Diazinon Dormant Spray				X		X
San Joaquin River/ Sacramento River Delta, Urban Stormwater Pesticide				X		X
San Joaquin River/ Sacramento River Delta, Irrigation Return Flow Pesticide				X		X
Lower Newport Bay, Rhine Channel	X					
San Diego Bay, Seventh Street Channel	X					

The Consolidated Cleanup Plan identifies 22 high priority toxic hot spots Statewide (Table 18). These sites are located in ocean waters (e.g., Santa Monica Bay), enclosed bays (e.g., sites in Humboldt Bay, Moss Landing Harbor, Los Angeles Harbor, Lower Newport Bay, San Diego Bay), estuaries (e.g., San Francisco Bay and the Sacramento/San Joaquin River Delta), and coastal lagoons (e.g., Mugu Lagoon). The size of the toxic hot spots ranges from approximately 1.5 acres to 1631 square miles (San Francisco Bay).

TABLE 18: AREAL EXTENT AND HABITAT AT TOXIC HOT SPOTS (SORTED BY AREAL EXTENT)

Toxic Hot Spot	Areal Extent	Habitat
San Francisco Bay, Point Potrero/ Richmond Harbor	Approximately 1 acre	Enclosed Bay
San Francisco Bay, Peyton Slough	Approximately 1.25 acres	Estuary/Slough
Lower Newport Bay, Rhine Channel	1.5 to 2.5 acres	Enclosed bay
Los Angeles Outer Harbor, Cabrillo Pier	25,000-50,000 cubic yards	Enclosed bay
Los Angeles/ Inner Harbor, Dominguez Channel/ Consolidated Slip	Approximately 50,000 cubic yards	Enclosed bay
Cañada de la Huerta, Shell Hercules Site	3600 feet x 1200 feet	Creek mouth
San Diego Bay, Seventh St. Channel Naval Station	Approximately 3 acres	Enclosed Bay
Humboldt Bay, Eureka Waterfront H Street	3.5 acres, 10,000 cubic yards	Enclosed bay
San Francisco Bay, Mission Creek	Approximately 9 acres	Estuary
San Francisco Bay, Stege Marsh	Approximately 10 acres to 23 acres	Estuary

Toxic Hot Spot	Areal Extent	Habitat
San Francisco Bay, Islais Creek	Approximately 11 acres	Estuary
San Francisco Bay, Castro Cove	Between 10 and 100 acres	Enclosed Bay
McGrath Lake	15,000 –300,000 cubic yards	Estuary
Mugu Lagoon east arm, Main Lagoon, western arm Calleguas Creek Tidal Prism	150 acres, 725,000 cubic yards	Coastal lagoon
Delta Estuary, Morrison Creek, Mosher, 5-Mile, Mormon Slough & Calaveras River	5 linear miles of back sloughs	Estuary
San Joaquin River, City of Stockton	Approximately 10 miles	River
Delta Estuary, Ulatis Creek, Paradise Cut, French Camp & Duck Slough	up to 15 linear miles of waterways	Estuary
Santa Monica Bay, Palos Verdes Shelf	Approx. 15 square miles	Ocean
Moss Landing Harbor and Tributaries	Harbor and Tributaries: 3,210 acres, lineal river miles 20 miles, and associated watershed subarea 187,596 acres	Enclosed Bay Estuaries and river
Delta Estuary, Entire Delta	78 square miles of water area, 1,000 linear miles of waterways	Estuary
Delta Estuary, Cache Creek	1100 square mile watershed, 1500 linear miles of creek	Creek in the Delta
San Francisco Bay, Entire Bay	1631 square miles	Estuary

Dredging, Disposal, and Capping

Many of the remediation alternatives outlined in the Consolidated Cleanup Plan involve dredging, disposal, and/or capping of

polluted sediments (see Table 17). While removal of the polluted sediments will have a beneficial impact on aquatic life and human health (e.g., improvement in aquatic life resources, recreational opportunities, etc.), there may be environmental impacts associated with remediation.

Dredging involves the use of machinery with scooping or suction devices to remove sediment. Typical dredging methods include mechanical or hydraulic dredging. Mechanical dredging removes sediments through direct application of mechanical force and excavates the material at almost *in situ* densities. Sediments removed by a mechanical dredge are placed into a barge or boat for transport to the disposal site. Sediments can be resuspended by the impact of the bucket, by the removal of the bucket, and by leakage of the bucket. Mechanical dredging typically produces sediments low in water content.

Hydraulic dredging uses centrifugal pumps to remove sediments in the form of a slurry. Although less sediment may be resuspended at the removal site, sediment slurries contain a high percentage of water at the end of the pipe. The slurry is transported by pipeline to a disposal area.

Removal and consolidation can involve a diked or containment structure which retains the dredged material and assures that pollutants do not migrate. Large portable settling tanks can also be used to consolidate sediment. After consolidation, disposal to an off-site location may include either upland (landfill) or containment. Considerations once the material has been dredged shall be (1) staging or holding structures or settling ponds, (2) de-watering issues including treatment and discharge of wastewater, (3) transportation of dredged material, (i.e., pipeline, barge, rail, truck), or (4) regulatory constraints.

Capping involves subaqueous coverage of polluted sediments to contain the toxic waste at the site.

Potential Impacts to Air Quality

Emissions from equipment used for dredging, disposal, and capping have the potential for temporary adverse effects to air quality. The primary pollutants of concern in these emissions are NOx or nitrogen oxides (Grant Chin, Air Resources Board, pers. comm.). NOx are precursors to ozone formation, and many of the

remediation projects are located in areas which have been designated as nonattainment areas for ozone[17]. Nonattainment areas for State ambient air quality standards are all the coastal counties from San Diego County north to Marin County as well as Sonoma, Napa, Yolo, Sacramento, San Joaquin, Contra Costa, and Solano counties. In addition, nonattainment areas for National ambient air quality standards are all the coastal counties from San Diego County north to Santa Barbara County as well as San Mateo, San Francisco, Marin, Sonoma, Napa, Yolo, Sacramento, San Joaquin, Contra Costa, and Solano counties. Emissions from dredging operations are from mechanical or hydraulic dredges and supporting vessels.

Other emissions of concern could be carbon monoxide and PM_{10} (particulate matter < 10 microns). Los Angeles County is a nonattainment area for State carbon monoxide standards, and both the Los Angeles and Orange counties are carbon monoxide nonattainment areas under national standards. Los Angeles and Orange counties are also nonattainment areas for PM_{10} under national standards; all coastal counties are nonattainment areas for PM_{10} under State standards.[18]

In order to evaluate the air quality impact of emissions due to dredging, disposal, and capping equipment, the project proponent must identify the specific type of equipment that will be used in the remediation action. Next, emissions from the equipment must be quantified and evaluated in the context of air quality standards for the area in which the remediation is occurring, climate and meteorology, and time of year remediation will occur. A project scheduled in the winter may be less likely to cause exceedances of ozone standards than an action taken in the summer when ambient ozone levels are higher.

When evaluating the potential adverse effects to air quality, the project proponent must contact the appropriate regional air district for assistance in determining whether the amount of emissions

[17] Proposed Amendments to Designation Criteria and Amendments to the Area Designations for State Ambient Air Quality Standards and Proposed Maps of the Area Designations for the State and National Ambient Air Quality Standards, California Air Resources Board, August 1998; and errata with changes adopted by California Air Resources Board on September 24, 1998.

[18] Proposed Amendments to Designation Criteria and Amendments to the Area Designations for State Ambient Air Quality Standards and Proposed Maps of the Area Designations for the State and National Ambient Air Quality Standards, California Air Resources Board, August 1998; and errata with changes adopted by California Air Resources Board on September 24, 1998.

generated at the remediation site will cause a violation of air standards. Project proponents would be responsible for meeting the requirements of the local air quality district for their specific project. If there is potential for an air quality violation, the project proponent should attempt to prevent or control emissions. This can be done by operating equipment under permit, purchase of air credits or offsets, use of electric dredging equipment, planning the project for the time of year or day when emissions would be least likely to cause an exceedance of air quality standards, optimizing the mode of transportation, favoring disposal sites closer to dredge sites, and minimizing the number of trips necessary to transport dredged material to the disposal site or rehandling facility.

Subaqueous material has the potential to create objectionable odors (e.g., hydrogen sulfide), and this is a potential adverse impact to air quality at the site where dredged materials are disposed or reused. In addition, objectionable odors may occur during dredging of subaqueous material. Whether the odor is considered to be significant is a function of the location of the site and whether a substantial number of people are affected. The impact is expected to be less than significant due to the short duration and locations of these activities. Reuse and disposal facilities must be located and designed to avoid generating nuisance odors that will adversely affect surrounding neighborhoods.

Water Resources and Wetlands

Generally, the stated goal of the State and Federal agencies is no net loss of wetlands (this includes acreage and value). This is done by requiring mitigation in the following order:

- Avoiding impacts by issuing permits only for the least environmentally damaging practical alternative or reconfiguring the project;
- minimizing impacts by modifying the project or restoring areas temporarily affected during a phase of the project; and, finally, if necessary
- compensating for unavoidable adverse impacts by restoring or creating wetlands:
  (1) restoring existing degraded wetlands
  (2) creating new wetlands in upland sites.

The proper application of the regulatory requirements (presented below generally) for project review and mitigation should reduce

the potential for impacts to wetlands and water quality due to disposal of dredged materials.

Project-specific planning can also reduce the potential for adverse environmental effects due to dispersal of polluted sediments. Following is a discussion of the regulatory framework and issues that should be considered when planning for disposal of polluted sediments.

California Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne) establishes a comprehensive program for the protection of water quality and beneficial uses of water. It applies to surface waters including wetlands. Porter-Cologne requires adoption of Water Quality Control Plans that identify beneficial uses of waters, water quality objectives that will protect the uses, specified discharge prohibitions, and a plan of implementation for achieving water quality objectives. Typical beneficial uses include water supply, water contact and non-contact recreation, warm freshwater habitat, wildlife habitat, ground water recharge, preservation of rare and endangered species, and establish a program of implementation. Anyone discharging or proposing to discharge materials that could affect water quality (other than to a community sewer system) must file a report of waste discharge. The RWQCBs regulate discharges under Porter-Cologne primarily through issuance of WDRs. WDRs are intended to protect the beneficial uses of water bodies, and list what can and can not be discharged to waters of the State.

CWA Section 404/401

Under CWA Section 404, the Corps issues permits to regulate discharges of dredged or fill material to waters of the United States. The CWA Section 404(b)(1) Guidelines are the environmental criteria used in evaluating discharges of dredged or fill material under CWA Section 404. Under the guidelines, the analysis of practicable alternatives is the primary screening mechanism to determine the necessity of permitting a discharge of dredged or fill material into regulated waters. The guidelines prohibit all discharges of dredged or fill material into regulated waters unless the discharge constitutes the least environmentally damaging practicable alternative that will achieve the basic project purpose.

Disposal or discharge of dredged materials into waters of the United States (including wetlands) are highly regulated in order to protect against adverse environmental effects as well as to protect against net loss of wetlands. Section 404(a) of the Clean Water Act makes it unlawful to discharge dredged materials into waters of the United States without a permit from the Army Corps of Engineers. The Corps must conduct a public interest review that weighs benefits versus detriments of the project and considers all relevant factors including: conservation, aesthetics, wetlands, flood hazards, flood plain values, navigation, recreation, water quality, safety, mineral needs, economics, general environmental concerns, cultural values, fish and wildlife values, land use, shoreline erosion and accretion, water supply and conservation, energy needs, food and fiber production, property ownership, and the needs and welfare of the public. The permit process must comply with National Environmental Policy Act (NEPA).

The Corps may also issue General Permits for discharges of dredged materials that have minimum adverse environmental effects (including cumulative effects). General Permits usually contain project-specific mitigation requirements. Nationwide Permits are issued by the Corps for specified types of projects that are limited in size and impacts.

Section 404(b)(1) directs the U.S. EPA to develop guidelines for issuance of fill permits. The stated policy in these guidelines is that discharges of dredged or fill material into waters of the United States should not be conducted unless it can be proven that it will not have an unacceptable adverse direct or cumulative impact. U.S. EPA may prohibit placement of fill if there will be an unacceptable adverse effect on: municipal water supplies, shellfish beds, fisheries, wildlife, or recreation areas. The guidelines provide that dredged or fill material shall not be permitted in a water of the United States if there is a practicable alternative that would have less impacts. For "Special Aquatic Sites" (wetlands, wildlife sanctuaries, mudflats, vegetated shallows, and riffle and pool complexes in streams), the guidelines presume that practicable alternatives are available and the permit applicant must provide otherwise. The CWA Section 404(b)(1) Guidelines are the substantive environmental criteria used in evaluating discharges of dredged or fill material under CWA Section 404. Under the guidelines, the analysis of practicable alternatives is the primary screening mechanism to determine the necessity of permitting a discharge of dredged or fill material into regulated waters. The

guidelines prohibit all discharges of dredged or fill material into regulated waters unless the discharge constitutes the least environmentally damaging practicable alternative that will achieve the basic project purpose.

CWA Section 401 allows states to deny or grant water quality certification for any activity which may result in a discharge to waters of the United States and which requires a Federal permit or license. Certification requires a finding by the State that the activities permitted will comply with all water quality standards individually or cumulatively over the term of the permit. Under Federal regulations (40 Code of Federal Regulations Section 131), water quality standards include the designated beneficial uses of the receiving water, the water quality criteria for those waters, and an antidegradation policy. Certification must be consistent with the requirements of the Federal CWA, the CEQA, the California Endangered Species Act (CESA), and the SWRCB's mandate to protect beneficial uses of waters of the State.

The SWRCB considers issuance of Water Quality Certifications for the discharge of dredged and fill materials. CWA Section 401 allows the State to grant or deny water quality certification for any activity which may result in a discharge to navigable waters and which requires a federal permit. Title 23 California Code of Regulations Section 3830 provides the regulatory framework under which SWRCB issues Water Quality Certifications under CWA Section 401. The Corps may not issue a Section 404 permit if the State denies water quality certification.

In order to certify a project, the SWRCB must certify that the proposed discharge will comply with all of the applicable requirements of CWA Sections 301, 302, 303, 306, and 307 (42 U.S.C. §§ 1311, 1312, 1313, 1316, and 1317). Essentially, the SWRCB must find that there is reasonable assurance that the certified activity will not violate water quality standards. Water quality standards include water quality objectives and the designated beneficial uses of the receiving water. CEQA compliance is required during the Section 401 water quality certification process. CWA Section 401 requires the water quality certification process to comply with CWA Section 404(b)(1) Guidelines.

In addition to the 404(b)(1) guidelines, both the San Francisco and Los Angeles districts of the U.S. Army Corps of Engineers have

habitat mitigation and monitoring guidelines, and California DFG, Fish and Wildlife, and NMFS have wetlands mitigation guidelines. Fish and Game Code Section 5650 could also be invoked if there is the discharge of deleterious substances into the environment.

Stream Bed Alteration Agreement Program

Fish and Game Code Section 1600 et seq. establishes a process to ensure that projects conducted in and around lakes, rivers or streams do not adversely impact fish and wildlife resources, or when adverse impacts cannot be avoided, ensures that adequate mitigation and or compensation is provided. Sections 1601 and 1603 of the Fish and Game Code are the primary sections with regard to developing Stream Bed Alteration Agreements. Projects that divert, obstruct or change the natural flow or bed, channel or bank of any river, stream, or lake where there is an existing fish or wildlife resource are subject to Section 1600. Fish and Game Code 1601 regulates the agreement process for projects proposed by state or local government agencies or public utilities while section 1603 regulates the process for projects proposed by all private project sponsors and federal projects without a state agency sponsor.

Landfill Disposal

In some cases, the cleanup of sites may generate significant amounts of materials that could be disposed in an appropriately designated solid waste disposal site. This could create increased demand for landfill capacity. In order to assess the potential effect to landfills, the areal extent and volume of sediment should be characterized. Once this is done, project impact to landfill capacity can be evaluated. If estimates exceed capacities, plan for alternative use of polluted sediments to remove impact (e.g., land-based confined disposal facilities, capping confined aquatic disposal, wetland restoration, levee reuse). Environmental effects and mitigation of site-specific impacts of these other alternatives would have to be evaluated.

Rehandling Facilities and Confined Disposal Facilities

Rehandling facilities are a link between dredging projects and the ultimate disposal of dredged material in upland projects. Dredged materials are typically off-loaded from barges, dewatered, dried, then transported to a final destination. Material (such as polluted sediments) that requires confinement may be transported to a dedicated confined disposal facility (CDF) constructed for the permanent storage of the dredged material, to other existing sites

(e.g., landfills) that provide the necessary confinement. It is unknown if there is adequate rehandling or CDF capacity to handle the volume and quality of dredged material identified for removal in the Consolidated Plan.

Consequently, it is necessary when site-specific projects are considered that an evaluation be completed on the availability of rehandling facilities and CDFs (LTMS, 1996). If inadequate capacity is available, the RWQCB should consider, in the planning effort, the development of new facilities. In the evaluation of new facilities the RWQCB should consider, but not be limited to:
(1) site selection, (2) facility construction practices, (3) facility operation,
(4) facility administration and maintenance, and (5) regulatory, mitigation, and monitoring requirements (Table 19).

TABLE 19: DREDGE MATERIAL DISPOSAL ISSUES RELATED TO REHANDLING FACILITIES AND CONFINED DISPOSAL FACILITIES TO BE ADDRESSED DURING PROJECT-SPECIFIC REVIEW

Factor to be Considered	Issues to be Addressed During Project-Specific Review.
Site Selection	Water access to site
	Evaluation of site conditions: • elevation • tidal range • Alignment and elevation of existing levees • area available for dredged material use (fill depth) • Typical foundation conditions • Characteristics of dredged material to be used (e.g., material density, grain size, dredge method, etc.
	Assessment of land uses
Site Construction	Assessment of adequately engineered and constructed perimeter and interior levees
	Assessment of the feasibility of proposed dredged material off-loading facilities and methods of transporting the dredged material
Site Development	Proximity to channel with sufficient water depth to allow access for dredged material off-loading.
	Sufficient mooring for barges
	Evaluation of suitable off-loading site(s) in terms of proximity to the site of final use and its ability to handle the proposed types of off-loading equipment.
	Evaluation of the proposed means for dredged material placement at the site of final use.
	Evaluation of the ability to prevent overfilling of the site of final use.
Facility Administration and Maintenance	Evaluation of the proposed management of all construction operations and post-construction maintenance.
	Evaluation of the proposed inspection and supervision of contractors working on site.
Regulatory, Mitigation and Monitoring Requirements	Determination of the need for Federal and State permits or reviews.
	Determination of the need for local approvals.
	Evaluation of the proposed mitigation and monitoring plans to ensure compliance with all applicable Federal and State regulations and policies.

Capping or Confined Aquatic Disposal

Capping or Confined Aquatic Disposal (CAD) generally refers to capping polluted sediments but can also include nearshore fill or wetland creation projects where polluted sediments are not used as cover material. CAD projects must include consideration of siting, design and monitoring (Table 20). Polluted sediments must be placed at a CAD site with acceptable levels of dispersion, and the cap must be successfully placed and maintained. The evaluation process for a CAD project includes selection of an appropriate site, characterization of both polluted and capping sediments, selection of equipment and placement techniques, prediction of material dispersion during placement, determination of the required cap thickness, evaluation of cap stability against erosion and bioturbation, and development of a monitoring program to assess the effectiveness of the capping project (LTMS, 1996).

TABLE 20: ISSUES RELATED TO CONFINED AQUATIC DISPOSAL AND CAPPING SITES TO BE ADDRESSED DURING PROJECT-SPECIFIC REVIEW

Factor to be Considered	Issues to be Addressed During Project-specific Review.
Site Selection	Depositional/erosional characteristics • Identify if site is depositional or erosional to assess dispersion during cap placement • The potential for later cap erosion The need for armoring or long-term cap maintenance.
	Current velocities • Water column currents (affect dispersion during cap placement) • Bottom currents (affect resuspension; erosion of mound and cap) • Storm-induced waves (affect maximum bottom current velocities)
	Bathymetry that may confine the material and reduce dispersion and erosion • Natural or man-made depressions • Other features including constructed subaqueous berms
	Other siting issues • Location relative to sensitive resources • Capacity to meet the disposal need • Depth and width needed to maintain the spread of material during placement • Water access • Potential for interference with navigation traffic or other activities
Design	Potential water column impacts during placement • Release of pollutants • Water column toxicity • Mass loss of pollutants • Initial mixing
	Efficacy of cap placement • Type of capping material • Dredging/placement method for polluted sediment • Dredging/placement method for cap material • Compatibility of site conditions, material types, and dredging/placement methods

Factor to be Considered	Issues to be Addressed During Project-specific Review.
	Long-term cap integrity • Physical isolation of pollutants • Bioturbation of the cap by benthos • Consolidation of the sediments (both cap and polluted sediments) • Long-term pollutant loss (due to advection/diffusion) • Potential for physical disturbance of the cap (e.g., by currents, waves, anchors, ship traffic)
	Cap composition and thickness • Thickness needed for physical isolation • Thickness needed for bioturbation • Consolidation of both confined and cap material • Potential need for cap armoring against worst case erosive events
Monitoring	Ensure polluted sediments are placed as intended, with acceptable levels of dispersion and release • Pre-disposal bathymetry surveys, as appropriate • Plume monitoring during placement
	Ensure cap material is placed as intended, and that required thickness is attained and maintained • Intermediate post-capping bathymetry surveys • Core samples through cap immediately after capping • Sediment toxicity testing
	Ensure cap remains effective in isolating the polluted material • Periodic post-capping bathymetry surveys • Periodic core samples through cap • Sediment toxicity testing and chemical measurements

Proper cap design and construction can avoid adverse impacts such as perforation of the cap by burrowing organisms and exposure of underlying contaminated sediment to the water column; inability of aquatic plants such as an eel grass, to become established over the cap; or prohibition by local planning agency of changing tidal prism. Potential for these impacts can be avoided by placement of a layer of rock or gravel over underlying sediment to exclude burrowing organisms, such as burrowing shrimp; placement of a layer of sand of appropriate grain size over the layer of armor rock or gravel; and dredging at site adjacent to the cap to remove an equal amount of bottom material to provide no net change in tidal prism. Anchoring of vessels over the cap can result in destruction of bottom habitat by anchors and keels; resuspension of bottom sediment by propeller wash; destruction of the cap, or depositing of trash or oil. These potential impacts can be avoided by marking the cap on navigation charts; excluding vessels from areas near the cap; or selection of dredging as the remediation alternative. Many of the mitigation measures outlined above to reduce or avoid impacts due to dredging and disposal are also appropriate for capping.

Placement of a cap could release pollutants into the marine environment if the design and deployment of capping materials are not properly done. Monitoring must be conducted to verify the integrity of the final cap.

Other water resources issues

Dredging equipment can cause turbulence in the water body and thus the dredging process can cause short-term adverse impacts to water quality from turbidity or from stirring up pollutants in the sediment. These impacts can be regulated through WDRs and can be reduced by requiring use of dredging equipment or operations that minimize the discharge of chemical pollutants during dredging (e.g., use of clam shell dredger, etc.), use of settling tanks to reduce excessive turbidity in discharge, use of silt curtains to reduce dispersal of turbidity plume beyond dredge site, coffer dams in small channels, and accurate positioning of disposal equipment during dredging. DFG also has dredging regulations to protect against adverse biological impacts.

At some sites, a portion of the cleanup activity will take place on the shoreline. Depending on the cleanup method selected for the shore line activity, minor changes in absorption rates, drainage

patterns, and the rate of surface runoff may change. On land, excavation can be mitigated by performing all work during the dry season and using best management practices for the control of erosion.

In addition, runoff from excavation activities or disposal of dredged materials above sea level can adversely affect surface water quality. Impacts from land excavation can be reduced by doing work during the dry season or by implementing BMPs to reduce erosion. Most local governments also have erosion control ordinances and grading ordinances.

Changes in bottom contours brought by dredging or capping would probably have minimal effects on water circulation if properly managed. Relatively small areas are under consideration for modification at most of the sites. At larger sites, removal and placement will attempt to retain regional bottom depth and contour, except where bathymetry is planned for environmental improvement.

Dredging activities have the potential to destabilize channel slopes and undermine pilings. Standard engineering practices such as installation of sheet pile walls at the toe of the shore slope would reduce or avoid this impact.

Biological resources

Dredging, disposal, and capping all have the potential to cause adverse effects to biological resources in several ways: short-term habitat destruction and displacement of sensitive species, possibly during critical periods such as nesting, disturbance of sensitive spawning or migrating fish species due to turbidity, and "take" of endangered species.

As described in the Environmental Setting and Remediation at Toxic Hot Spots sections of this document, identified remediation alternatives occur in various types of habitats. As explained earlier in this FED, provisions of the cleanup plans are expected to result in the removal of pollutants that have adverse effects on plants and animals. This will improve habitat, and encourage development of and protect rare and endangered species as well as fish and wildlife generally. There is a possibility that the quality of the environment could be temporarily degraded and that there could be effects on endangered species if cleanup and mitigation projects are not carefully planned and executed. Potential adverse effects of

identified remediation alternatives vary with different habitats, species, and time of year, as well as methods for remediating the site. Any potential adverse effects would be mitigated through consultation with the DFG and the USFWS. The SWRCB received a CESA consultation letter from DFG during the development and review of the Policy on Guidance for Development of Toxic Hot Spot Cleanup Plans (SWRCB, 1998a; 1998b). The DFG consultation letter reiterated that the toxic hot spot cleanup actions, if implemented by the RWQCBs, would most likely result in the long term in beneficial impacts for threatened and endangered species and the habitat upon which they depend, but it also noted the potential for short-term adverse impacts to threatened and endangered species during the cleanup effort itself if not properly planned. The DFG consultation letter requested that DFG continue to be informed and involved in the evolving toxic hot spot cleanup plans as they were prepared by the RWQCBs, and in fact deferred any final determination of impacts to threatened and endangered species until site specific cleanup plans were actually proposed. Similar DFG consultation letters were prepared for each Regional Toxic Hot Spots Cleanup Plan, again, requesting continued DFG involvement in the review of and comment upon threatened and endangered species potential impacts from project specific actions for cleanup at individual sites. DFG recognized that most negative biological resource impacts, if any, would be minimal and temporary if planned properly.

Table 21 is a list of Federal and State listed endangered and threatened animals which DFG staff (Puckett, pers. comm.) believes could possibly be present, or have habitat they depend on, and thus could possibly be adversely impacted, if only temporarily, during cleanup implementation at the toxic hot spots sites. (Remediation activities in the Central Valley/Delta region bring in many of the non-marine/estuarine species.) According to DFG, there could be others and some of those listed are probably not present at any of the 21 sites; but this provides a broad brush look at species that could be affected. Ultimately, the precise determination of what is present at a particular site will have to come with the definitive project for a site.

TABLE 21: ENDANGERED AND THREATENED ANIMALS THAT MAY BE PRESENT AT IDENTIFIED TOXIC HOT SPOTS

Organism	Classification			
	State	List Date	Federal	List Date
FISHES				
Winter-run chinook salmon[19] (*Oncorhynchus tshawytscha)*	SE[20]	9-22-89	FE[21]	3-23-94
Chinook salmon-Central valley fall/late fall-run ESU[22] (*Oncorhynchus tshawytscha*)			FPT[23,24]	3-9-98
Chinook salmon-So. Oregon & California coastal ESU[25] (*Oncorhynchus tshawytscha)*			FPT	3-9-98
Spring-run chinook salmon (*Oncorhynchus tshawytscha*)	ST	8-28-98[26]	FPT[27]	3-9-98
Coho salmon-Central California ESU (*Oncorhynchus kisutch*)	SE[28]	12-31-95	FT[29]	11-30-96
Coho salmon-Do. Oregon/No. California ESU[30] (*Oncorhynchus kisutch*)			FT	6-5-97
Steelhead-Central California Coast ESU[31] (*Oncorhynchus mykiss*)			FT	10-17-97
Steelhead-South/Central California Coast ESU[32] (*Oncorhynchus mykiss*)			FT	10-17-97
Steelhead-Southern California ESU[33] (*Oncorhynchus mykiss*)			FE	10-17-97
Steelhead-Central Valley ESU[34] (*Oncorhynchus mykiss*)			FT	5-18-98
Sacramento splittail (*Pogonichthys macrolepidotus*)			FPT	1-6-94

[19] Federal: Sacramento River winter run chinook salmon

[20] SE = State-listed Endangered

[21] FE = Federally-listed Endangered

[22] ESU = Evolutionarily Significant Unit

[23] FPT = Federally proposed (Threatened)

[24] Populations spawning in the Sacramento & San Joaquin Rivers and their tributaries

[25] All naturally spawned coastal spring & fall chinook salmon spawning between Cape Blanco, Oregon (inclusive of the Elk River) and Pt. Bonita, California

[26] The Fish & Game Commission has voted to list; administrative rulemaking is in progress

[27] Federal: Central Valley Spring-Run ESU. Includes populations spawning in the Sacramento River & its tributaries

[28] The State listing is limited to Coho south of San Francisco Bay

[29] The federal listing is limited to naturally spawning populations in streams between Punta Gorda, Humboldt Co. & the San Lorenzo River, Santa Cruz Co.

[30] Populations between Cape Blanco, Oregon and Punta Gorda, California

[31] Federal: *Oncorhynchus (=Salmo) clarki seleniris*

[32] Coastal basins from the Russian River, south to Soquel Creek, inclusive. Includes the San Francisco & San Pablo Bay basins, but excludes the Sacramento-San Joaquin River basins

[33] Coastal basins from the Santa Maria River, south to the southern extent of the range (presently considered to be Malibu Creek)

[34] The Sacramento and San Joaquin Rivers and their tributaries

Organism	Classification			
	State	List Date	Federal	List Date
Colorado Squawfish (*Ptychocheilus lucius*)	SE	6-27-71	FE	3-11-67
Unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*)	SE	6-27-71	FE	10-13-70
Tidewater goby (*Eucyclogobius newberryi*)			FE	2-4-94
Rough sculpin (*Cottus asperrimus*)	ST	1-10-74		
AMPHIBIANS				
Santa Cruz long-toed salamander (*Ambystoma macrodactylum croceum*)	SE	6-27-71	FE	3-11-67
California red-legged frog (*Rana aurora draytonii*)			FT	5-20-96
BIRDS				
California brown pelican[35] (*Pelecanus occidentalis californicus*)	SE	6-27-71	FE	10-13-70
Bald eagle	SE(rev)	10-2-80	FT	8-11-95
(*Haliaeetus leucocephalus*)	SE	6-27-71	FE(rev)	2-14-78
			FE	3-11-67
Swainson's hawk (*Buteo swainsoni*)	ST	4-17-83		
Peregrine falcon			FPD	8-26-98
(*Falco peregrinus*)			FE (S/A)[36]	3-20-84
American peregrine falcon	SE	6-27-71	FPD	8-26-98
(*Falco peregrinus anatum*)			FE	10-13-70
California black rail (*Laterallus jamaicensis coturniculus*)	ST	6-27-71		
California clapper rail (*Rallus longirostris obsoletus*)	SE	6-27-71	FE	10-13-70
Light-footed clapper rail (*Rallus longirostris levipes*)	SE	6-27-71	FE	10-13-70
Western snowy plover[37] (*Charadrius alexandrinus nivosus*)			FT	4-5-93
California least tern (*Sterna antillarum browni*)	SE	6-27-71	FE	10-13-70
MAMMALS				
Salt-marsh harvest mouse (*Reithrodontomys raviventris*)	SE	6-27-71	FE	10-13-70

[35] Federal: Brown pelican, *Pelecanus occidentalis*

[36] "(S/A)" is the Federal code for "similarity of appearance". (Not included in counts of listed species)

[37] Federal status applies only to the pacific coastal population

Organism	Classification			
	State	List Date	Federal	List Date
Steller (=northern) sea lion (*Eumetopias jubatus*)			FT	4-5-90
Southern sea otter (*Enhydra lutris nereis*)			FT	1-14-77

Turbidity during dredging activities have the potential to disrupt spawning periods or the migration of fish species or exceedances of water quality objectives. Mitigation to reduce turbidity is discussed in the water quality section of this FED. Impacts to sensitive species can be further mitigated by avoiding dredging and excavation activities during periods when species are spawning or migrating through the remediation site.

Dredging and aquatic disposal normally can result in short-term impacts to benthic communities. However, these communities would be expected to fully recover within a relatively short term (typically 2-3 years).

Another potential adverse impact, which can usually be avoided by proper planning, is the possible disturbance of nesting activities of threatened or endangered bird species, such as snowy plovers, least terns, etc. Cleanup actions would obviously have to be planned to occur in time periods when it would not impact such nesting activities.

Sensitive species may be displaced by removing habitat or threat of burial or contamination of sensitive habitats due to excessive turbidity caused by dredging operations. Mitigation to reduce turbidity is discussed in the water quality section of this FED. Bird species (e.g., least terns) may also be impacted by sediment management activities. Any displaced habitats should be replaced nearby with equal or greater area and density, and restoration of the site or restoration of an offshore location should be required to mitigate for loss of any intertidal habitat.

While in general the DFG believes that remediation of the identified high priority toxic hot spots would benefit endangered species in California (SWRCB, 1998b), the DFG, and where appropriate the USFWS and NMFS, must be consulted as site-specific remediation plans are developed. Under the California

Endangered Species Act, no person can "take" endangered or threatened species, except in cases where the DFG issues an "incidental take" permit. Such a permit can only be issued if all of the following conditions are met (Attwater, 1999):

- The take is incidental to an otherwise lawful activity.
- The impacts of the take are minimized and fully mitigated.
- The permit is consistent with any applicable Department regulations.
- The applicant ensures adequate funding to implement the mitigation measures and for monitoring compliance with, and effectiveness of, those measures.
- Permit issuance would not jeopardize the continued existence of the species.

Mitigation actions DFG has typically required in association with incidental take authorizations and consultations have included:

- Protection of habitat of the affected species
- Establishment of an endowment to manage the protected habitat
- Provision of funds for enhancement of the protected land by fencing, initial trash cleanup, and related measures
- Implementation of various standardized construction avoidance measures
- Implementation of various standardized construction monitoring and reporting actions
- Implementation of other miscellaneous actions to reduce potential impacts; e.g., requiring that construction or operations employees be given orientation and training regarding the sensitive species, their habitats, and actions to be taken to minimize or avoid impact.

The USFWS or NMFS must also be consulted if the remediation is considered to be a federal action. The remediation alternatives that involve the disposal of dredged material in waters of the United States will require consultation with these agencies through CWA Section 404 permitting processes. Involvement of USFWS and NMFS is required in other projects if the actions are authorized, funded, or carried out by federal agencies.

A remediation project cannot proceed if it is determined that the project would jeopardize the continued existence of a endangered species.

Hazards and Polluted Sediments

In any action involving toxic pollutants, there is a potential for release of pollutants due to an accident or upset condition. The potential for such releases can be greatly reduced by proper planning. Measures to prevent releases of toxic pollutants include such things as pollution prevention technology (e.g., automatic sensors and shut-off valves, pressure and vacuum relief valves, secondary containment, air pollution control devices, double walled tanks and piping), access restrictions, fire controls, emergency power supplies, contingency planning for potential spills and releases, pollution prevention training and other types of mitigation appropriate to the cleanup plan.

In southern California, at least one high priority toxic hot spot may have been the site of disposal of ordnance. Dredging near a former explosives disposal area could pose a danger to people, equipment, and wildlife at the dredge site; and to the public at the disposal site. Risk of these potential hazards can be reduced by placing a grate at the dredge cutter head to reject large ordinance; disposal of dredge material where explosives could not cause harm; testing sediment for leakage of explosives; and inspection at disposal site.

Trucking hazardous explosive wastes over bridges or through neighborhoods has the potential to result in possibility of fire or explosion; exclusion of hazardous waste from certain neighborhoods; inability to get bridge-crossing permits in a timely manner. It may be necessary to select a remediation measure such as capping to avoid such hazards. Fuels, lubricating oils, and other petroleum products will be used during cleanup activity. Well established techniques for controlling spills, leaks, and drips will be incorporated in the work plans to assure the control of petroleum products and any other chemicals used during the cleanup activity.

Source Control

The RWQCBs identified source control as a potential remediation approach for some of the high priority toxic hot spots in the proposed Consolidated Plan (see Table 22). A wide range of potential source control measures were identified, and these control

measures are summarized below in Table 22. Project proponents are not, of course, limited to these source control measures.

TABLE 22. SUMMARY OF POTENTIAL SOURCE CONTROL MEASURES IDENTIFIED IN CONSOLIDATED TOXIC HOT SPOTS CLEANUP PLAN

Site	Study	TMDLs	NPS BMPs	Storm water Urban runoff	Public Education	Point source discharges	Other existing plans, policies
Cañada de la Huerta	X						
Delta Estuary Mercury	X	X					
Delta Estuary Pesticides (3 THS)		X	X				
Humboldt Bay "H" Street							
Los Angeles Inner Harbor							
Los Angeles Outer Harbor							
Lower Newport Bay Rhine Channel		X					
McGrath Lake		X	X				
Moss landing Harbor & Tributaries			X	X	X		X
Mugu Lagoon, Calleguas Creek Tidal Prism							
San Diego Bay, 7th Street Channel							
San Francisco Bay, Castro	X						

Site	Study	TMDLs	NPS BMPs	Storm water Urban runoff	Public Education	Point source discharges	Other existing plans, policies
Cove							
San Francisco Bay, Entire Bay	X	X			X		X
San Francisco Bay, Islais Creek	X					X	
San Francisco Bay Mission Creek	X					X	
San Francisco Bay, Peyton Slough	X						X
San Francisco Bay, Point Potrero							
San Francisco Bay, Stege Marsh	X						
San Joaquin River, Dissolved O_2	X	X					
Santa Monica Bay, Palos Verdes Shelf					X		

Some of the actions outlined in the Consolidated Cleanup Plan are related to addressing sources of pollutants in order to reduce the threat on the marine environment. Source control must be accomplished through existing RWQCB authority and includes a wide range of potential actions such as TMDLs, best management practices, the SWRCB and RWQCB stormwater programs, point source treatment, and pretreatment. It is not possible to evaluate the environmental effects of source control per se; one must evaluate the specific source control measure on a site-specific basis. It is not reasonably feasible at this time to evaluate the environmental effects of these hypothetical source control projects or mitigation measures for such hypothetical actions. In addition, as stated earlier in this document, this FED is not intended to take the place of site-specific CEQA review.

While adverse impacts are a possible consequence of source control measures for some sites, these impacts may be minimized or avoided by the implementation of a watershed management approach that balances the potential impacts (and cost effectiveness) of correcting the toxic hot spots. The watershed management approach should involve point and nonpoint dischargers in addressing prevention and remediation of toxic hot spots. The Consolidated Cleanup Plan requires this approach to address prevention of toxic hot spots.

Consequently, the environmental impact of source control efforts that result from a watershed management effort should be analyzed on a site-specific basis once the sites have been selected, and the function and general designs of the actions or facilities have been determined.

Watershed management is actually a process, rather than a regulatory requirement, and it is not possible to evaluate the physical environmental effects of such a process. Compared to the more traditional programmatic, regulatory approach to water management the watershed approach looks at all types of pollution and all sources of pollution. In a collaborative, stewardship effort, local interests are engaged with State and Federal interests, and land managers to work with water managers to solve complex resource management problems. The purpose of watershed management is variously viewed as (1) a method for increasing participation at the local level in water quality protection, (2) an approach to reducing the impact of nonpoint sources, (3) a strategy for integrating management of all components of aquatic

ecosystems, and (4) a process for optimizing the cost effectiveness of a number of point and nonpoint source control efforts.

Water shed management is not a new centralized program that replaces existing programs. The significant advantage of a watershed management approach is it encourages a collaborative process where diverse interests (i.e., individuals, landowners, growers, municipal agencies, industries, environmental groups and agencies) can work in conjunction with the SWRCB and the RWQCB staff to develop a consensus on approaches for addressing water quality problems. Further, watershed management provides a mechanism for considering social and economic interests in the context of solving water quality problems.

Taking a comprehensive approach to addressing pollution problems where point and nonpoint source pollution is considered together provides an opportunity to minimize environmental impacts of future pollutant reductions and consider cost-effectiveness together. It is impossible to predict the outcome of this combined process before it is completed. The potential impacts and mitigation depend on future decisions of watershed groups and the RWQCBs. It is apparent in Table 22 that in many cases, the RWQCB includes further study of the sources of toxic hot spot pollutants prior to selection of control measures. These studies are consistent with the Consolidated Cleanup Plan requirement to address prevention of toxic hot spots through a watershed management effort.

Total Maximum Daily Loads (TMDLs)

TMDLs are required for all waters listed pursuant to CWA Section 303(d)(1)(A). TMDLs establish the amount of a pollutant that may be discharged into a water body and still maintain water quality standards with seasonal variations and a margin of safety that takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. The TMDL process is defined in Federal regulations (40 CFR Section 130.7, revised as of July 1, 1996) and generally consists of five steps:

1. Identification by each state of water quality limited waters that do not now, or are not expected to, attain state water quality standards after implementation of technology-based effluent limitations, more stringent effluent limitations required by

Federal, State, or local authority, and other pollution control requirements (e.g., best management practices) required by local, State, or Federal authority, and identification of impairment;

2. Establishment of priority rankings for the development of TMDLs;

3. Development of waste load allocations for point sources, load allocations for nonpoint sources, and TMDLs;

4. Incorporation of the loadings in the RWQCB basin plans; and

5. Submittal of segments identified, priority ranking and loads established to U.S. EPA for approval.

Development of TMDLs can use the watershed approach to assess and identify water quality limited segments and pollutants causing impairment, identify sources, and allocate pollutant loads. The watershed approach may address a broader range of issues than the TMDLs, but the approach can: (1) result in achieving or maintaining water quality standards so that waters are not added to the 303(d) list; (2) result in water quality improvements, through means other than the TMDL process, so that waters can be removed from the 303(d) list; or (3) be used to develop TMDLs. A watershed group can develop a TMDL if the TMDL complies with applicable Federal requirements.

This Plan does not change the process for or technical development of TMDLs. It would be speculative to try in this FED to identify and evaluate potential environmental impacts of all possible means of implementing a TMDL that has not yet been established. TMDLs must be incorporated in RWQCB basin plans, and RWQCBs must comply with CEQA as part of the Basin Plan revision process.

Nonpoint Sources

Some of the RWQCB Toxic Hot Spot Cleanup Plans identify nonpoint source pollution control as an alternative for source control. Nonpoint source pollution control programs are used by the RWQCBs to protect beneficial uses in waters of the State affected by nonpoint source pollution dischargers. Currently, the SWRCB and RWQCBs are implementing these activities for control of nonpoint source pollution:

- Nonpoint Source Management Plan (adopted by the SWRCB in November 1988);
- Initiatives in Nonpoint Source Management (adopted by the SWRCB and submitted to USEPA in September 1995, implementing the Coastal Zone Act Reauthorization Amendments);
- Management Agency Agreement (MAA) with the Department of Pesticide Regulation (DPR) and the Pesticide Management Plan (PMP) (1997); and the
- Watershed Management Initiative.

The Nonpoint Source Management Plan is the foundation of the SWRCB/RWQCB nonpoint source pollution control program. The NPS Plan states that nonpoint sources are a major cause of water pollution in California and that effective management of nonpoint sources will require:

- An explicit long-term commitment by the SWRCB and the RWQCBs
- More effective coordination of existing SWRCB and RWQCB nonpoint source related programs
- Greater use of RWQCB regulatory authorities coupled with non-regulatory programs
- Stronger links between the local, State, and Federal agencies which have powers that can be used to manage nonpoint sources
- Development of new funding sources.

The NPS Management Plan provides a general approach to addressing all types of nonpoint source discharges. It does not address specific measures for individual types of nonpoint source discharges of sources of nonpoint source pollution. Three management approaches, frequently referred to as the Three-Tier Approach, are presented to address nonpoint source pollution problems. RWQCBs have the discretion to decide whether or what mix of the three options are appropriate to address any given nonpoint source pollution problem. Those management approaches are:

1. Discharger voluntary implementation of BMPs;

2. Regulatory based encouragement of BMP implementation; and

3. Adoption of effluent limitations in WDRs.

BMPs are methods, measures, or practices designed and selected to reduce or eliminate the discharge of nonpoint source pollution. BMPs include structural and non-structural controls, and operation and maintenance procedures which can be applied before, during and/or after pollution producing activities. The NPS Plan also states that "[i]n general the least stringent option that successfully protects or restores water quality will be employed, with more stringent measures considered if timely improvements in beneficial use protections are not achieved." The NPS Plan further states that "[w]hen necessary to achieve water quality objectives, RWQCBs will actively exercise their regulatory authority over nonpoint sources through enforcement of effluent limitations and other appropriate regulatory measures."

The Initiatives in Nonpoint Source Management (Initiatives) were developed in partial response to the Coastal Zone Act Reauthorization Amendments. CZARA requires states to develop and implement an enforceable nonpoint source program for reducing nonpoint source pollution from specific source and land-use categories in coastal areas. The U.S. EPA and the National Oceanic and Atmospheric Agency (NOAA) jointly prepared guidance documents with specific management measures that would fulfill CZARA requirements. Under the SWRCB's NPS Program, technical advisory committees (TAC) were formed to examine the U.S. EPA/NOAA management measures and their applicability to California. TACs were convened regarding: Confined Animals; Irrigated Agriculture; Pesticide Management; Plan Nutrient Management; Range Management; Abandoned Mines; Hydromodification; Wetlands and Riparian Areas; Marina and Recreational Boating; On-site Sewage Disposal Systems; and Urban Runoff. Each TAC prepared its own report with recommendations.

The Coastal Nonpoint Pollution Control Submittal consists of the NPS Plan and the Initiatives. This package was provided to the U.S. EPA and NOAA pursuant to Section 6217 of CZARA in September 1995. The Federal agencies have not taken final actin on the submittal.

The SWRCB and DPR have entered into a MAA to eliminate duplication of effort and inconsistency of actions dealing with pesticide use and water quality (SWRCB and DPR, 1997). The PMP describes how DPR and the County Agriculture

Commissioners will work in cooperation with the SWRCB and the RWQCBs to protect water quality from the use of pesticides. The PMP contains, among other things, provisions for outreach, compliance with water quality objectives, ground and surface water protection, self-regulatory and regulatory compliance. The MAA is a useful tool for addressing nonpoint source runoff.

The Watershed Management Initiative (WMI) will guide a portion of SWRCB and RWQCB work and resource allocation decisions through a comprehensive perspective that considers water-related impacts within the context of a watershed. Under the WMI, each organization is preparing workplans (Chapters) that describe work activities and resource needs for the next five to seven years in targeted and nontargeted areas. The goals of the WMI are to:

1. Integrate water quality monitoring, assessment, planning, standard setting, permit writing, point source regulatory programs, nonpoint source management, ground water protection, and other programs at the SWRCB and RWQCBs to promote more efficient use of personnel and fiscal resources while ensuring maximum water quality protection benefits;

2. Provide water resource protection, enhancement, and restoration while balancing economic and environmental impacts by phasing in an integrated watershed management approach;

3. Promote cooperative relationships and better assist the regulated community and the public. This will require that the WMI approach include coordination with other Federal, State, and local agencies, as well as stakeholder participation in policy development and review; and

4. Reduce the impact of nonpoint source discharges on water quality through voluntary, collaborative decision-making at the local level that is open to all stakeholders.

The RWQCB basin plans provide additional discussion and provisions, such as, conditional waivers of WDRs for some types of nonpoint source discharges including agriculture, silviculture, mining, grazing, marinas and boating, highways, on-site septic systems, and erosion and sediment control. Additionally, the basin plans of San Francisco Bay, Central Valley, Santa Ana, and San Diego RWQCBs have prohibitions of discharge applicable to nonpoint sources.

Adoption of the Consolidated Cleanup Plan would not change the process and requirements for regulation of nonpoint source discharges nor would it change the methods for controlling nonpoint sources. Implementation of this Plan will be consistent with the SWRCB's Nonpoint Source Management Plan. Nonpoint source pollution control can best be achieved through the cooperative efforts of the dischargers, other interested persons, and the SWRCB and RWQCBs. The watershed management approach in the proposed Consolidated Plan embraces this approach.

Storm Water/Urban Runoff

The 1987 amendments to the CWA added Section 402(p) which specified that discharges of storm water from municipal separate storm sewer systems (MS4's) serving a population of 100,000 or more, and from industrial activities (specified at 40 CFR Section 122.26), must be in compliance with NPDES permits (i.e., WDRs).

MS4 Permitting

The RWQCBs have adopted NPDES storm water permits for MS4's required to be permitted and for facilities not suited for coverage under the General Industrial Permit (discussed below). The MS4 permits require the discharger to develop and implement a Storm Water Management Plan whose goal is to reduce the discharge of pollutants to the maximum extent practicable (MEP). MEP is the performance standard specified in Section 402(p) of the Clean Water Act. Components of the storm water management plan address public education and outreach; illicit connection/illegal discharge detection and elimination; fiscal resources; monitoring; and the BMPs which will be used. To date, the efforts of the municipalities subject to MS4 permits have been focused on implementation of BMPs to *reduce* pollutants, rather than on treatment of storm water to *remove* pollutants.

Industrial/construction permitting

The SWRCB has adopted two Statewide NPDES general storm water permits. The first, originally adopted on November 19, 1991, and subsequently reissued on April 17, 1997, addresses storm water discharges associated with 10 broad categories of industrial activities. This permit is known as the General Industrial Permit. The second, adopted on August 20, 1992, addresses storm water discharges associated with construction activities resulting in a land disturbance of at least five acres. This permit is known as

the General Construction Permit. Both of these permits are implemented (inspections, report review, complaint investigation and enforcement) by the RWQCBs.

Both the General Industrial and Construction Permits are NPDES permits and must meet all applicable provisions of Sections 301 and 402 of the Clean Water Act. These permits require the implementation of management measures that will achieve the performance standard of best available technology economically achievable (BAT) and best conventional pollutant control technology (BCT). Both the General Industrial and Construction Permits require the development of a Storm Water Pollution Prevention Plan (SWPPP) and a monitoring plan. The General Industrial Permit requires that an annual report be submitted each July 1; the General construction Permit requires only filing of an annual certification.

Through the SWPPP, sources of pollutants are to be identified and the means to manage the sources to reduce storm water pollution are described. Because of the nature of storm water discharges and the typical lack of information upon which to base numeric water quality based effluent limitations, it has not been feasible for the SWRCB to establish numeric effluent limitations for storm water permits. The effluent limitations contained in the storm water permits (both MS4, and General Industrial and Construction Permits) are, therefore, narrative and include the requirement to implement the appropriate control practices and/or BMPs. BMPs can range from good housekeeping to structural controls.

The proposed Consolidated Cleanup Plan makes no changes in the existing storm water program at the SWRCB and RWQCBs or the way in which BMPs, BAT, or BCT would be implemented, and any of these measures can be developed through a watershed process.

Public Education

Public education is identified as a potential source control measure for several of the toxic hot spots. Public education may include informing people of the risks associated with the site (e.g., informing local persons who consume fish about the health advisories and ways to decrease their risk, posting "no swimming" signs, etc.). Public education can also be used to inform the public of product or replacement in order to decrease concentrations of pollutants. Examples could include use of dioxin free, paper,

limiting use of fireplaces, substitution of mercury containing products. No adverse environmental effects are foreseen due to public education.

Point Source Discharges

Further controls on point source discharges are listed as a potential source control alternative. This source control alternative is only discussed in the Plans as one of several options that may be warranted after further study to delineate the sources of the pollutants of concern for the toxic hot spot. If it is determined that it is necessary to reduce a point source discharge in order to restore beneficial uses at a designated toxic hot spot, these reductions may be accomplished in various ways. Discharge reductions can be accomplished through (1) treatment process optimization (measures facilities can implement to modify or adjust the operating efficiency of the existing wastewater treatment process - such measures usually involve engineering analysis of the existing treatment process to identify adjustments to enhance pollutant removal or reduce chemical additional); (2) waste minimization/pollution prevention costs (conducting a facility waste minimization or pollution prevention study); (3) pretreatment (conducting study of sources and reducing inflow from indirect discharges); or (4) new or additional treatment systems. The construction of additional treatment systems has the most potential for adverse environmental effects, and a CEQA compliance is required for such facility changes.

Actual construction of additional treatment systems for publicly owned or industrial treatment facilities have the potential to result in a wide range of environmental impacts. In order to assess such impacts, first one must know the specific processes that will be added (e.g., settling basins, new biological treatment units, or other treatment (cf., SWRCB, 1998b)); and the environmental setting (land use; geologic characteristics; air quality; fish, wildlife, and plant communities including endangered species; wetlands, ground water characteristics; agricultural land; cultural resources [e.g., archaeological, paleontological, etc.]; floodplain).

Next, it is necessary to identify primary and secondary impacts the facility may have on surface and ground water quality, air quality, geologic stability, soils (erosion) important vegetation types, fish and wildlife, aesthetics, noise, recreation, open space, cultural resources, threatened or endangered species, energy, transportation, public services, population, and housing. In addition to evaluating

these potential impacts, impacts of sludge disposal and outfalls must be evaluated.

In the process of planning and CEQA review, most potential impacts due to construction or modification of treatment facilities are mitigated to less than significant levels. Between 1992 and 1997, the SWRCB Division of Clean Water Programs considered approximately 50 CEQA documents for construction or modification of wastewater facilities. Potential environmental impacts were less than significant for about 80 percent of these projects. About 20 percent of the projects had at least one environmental impact that could not be mitigated to a less than significant level. For these projects, both the discharger and the SWRCB determined that the benefits of the project outweighed the unavoidable impacts, and so the project was approved. (Personal communication, Wayne Hubbard, Division of Clean Water Programs, SWRCB, August 1997.)

Implementation of Existing Plan and Policies

A number of the cleanup plans cite existing programs and policies that will work to reduce sources of pollutants of concern in toxic hot spots. Examples include the Water Quality Protection Program of the Monterey Bay National Marine Sanctuary and the San Francisco RWQCB Mercury Strategy. These programs and policies have their own environmental review and regulatory approval processes, and it is not appropriate to attempt to evaluate them in this FED.

Cumulative Impacts

A listing of other actions that are underway at or near the toxic hot spots is included in the section of this FED titled "Proposed Remediation Approach and Alternatives at Toxic Hot Spots." RWQCBs have developed remediation actions to build on or use the existing efforts to address the toxic hot spot.

It is not possible to assess the total volume of sediment that would be dredged for all high priority toxic hot spots because the information needed to make this estimate is not available for all sites. Some of the mitigation measures address the need to determine the sediment volume to be disposed (e.g., quantifying the volume, compare the volume to be disposed with disposal options available, etc.).

The existing body of laws, regulations, and programs described throughout this FED have established both the requirements to cleanup the identified high priority toxic hot spots and the regulatory framework for protection of the environment during remediation. Remediation and mitigation for any adverse impacts that occur due to remediation are complex matters that can only be determined on a site-specific basis while the actual remediation plans are being developed, impacts are quantified, appropriate mitigation determined, and appropriate legal mandates met. It is not possible to determine at this time whether, after mitigation is incorporated, remediation of the sites will result in any cumulatively considerable effects.

Regardless, from a CEQA compliance perspective, adoption of the proposed Plan does not contribute in a cumulatively considerable way to potential effects of remediation. To the extent that substantive effects to resources may occur, they would originate with the mandates and standards established by the existing body of laws, regulations, and programs that require remediation and environmental protection. SWRCB adoption of the Plan would not contribute to cumulative adverse effects to the environment.

Growth-Inducing Impacts

The proposed Consolidated Cleanup Plan has no effect on parameters that are typically evaluated in addressing potential growth inducement, such as generation of employment opportunities, provision of housing supply, generation of the sale of goods and services, removal of growth obstacles, expansion of infrastructure, or extension of utilities. The proposed Plan would not result in any substantial growth-inducing impacts.

Mitigation For Potentially Significant Adverse Effects of Cleanup

The resources that may be adversely affected by dredging, disposal, and/or capping are protected by a number of existing regulations and agency policies, as well as "policy-level mitigation measures" incorporated in the Consolidated Cleanup Plan. Based on the regulatory requirements to protect the environment and policy-level mitigation, persons implementing remediation will take a number of steps to ensure that potentially significant environmental impacts are minimized or avoided during dredging, disposal, and capping activities (Table 23).

The policy-level mitigation measures contained in the Consolidated Plan differ from project-specific mitigation measures

in that they address potential adverse impacts on a broad and generic level. In this regard, they help direct how and when site-specific measures may be needed to avoid or mitigate potential impacts, but they do not replace the need for site-specific environmental review or mitigation measures.

Many of the policy-level mitigation measures discussed in this document are restatements of existing federal and/or state laws and policies. Project proponents will evaluate proposed remediation plans consistent with these federal and state requirements (e.g., CEQA, Clean Water Act, Porter-Cologne Water Quality Control Act, etc.). The inclusion and coordination of these measures as part of the Cleanup Plans should help to minimize adverse environmental effects.

TABLE 23: POTENTIALLY SIGNIFICANT ADVERSE IMPACTS AND MITIGATION MEASURES.

Type of Remediation Activity	Environmental Factor	Potentially Significant Impact	Mitigation Measures
Dredging, Disposal, Capping, Confined Aquatic Disposal	Air Quality	Emissions from dredging, excavation; transport, disposal, and capping equipment	Use electric dredging equipment; purchase air credits; schedule remediation for time of year that will cause least impacts to air quality; optimize the mode of transportation to reduce air emissions; evaluate and minimize the relative impacts of hauling dredged material by alternate means; favor sites closer to dredge sites; minimize number of trips necessary to transport dredged material to disposal site or rehandling facility; meet requirements of air management plans.
Dredging, Disposal, Capping, Confined Aquatic Disposal		Potential for increased odors if dredged material is reused.	Design and locate reuse facility or other facility to remove impact.
Dredging, Disposal, Capping, Confined Aquatic Disposal	Surface Water	Short-term impact on aquatic resources from high concentrations of chemical concentrations or turbidity	Require the use of dredging equipment or operations that minimize the discharge of chemical pollutants during dredging/capping; reduce impacts by accurate positioning of disposal equipment during dredging; use silt curtains to reduce dispersal beyond dredge/excavation site; use coffer dams in small channels use large settling tanks to reduce excessive turbidity; monitor dredging and disposal activities to assess project is being implemented as authorized and whether disposal of dredged/capping material stays within disposal area or is transported out of the disposal area.
Dredging, Disposal		Runoff from excavation or disposal above sea level	Comply with SWRCB/RWQCB storm water programs and WDRs. Construct storm water system that directs runoff away from sensitive resources and implement BMPs for improve water quality.

Type of Remediation Activity	Environmental Factor	Potentially Significant Impact	Mitigation Measures
Capping, Confined Aquatic Disposal		Leaching of pollutants from capped area into surface sediments and water.	Require a monitoring program to ensure polluted sediments are placed as intended, cap material is placed correctly and the cap is effective in isolating polluted sediments.
Dredging, Disposal		Changes in currents or course/direction of water movements	Removal and placement will attempt to retain regional bottom depth and contour, except where bathymetry is planned for environmental improvement.
Dredging, Disposal	Geology and groundwater	Destabilizing channel slopes and undermining pilings	Use BMPs or standard building practices to reduce instability of pilings and wharves.
		Destabilizing sediments under cap	Incorporate into design, the site depositional/erosional characteristics, current velocities, bathymetry, depth and width to contain spread of materials, etc.
Dredging, Disposal, Capping, Confined Aquatic Disposal	Biological resources	Turbidity disrupting sensitive spawning or migrating fish species or excessive turbidity caused by dredging operation threatening burial or contamination of sensitive habitats; noise, light, or traffic causing seasonal disruption to nesting birds	See surface water mitigation for turbidity. Avoiding dredging operations during periods when species are spawning or migrating through project area; change schedule to avoid bird nesting season; operate during daylight hours; use of silt curtains to reduce dispersal of turbidity plume beyond immediate area.
Dredging, Disposal, Capping, Confined		Sensitive species may be displaced by removing habitat or threat or burial or contamination of sensitive	See surface water mitigation for turbidity. Any displaced habitats should be replaced nearby with equal or greater area and density. Require restoration of the site or restoration of an offshore location to mitigate for loss of intertidal habitat.

Type of Remediation Activity	Environmental Factor	Potentially Significant Impact	Mitigation Measures
Aquatic Disposal		habitats due to excessive turbidity caused by dredging operation.	
Dredging, Disposal, Capping, Confined Aquatic Disposal		Endangered species	For "incidental take" - habitat protection, funding to protect and/or manage habitat, training of construction/operation employees to avoid impacts, implementation of standardized avoidance measures. No project if it would result in jeopardizing continued existence of an endangered species.
Dredging, Disposal, Capping, Confined Aquatic Disposal	Transportation	Access to berths by ships or recreational boating could be altered.	Coordinate/schedule dredging disposal activities with terminal managers/harbor masters. Ensure adequate access channels are available for shipping and other harbor/bay use; operate when vessel traffic minimal; use smaller dredges.
Dredging, Disposal, Capping, Confined Aquatic Disposal	Noise	Operation of dredging operations may cause noise impacts.	Comply with local noise ordinances. Reduce or eliminate noise by using silencers or mufflers on dredging equipment. Consider use of electrical dredging equipment. Reduce noise during night hours. Use smaller dredges.
Dredging, Disposal, Capping, Confined	Hazards and Polluted wastes	Accidental spills/releases from dredging operations	Develop procedures and requirements for loading and unloading polluted sediments to eliminate potential for spillage. Establish in cleanup plan, cleanup procedures if spillage/release occurs.

Type of Remediation Activity	Environmental Factor	Potentially Significant Impact	Mitigation Measures
Aquatic Disposal			
Disposal		Leaching of pollutants into groundwater.	Dry sediments in areas where impermeable liner or membrane blocks leaching.
Disposal		Disposal of polluted sediments may exceed landfill capacities or acceptance criteria.	The areal extent and volume of sediment should be characterized so realistic estimates are available to plan disposal. Reevaluate if impact still exists. Once these estimates still exceed capacities, plan for alternate use of polluted sediments to remove impact. Consider, as appropriate, confined aquatic disposal, wetland restoration, levee reuse. Consider and mitigate site-specific impacts of other alternatives
		Dredging near former explosives disposal area - danger of injury to people, equipment, and wildlife at dredge site; danger to public at disposal site.	Placing grate at dredge cutter head to reject large ordinance; disposal of dredge material where explosives could not cause harm; testing sediment for leakage of explosives; inspection at disposal site.
Dredging, Disposal, Capping, Confined Aquatic Disposal		Trucking hazardous or explosive wastes over bridges or through neighborhoods - possibility of fire or explosion, exclusion of hazardous waste from certain neighborhoods, inability to get bridge-crossing permits in timely manner.	Selection of feasible alternative mitigation measure such as capping, or in-situ or ex-situ treatment near dredge site.

Unavoidable Adverse Impacts

It is too speculative to determine that toxic hot spot remediation will not result in any significant adverse impacts that cannot be mitigated to a level where there is no impact or the impact is less than significant. In this FED, we have identified potentially significant impacts that could occur due to the remediation alternatives identified in the Consolidated Cleanup Plan. We have incorporated into the Plan, mitigation that could be used to lessen or avoid such potential effects. As long as the mitigation measures of the proposed Plan are considered, and all applicable laws, and local, State, and Federal regulations and policies are complied with, remediation is not expected to result in significant adverse environmental impacts.

As stated earlier in this document, this FED is not meant to take the place of site-specific CEQA compliance, including site-specific determination as to what mitigation is necessary to avoid significant adverse impacts or reduce them to less than significant levels. We recognize that a site-specific evaluation of environmental effects of remediation, and whether mitigation measures can reduce impacts to less than significant levels, is necessary before it is possible to determine with certainty whether there will be significant adverse effects of remediation.

The action of adoption of the Consolidated Cleanup Plan by the SWRCB will not result in significant adverse impacts. Any adverse environmental effects that may occur due to remediation under the proposed Plan would be substantially the same as environmental effects of remediation if the Plan is not adopted. As explained earlier in this section of the FED, both the regulatory framework requiring remediation and the regulatory framework protecting the environment against adverse affects of remediation, are unchanged by the adoption of the proposed Plan. In other words, the Plan will neither affect the requirements for remediation nor the way in which the environment is protected against adverse effects through permitting, CEQA, WDRs, etc. It can be reasonably argued that by listing potential mitigation measures in the Plan, these mitigation measures will be considered as site-specific remediation efforts are developed, and may, therefore lessen or avoid the potential for adverse effects.

ENVIRONMENTAL CHECKLIST

1. Project title: Consolidated Toxic Hot Spots Cleanup Plan

2. Lead agency name and address: State Water Resources Control Board
   901 P Street
   Sacramento, CA 95814

3. Contact person and phone number: Craig J. Wilson, (916) 657-0671

4. Project location: Please refer to the FED for description (Project Definition and Figure 1)

5. Project sponsor's name and address: State Water Resources Control Board
   901 P Street
   Sacramento, CA 95814

6. General plan designation: Not Applicable

7. Zoning: Not Applicable

8. Description of project: Please refer to the Project Description Section of the FED.

9. Surrounding land uses and setting: Please refer to the FED for description (Environmental Setting at Toxic Hot Spots)

10. Other public agencies whose approval is required: Office of Administrative Law (for the regulatory provisions of the Consolidated Toxic Hot Spots Cleanup Plan only)

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

[ ] Land Use and Planning	[ ] Transportation/Circulation	[ ] Public Services
[ ] Population and Housing	[ ] Biological Resources	[ ] Utilities and Service Systems
[ ] Geological Problems	[ ] Energy and Mineral Resources	[ ] Aesthetics
[ ] Water	[ ] Hazards	[ ] Cultural Resources
[ ] Air Quality	[ ] Noise	[ ] Recreation
	[ ] Mandatory Findings of Significance	

Environmental Impacts:

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
I. LAND USE AND PLANNING. *Would the proposal:*				
a. Conflict with general plan designation or zoning? (*source #:* 1)	[ ]	[ ]	[ ]	[X]
b. Conflict with applicable environmental plans or policies adopted by agencies with jurisdiction over the project? (2)	[ ]	[ ]	[ ]	[X]
c. Be incompatible with existing land use in the vicinity? (1)	[ ]	[ ]	[ ]	[X]
d. Affect agriculture resources or operations (e.g. impacts to soils or farmlands or impacts from incompatible land uses)? (3)	[ ]	[ ]	[ ]	[X]
e. Disrupt or divide the physical arrangement of an established community (including a low- income or minority community)? (1)	[ ]	[ ]	[ ]	[X]
II. POPULATION AND HOUSING. *Would the proposal:*				
a. Cumulatively exceed official regional or local population projections? (4)	[ ]	[ ]	[ ]	[X]
b. Induce substantial growth in an area either directly or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure)? (4)	[ ]	[ ]	[ ]	[X]
c. Displace existing housing especially affordable housing? (4)	[ ]	[ ]	[ ]	[X]
III. GEOLOGIC PROBLEMS. *Would the proposal result in or expose people to potential impacts involving:*				
a. Fault rupture? (5)	[ ]	[ ]	[ ]	[X]
b. Seismic ground shaking? (5)	[ ]	[ ]	[ ]	[X]
c. Seismic ground failure, including liquefaction? (5)	[ ]	[ ]	[ ]	[X]
d. Seiche, tsunami, or volcanic hazard? (5)	[ ]	[ ]	[ ]	[X]
e. Landslides or mudflows? (5)	[ ]	[ ]	[ ]	[X]
f. Erosion, changes in topography or unstable soil conditions from excavation, grading or fill? (6)	[ ]	[X]	[ ]	[ ]
g. Subsidence of the land? (5)	[ ]	[ ]	[ ]	[X]
h. Expansive soils? (5)	[ ]	[ ]	[ ]	[X]
i. Unique geologic or physical features? (5)	[ ]	[ ]	[ ]	[X]

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. WATER. *Would the proposal result in:*				
a. Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff? (6)	[ ]	[X]	[ ]	[ ]
b. Exposure of people or property to water related hazards such as flooding? (5)	[ ]	[ ]	[ ]	[X]
c. Discharge into surface water or other alteration of surface water quality (e.g. temperature, dissolved oxygen or turbidity)? (6)	[ ]	[X]	[ ]	[ ]
d. Changes in the amount of surface water in any water body? (6)	[ ]	[ ]	[ ]	[X]
e. Changes in currents or the course or direction of surface water movements? (6)	[ ]	[X]	[ ]	[ ]
f. Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations or through substantial loss of ground water recharge capability? (5)	[ ]	[ ]	[ ]	[X]
g. Altered direction or rate of flow of ground water? (5)	[ ]	[ ]	[ ]	[X]
h. Impacts to ground water quality? (6)	[ ]	[X]	[ ]	[ ]
i. Substantial reduction in the amount of ground water otherwise available for public water supplies? (5)	[ ]	[ ]	[ ]	[X]
V. AIR QUALITY. *Would the proposal:*				
a. Violate any air quality standard or contribute to an existing or projected air quality violation? (7)	[ ]	[X]	[ ]	[ ]
b. Expose sensitive receptors to pollutants? (7)	[ ]	[ ]	[ ]	[X]
c. Alter air movement, moisture, or temperature, or cause any change in climate? (8)	[ ]	[ ]	[ ]	[X]
d. Create objectionable odors? (7)	[ ]	[X]	[ ]	[ ]
VI. TRANSPORTATION/CIRCULATION. *Would the proposal result in:*				
a. Increased vehicle trips or traffic congestion? (5)	[ ]	[ ]	[ ]	[X]
b. Hazards to safety from design features (e.g. farm equipment)? (5)	[ ]	[ ]	[ ]	[X]
c. Inadequate emergency access or access to nearby uses? (5)	[ ]	[ ]	[ ]	[X]
d. Insufficient parking capacity on- site or off- site? (5)	[ ]	[ ]	[ ]	[X]
e. Hazards or barriers for pedestrians or bicyclists? (5)	[ ]	[ ]	[ ]	[X]

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
f. Rail, waterborne or air traffic impacts? (9)	[ ]	[X]	[ ]	[ ]
g. Conflicts with adopted policies supporting transportation (e.g., bus turnouts, bicyclists racks)? (5)	[ ]	[ ]	[ ]	[X]
VII. BIOLOGICAL RESOURCES. *Would the proposal result in impacts to:*				
a. Endangered, threatened or rare species or their habitats (including but not limited to plants, fish, insects, animals, and birds)? (10)	[ ]	[X]	[ ]	[ ]
b. Locally designated species? (10)	[ ]	[X]	[ ]	[ ]
c. Locally designated natural communities (e.g. oak forest, coastal habitat, etc.)? (10)	[ ]	[X]	[ ]	[ ]
d. Wetland habitat (e.g. marsh, riparian and vernal pool)? (11)	[ ]	[X]	[ ]	[ ]
e. Wildlife dispersal or migration corridors? (10)	[ ]	[X]	[ ]	[ ]
VIII. ENERGY AND MINERAL RESOURCES. *Would the proposal:*				
a. Conflict with adopted energy conservation plans? (12)	[ ]	[ ]	[ ]	[X]
b. Use non- renewable resources in a wasteful and inefficient manner? (12)	[ ]	[ ]	[ ]	[X]
c. Result in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the State? (12)	[ ]	[ ]	[ ]	[X]
IX. HAZARDS. *Would the proposal involve*:				
a. A risk of accidental explosion or release of hazardous substances (including, but not limited to: oil, pesticides, chemicals or radiation)? (13)	[ ]	[ ]	[ ]	[X]
b. Possible interference with an emergency response plan or emergency evacuation plan? (5)	[ ]	[ ]	[ ]	[X]
c. The creation of any health hazard or potential health hazard? (5)	[ ]	[ ]	[ ]	[X]
d. Exposure of people to existing sources of potential health hazards? (13)	[ ]	[ ]	[ ]	[X]
e. Increased fire hazard in areas with flammable brush, grass, or trees? (5)	[ ]	[ ]	[ ]	[X]
X. NOISE. *Would the proposal result in:*				
a. Increases in existing noise levels? (14)	[ ]	[X]	[ ]	[ ]

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
b. Exposure of people to severe noise levels? (14)	[ ]	[ ]	[ ]	[X]
XI. PUBLIC SERVICES. *Would the proposal have an effect upon or result in a need for new or altered government services in any of the following areas:*				
a. Fire protection? (15)	[ ]	[ ]	[ ]	[X]
b. Police protection? (15)	[ ]	[ ]	[ ]	[X]
c. Schools? (15)	[ ]	[ ]	[ ]	[X]
d. Maintenance of public facilities, including roads? (15)	[ ]	[ ]	[ ]	[X]
e. Other governmental services? (15)	[ ]	[ ]	[ ]	[X]
XII. UTILITIES AND SERVICE SYSTEMS. *Would the proposal result in a need for new systems or supplies or substantial alterations to the following utilities:*				
a. Power or natural gas? (16)	[ ]	[ ]	[ ]	[X]
b. Communications systems? (16)	[ ]	[ ]	[ ]	[X]
c. Local or regional water treatment or distribution facilities? (16)	[ ]	[ ]	[ ]	[X]
d. Sewer or septic tanks? (17)	[ ]	[X]	[ ]	[ ]
e. Storm water drainage? (17)	[ ]	[X]	[ ]	[ ]
f. Solid waste disposal? (17)	[ ]	[X]	[ ]	[ ]
g. Local or regional water supplies? (17)	[ ]	[ ]	[ ]	[X]
XIII. AESTHETICS. *Would the proposal:*				
a. Affect a scenic vista or scenic highway? (5)	[ ]	[ ]	[ ]	[X]
b. Have a demonstrable negative aesthetic effect? (5)	[ ]	[ ]	[ ]	[X]
c. Create light or glare? (5)	[ ]	[ ]	[ ]	[X]
XIV. CULTURAL RESOURCES. *Would the proposal:*				
a. Disturb paleontological resources? (5)	[ ]	[ ]	[ ]	[X]
b. Disturb archaeological resources? (5)	[ ]	[ ]	[ ]	[X]
c. Affect historical resources? (5)	[ ]	[ ]	[ ]	[X]
d. Have the potential to cause a physical change which would affect unique ethnic cultural values? (5)	[ ]	[ ]	[ ]	[X]

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
e. Restrict existing religious or sacred uses within the potential impact area? (5)	[ ]	[ ]	[ ]	[X]
XV. RECREATION. *Would the proposal:*				
a. Increase the demand for neighborhood or regional parks or other recreational facilities? (18)	[ ]	[ ]	[ ]	[X]
b. Affect existing recreational opportunities? (18)	[ ]	[ ]	[ ]	[X]
XVI. MANDATORY FINDINGS OF SIGNIFICANCE				
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self- sustaining levels, threaten to eliminate a plant or animal community. Reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? (19)	[ ]	[X]	[ ]	[ ]
b. Does the project have the potential to achieve short- term, to the disadvantage or long- term, environmental goals? (20)	[ ]	[ ]	[ ]	[X]
c. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects). (21)	[ ]	[ ]	[ ]	[X]
d. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? (22)	[ ]	[ ]	[ ]	[X]

XVII. EARLIER ANALYSES.

a. Earlier analyses used.

The SWRCB analyzed the environmental impacts of the Water Quality Control Policy for Guidance on the Development of Regional Toxic Hot Spot Cleanup Plans (SWRCB, 1998a). The impacts related to the specific definition of a toxic hot spot, ranking criteria, potential remediation activities, prevention activities, and benefits of remediation were addressed. The documents are available upon request.

b. Impacts adequately addressed.

The environmental impacts of the specific definition of a toxic hot spot, ranking criteria, remediation approaches, prevention activities, benefits of remediation, and cleanup plan contents were addressed in the earlier analysis described above. No mitigation measures were proposed because no impacts were identified.

c. Mitigation measures.

None used.

DETERMINATION

Based on the evaluation in the FED (Potential Adverse Environmental Effects Section), I find that SWRCB adoption of the proposed Consolidated Toxic Hot Spots Cleanup Plan will not have a significant adverse effect on the environment.

April 2, 1999
Date

Stanley M. Martinson, Chief
Division of Water Quality
State Water Resources Control Board

Attachment to CEQA Environmental Checklist

1. (I.a., c., e.) General plans and zoning delineate those areas that will be developed, and the type and density of development to be allowed. There is nothing in the proposed Plan that requires the property in the area of remediation activities to be used in any way.

2. (I.b.) The proposed Plan provides that remediation activities will occur within existing local, State, and Federal laws and policies. It does not impose new regulatory requirements that would cause conflicts with existing plans or policies.

3. (I.d.) Remediation of toxic hot spots would not cause impacts to soils or farmlands or create incompatible uses. Any needed source reduction of pesticides would be consistent with the existing SWRCB/RWQCB framework for reducing nonpoint sources which is best achieved through the cooperative efforts of the dischargers, other interested parties, and the SWRCB and RWQCBs; and the Memorandum of Understanding with the Department of Pesticide Regulation.

4. (II. a.,b.,c.) See discussion of growth-inducing impacts.

5. (III.a.,b.,c.,d.,e.,g.,h.,i.; IV.b.,f.,g.,i.; VI.a.,b.,c.,d.,e.,g.; IX.b.,c.,e.; XIII.a.,b.,c.; XIV.a.,b.,c.,d.,e.): See discussion of potential impacts of constructing or modifying publicly owned wastewater or industrial treatment facilities.

6. (III.f.;IV.a.,c.,d.,e.,h.) See discussion of potential impacts to water resources.

7. (V.a.,b.,d.) See discussion of potential impacts to air quality, and exposure to hazards.

8. (V.c.) There is no evidence that remediation of toxic hot spots significantly impacts temperature, humidity, precipitation, winds, cloudiness, or other atmospheric conditions.

9. (VI.f.) See discussion of potential impacts to waterborne traffic.

10. (VII.a.,b.,c.,e.) See discussion of potential impacts to biological resources.

11. (VII.d.) See discussion of potential impacts to water resources (including wetlands).

12. (VIII.a.,b.,c.) There is no evidence that remediation would conflict with any energy conservation plans, use resources in a wasteful manner, or result in loss of a known mineral resource.

13. (IX.a.,d.) See discussion of potential hazards.

14. (X.a.,b.) See discussion of noise impacts.

15. (XI.a.,b.,c.,d.,e.) Remediation of toxic hot spots will not result in the need for new government services for fire or police protection, education, or maintenance of public services.

16. (XII.a.,b.,c.) Remediation of toxic hot spots would not result in a need for new systems or substantial alterations to the following utilities: power or natural gas, communications, local or regional water supplies.

17. (XII.d.,e.,f.,g.) Source control for toxic hot spots could result in a need for new systems or alterations to these types of utilities and service systems. See discussion of the potential need for these systems.

18. (XV.a.,b.) Cleanup of toxic hot spots would not create additional demand for parks or recreational facilities, but would have a positive impact on existing recreational opportunities such as fishing and swimming.

19. (XVI.a.) See discussion of biological effects.

20. (XVI.b.) See discussion of cumulative impacts.

21. (XVI.c.) See discussion of cumulative impacts.

22. (XVI.d.) See discussion of potential hazards.

COMMENTS AND RESPONSES

On April 2, 1999, a public notice for the public hearing was circulated to the public and a draft FED (SWRCB, 1999) was made available for public review. The hearing notice was also published in several newspapers with circulation in coastal areas. The list of persons who submitted written comments or oral testimony is listed below. A key for reading the comment and response table follows the list of commenters. Finally, a table is presented with a summary of all comments submitted and the SWRCB response to each comment.

List of Commenters

Individuals or organizations that submitted written comments on the proposed Consolidated Toxic Hot Spots Cleanup Plan on or before June 2, 1999 are listed below. The comments received after June 2, 1999 and before the close of the hearing record were responded to at the June 17, 1999 Board Meeting. All comments presented at the hearing and workshops were addressed.

1. Postcards received from 885 concerned citizens from the San Diego Bay area

2. Senator Dede Alpert
   Thirty-Ninth Senatorial District
   State Capitol
   Sacramento, CA 95814

3. Dennis A. Dickerson
   Executive Officer
   Los Angeles Regional Water Quality Control Board
   320 W. 4th Street, Suite 200
   Los Angeles, CA 90013

4. Joe Jaffe
   Comment sent by E-mail

5. John H. Robertus
   Executive Officer
   San Diego Regional Quality Control Board
   9771 Clairemont Mesa Boulevard, Suite A
   San Diego, CA 92124-1324

6. Susan A. Davis
   Assemblywoman
   Seventy-Sixth District
   State Capitol
   P.O. Box 942849
   Sacramento, CA 92429-0001

7. Steven L. Ogles
   Coronado Friends of the Beach
   826 Orange Avenue, #236
   Coronado, CA 92118

8. Kim and Victor Flake
1867 Hill Top Lane
Encinitas, CA 92024-1973

9. Tom Collins
Deputy Director
Administrative Affairs
Associate Vice Chancellor,
Marine Sciences
University of California, San Diego
9500 Gilman Drive
La Jolla, CA 92093-0210

10. Helge Weissig, Ph.D.
Chair, San Diego Chapter
Surfrider Foundation
P.O. Box 230754
Encinitas, CA 92023

11. Mark Harris
Comment sent by E-mail

12. Howard Wayne
Chair, Assembly Natural
Resources Committee
State Capitol
P.O. Box 942849
Sacramento, CA 94249-0001

13. John Barth
Executive Director, pro tem
San Diego BayKeeper
1450 Harbor Island Drive, Suite 205
San Diego, CA 92101

14. Donna Frye
Founder, Surfers Tired of Pollution
(S.T.O.P.)
705 Felspar Street
San Diego, CA 92109

15. Scott Folwarkow, Chair
Bay Protection and Advisory Toxic
Cleanup Program Advisory
Committee
c/o P.O. Box 944213
Sacramento, CA 94244-2130

16. Sonya Holmquist
2746 Copley Avenue
San Diego, CA 92101

17. Christopher Gomez
4486 Bancroft #3
San Diego, CA 92116

18. Norma Sullivan
5858 Scripps Street
San Diego, CA 92122

19. Bart Ziegler, Ph.D.
Comment sent by email

20. Senator Steve Peace
Fortieth Senatorial District
State Capitol
Sacramento, Ca 94814

21. Manuel Valencia
United Waterfront Council of San
Diego
2842 Main Street
San Diego, Ca 92113

22. Earle Callahan
860 Cabrillo Avenue
Coronado, CA 92118

23. Randy DeGregori, Chief Lifeguard
Los Angeles County Fire
Department
Lifeguard Division
Santa Monica Bay Restoration
Project Watershed Council
1320 North Eastern Avenue
Los Angeles, CA 90063-3294

24. Nicole Capretz
Clean Bay Campaign Associate
Environmental Health Coalition
1717 Kettner Boulevard, Suite 100
San Diego, CA 92101

25. Jim Coatsworth
Friends of South Bay Wildlife
P.O. Box 575
Imperial Beach, CA 91933

26. Patricia McCoy
Southland Wetlands Interpretative Association
P.O. Box 575
Imperial Beach, CA 92032

27. Carol Jahnkow
Executive Director
The Peace Resource Center of San Diego
5717 Lindo Paseo
San Diego, CA 92115

28. Jerry Butkiewicz
Secretary-Treasurer
San Diego-Imperial Counties Labor Council
4265 Fairmount Ave., Suite 100
San Diego, CA 92105

29. William J. Costa
Coordinator
Intergovernmental Review Program
Department of Transportation
Transportation Planning-MS 32
1120 N Street
P.O. Box 942873
Sacramento, CA 94273-0001

30. Nicole Capretz
Clean Bay Campaign Associate
Environmental Health Coalition
1717 Kettner Boulevard, Suite 100
San Diego, CA 92101

31. Paul C. Blackburn
Conservation Coordinator
Sierra Club, San Diego Chapter
3820 Ray Street,
San Diego, CA 92104-3623

32. Diane Rose
Mayor
City of Imperial Beach, California
825 Imperial Beach Boulevard
Imperial Beach, CA 91932

33. Dean Rundle
Refuge Manager
United States Department of the Interior
San Diego National Wildlife Refuge Complex
2736 Loker Avenue West, Suite A
Carlsbad, CA 92008

34. Nicole Capretz
Clean Bay Campaign Associate
Environmental Health Coalition
1717 Kettner Boulevard, Suite 100
San Diego, CA 92101

35. Carol A. Williams and
Michael L. Lewis
Comment received by E-mail

36. Michael Beck, President
The League of Conservation Voters
San Diego
P.O. Box 82851
San Diego, CA 92138-2851

37. Terry Roberts
Senior Planner
State Clearinghouse
Governor's Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95812-3044

38. Professor Edward T. Wei
University of California, Berkeley
School of Public Health
Earl Warren Hall
Berkeley, CA 94720-7360

39. David L. Malcolm
Commissioner
Port of San Diego
P.O. Box 488
San Diego, CA 92112

40. R. A. McCarthy Jr.
Environmental Manager
Continental Maritime of San Diego, Inc.
1995 Bay Front Street
San Diego, CA 92113-2122

41. Steven B. Treanor
Superintendent
Channel Coast District
Department of Parks and Recreation
1933 Cliff Drive, Suite 27
Santa Barbara, CA 93109

Donald L. Lollock, Chief
Scientific Program
Office of Spill Prevention and Response
Department of Fish and Game
1700 K Street
Sacramento, CA 95814

42. Nicole Capretz
Clean Bay Campaign Associate
Environmental Health Coalition
1717 Kettner Boulevard, Suite 100
San Diego, CA 92101

43. Donald L. Lollock, Chief
Scientific Program
Office of Spill Prevention and Response
Department of Fish and Game
1700 K Street
Sacramento, CA 95814

44. John H. Robertus
Executive Officer
San Diego Regional Water Quality Control Board
9771 Clairemont Mesa Boulevard, Suite A
San Diego, CA 92124-1324

45. Dennis Bouey
Executive Director
Port of San Diego
P.O. Box 120488
San Diego, CA 92112-0488

46. Paul N. Singarella
Latham & Watkins, Attorneys at Law
650 Town Center Drive, Suite 2000
Costa Mesa, CA 92626-1925

47. Paul Helliker, Director
Department of Pesticide Regulation
830 K Street
Sacramento, CA 95814-3510

48. Carl W. Mosher
Director
Environmental Services Department
City of San Jose
777 North First Street, Suite 450
San Jose, Ca 95112-8311

49. William J. Thomas
California Grape and Tree Fruit League
770 L Street, Suite 1150
Sacramento, CA 95814-3325

50. Bill Jennings
Deltakeeper
3536 Rainier Avenue
Stockton, CA 95204

Summary of Comments and Responses

Key for Reading the Comments and Responses Table

Column 1	**Comment Number:** Each comment has been assigned a comment number consisting of two parts, which are separated by a period. Starting from the left, the comment number begins with a number representing the interested party that submitted the comment. The list of commenters, with their assigned codes, is provided in the previous sub-section. Following the comment number is a number that represents the individual comment presented in the submittal or testimony.
Column 2	**Summary of Comment:** The column provides a summary of each individual comment the SWRCB received on the April 1999 draft Consolidated Toxic Hot Spots Cleanup Plan. Comments not related to the draft FED or focused on Guidance Policy (SWRCB, 1998a) issues already addressed are acknowledged.
Column 3	**Response:** The column contains the SWRCB response to each comment.
Column 4	**Revision:** This column states whether the proposed Consolidated Plan was revised based on the comment.
Column 5	**Section/Area:** This column provides the section addressed in the draft FED (SWRCB, 1999). If the comment was not focused on any specific section or area, no section is listed.

Summary of Comments and Responses

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
1.1	Thank you for your commitment to protecting our bays and estuaries.	Comment acknowledged.	No	
1.2	The San Diego Regional Water Quality Control Board has given a high priority to only one site. This is unacceptable!"	The San Diego RWQCB used each provision of the Guidance Policy to assemble the candidate toxic hot spot list and to rank sites. The Guidance Policy provides the RWQCB with significant flexibility to interpret the Policy to incorporate a regional perspective and priorities. The San Diego RWQCB considered the range of comments on the site ranking and performed a careful assessment of the provisions of the Guidance Policy. The RWQCB ranking is consistent with the Guidance Policy. However, San Diego Bay is an important economic and environmental resource that deserves aggressive protection of beneficial uses. The RWQCB should begin the process of planning to cleanup all the toxic hot spots in the Bay. The Consolidated Plan has been modified to create a new section that focuses new attention on remediation of toxic hot spots in San Diego Bay. It is proposed that the RWQCB be directed to develop characterizations and remediation plans for the moderate toxic hot spots listed for San Diego Bay. The RWQCB should also be directed to complete this activity within one year of the effective date of the Consolidated Plan.	No change regarding changing the rank of the toxic hot spots. Yes regarding requiring the RWQCBs to develop plans for remediating moderate rank toxic hot spots.	Regional Toxic Hot Spots Cleanup Plan, San Diego Region and the Consolidated Cleanup Plan. Volume I
1.3	Please protect San Diego Bay by exposing the cover up....	The San Diego RWQCB devoted a great deal of effort to include the public and interested parties in the creation of the regional cleanup plan. In late 1997 the preliminary regional plan was discussed in a RWQCB public hearing. Since the fall of 1998 the	No	Regional Toxic Hot Spots Cleanup Plan, San Diego

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
		RWQCB has had a Bay Cleanup web page to present the Plan, present responses to public comments, and to solicit comments. After the SWRCB adopted its Guidance Policy for regional cleanup plans in September 1998, the San Diego RWQCB hosted several public meetings: • Staff public workshop to discuss the approach for determining the presence of toxic hot spots in the San Diego Region • Staff public workshop to discuss the data and technical issues • Regional Board public workshop to hear testimony on the regional plan • Regional Board public hearing Individuals representing conservation, industry, and government organizations attended these events. The RWQCB members considered oral testimony and written comments on the Regional Toxic Hot Spots Cleanup Plan at their November and December 1998 meetings. A discussion was held at the December 16, 1998 RWQCB meeting on the issue of toxic hot spot site rankings.		Region
1.4	Please protect San Diego Bay by ... listing all of our toxic hot spots as a high priority in the Consolidated Statewide Cleanup Plan.	The San Diego RWQCB considered written and oral comments on the toxic hot spots ranking in San Diego Bay. The RWQCB exercised their discretion in ranking sites in San Diego Bay consistent with the SWRCB Guidance Policy. There appears to be substantial evidence in the record to support the RWQCB's site ranking. However, San Diego Bay is of such importance that the RWQCB should be directed to begin planning for the remediation of the moderate priority toxic hot spots. Please refer to the response for Comment No. 1.2.	Yes	Regional Toxic Hot Spots Cleanup Plan, San Diego Region
2.1	I am pleased that the state and regional boards are	Comment acknowledged.	No	

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
	developing plans to clean up and prevent toxic hot spots in San Diego and other coastal areas.			
2.2	Concerned about the priority ranking of San Diego Bay's hot spots...only one has been designated high priority.	Please refer to Responses for Comments 1.2 and 1.4.	Yes	Regional Toxic Hot Spots Cleanup Plan, San Diego Region
2.3	Urge the state Board to rank all five of San Diego's hot spots a high priority.	Please refer to Responses for Comments 1.2 and 1.4.	Yes	Regional Toxic Hot Spots Cleanup Plan, San Diego Region
3.1	We intend to add McGrath Lake to our region's list of Candidate Toxic Hot Spots. We recently received the results from a Water and Sediment Characterization Study of McGrath Lake...based on this new monitoring data, McGrath Lake clearly qualifies for designation as a "Candidate Toxic Hot Spot".	The information needed to list McGrath Lake as a high priority toxic hot spot was submitted by the Los Angeles RWQCB, DFG and the Department of Parks and Recreation. The new information show that McGrath Lake can be listed as a candidate toxic hot spot and satisfies the conditions needed to rank the site as high priority. The RWQCB has also submitted the characterization and remedial action for McGrath Lake. The Consolidated Cleanup Plan has been modified to include McGrath Lake as a high priority toxic hot spot.	Yes	FED, Consolidated Cleanup Plan, and Regional Toxic Hot Spots Cleanup Plan, Los Angeles Region
4.1	List all of San Diego toxic hot spots as high priority.	Please refer to Response for Comments 1.2 and 1.4.	Yes	Regional Toxic Hot Spots Cleanup Plan, San Diego Region
5.1	Duplicate entries were inadvertently included in the copy of the San Diego Region sites of concern list sent to the State Board. Pages 9-16 through 9-19 of the attached list should be concerned.	Changes will be made as necessary. The duplicate sites of concern have been deleted.	Yes	Regional Toxic Hot Spots Cleanup Plan,

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
				San Diego Region
6.1	I am pleased that the State and Regional Boards are developing plans to clean up and prevent toxic hot spots in San Diego and other coastal areas.	Comment acknowledged.	No	
6.2	Concerned about the priority ranking of the San Diego hot spots. Only one is designated high priority.	Please refer to responses for Comments 1.2 and 1.4.	Yes	Regional Toxic Hot Spots Cleanup Plan. San Diego Region
6.3	Urge the State Board to rank all five of San Diego's hot spots a high priority.	Please refer to responses for Comments 1.2 and 1.4.	Yes	Regional Toxic Hot Spots Cleanup Plan. San Diego Region
7.1	Reevaluate and assign high priority to all sites in San Diego Bay.	Please refer to responses for Comment 1.2 and 1.4.	Yes	Regional Toxic Hot Spots Cleanup Plan. San Diego Region
8.1	Thank you for your commitment to protecting our bays and estuaries.	Comment acknowledged.	No	
8.2	The San Diego Regional Water Quality Control Board has given a high priority to only one site. This is unacceptable.	Please refer to responses for Comments 1.2 and 1.4.	Yes	Regional Toxic Hot Spots Cleanup Plan. San Diego Region
8.3	Please list all of the toxic hot spots in San Diego Bay in the Consolidated Statewide Cleanup Plan.	Please refer to responses for Comments 1.2 and 1.4.	Yes	Regional Toxic Hot Spots Cleanup Plan,

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
				San Diego Region
9.1	Pleased that the State and Regional Water Boards are developing plans to clean up and prevent toxic hot spots in San Diego.	Comment acknowledged.	No	
9.2	Concerned about the priority ranking of San Diego hot spots...only one has been designated high priority.	Please refer to responses for Comments 1.2 and 1.4.	Yes	Regional Toxic Hot Spots Cleanup Plan, San Diego Region
9.3	Urge the State Board to rank all five of San Diego's hot spots a high priority.	Please refer to responses for Comments 1.2 and 1.4.	Yes	Regional Toxic Hot Spots Cleanup Plan, San Diego Region
10.1	Concerned with the contamination of San Diego Bay.	Comment acknowledged.	No	
10.2	We appreciate that the Regional Water Quality Control Board has identified five toxic hot spots in accordance with the State Board's guidelines.	Comment acknowledged.	No	
10.3	We are concerned that only one of the five worst toxic hot spots has been given high priority .	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Regional Toxic Hot Spots Cleanup Plan, San Diego Region
10.4	Urge the State Board to reevaluate their rankings and give all (San Diego) sites a high priority.	Please refer to responses for Comments 1.2 and 1.4.	Yes	Regional Toxic Hot Spots Cleanup Plan. San Diego Region
11.1	Please continue to protect our San Diego Bays from Toxic Waste.	Comment acknowledged.	No	

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
12.1	Request that the state water board rank all five of the hot spots in San Diego Bay as "high priority" for remediation. Request that the state board take aggressive steps to ensure that additional contamination is prevented.	Please refer to responses for Comments 1.2 and 1.4.	Yes	Regional Toxic Hot Spots Cleanup Plan. San Diego Region
13.1	Urge the State Board to rank all five San Diego Bay toxic hot spots as a high priority for remediation.	Please refer to responses for Comments 1.2 and 1.4.	Yes	
14.1	Ensure that all toxic hot spots in San Diego Bay are given a high priority ranking for immediate cleanup.	Please refer to responses for Comments 1.2 and 1.4.	Yes	
15.1	The BPTCP Advisory Committee recommends that a finding be added to a section of the Draft Consolidated Toxic Hot Spots Cleanup Plan regarding acknowledging that some of the proposed actions are study-oriented and that full remediation will cost more than presented.	The recommendation has been included in the findings section of the Consolidated Toxic Hot Spots Cleanup Plan.	Yes	Consolidated Cleanup Plan, Volume I
16.1	List all San Diego hot spots as high priority in the Consolidated Statewide Cleanup Plan.	Please refer to responses for Comments 1.2 and 1.4.	Yes	Regional Toxic Hot Spots Cleanup Plan. San Diego Region
17.1	San Diego used a higher alpha level threshold than the other bays in California. Other bays with lower levels of toxicity will be cleaned up first while San Diego Bay, which has the second most toxic bay in the nation, will continue to have only one out of five sites designated as high priority.	The San Diego RWCB used a "p" value of 1 in using the reference envelope approach required by the SWRCB Guidance Policy. It is probable that more sites would be identified as toxic hot spots if a "p" value of 10 were used. It is uncertain if other bays will be remediated before San Diego Bay; remediation depends on many factors including identification of responsible dischargers, funding availability, cooperation with other regulatory agencies, etc. The study referenced is a National Oceanic and Atmospheric Administration study that listed San Diego Bay as the second most toxic bay of those	No	Regional Toxic Hot Spots Cleanup Plan. San Diego Region

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
		studied. Also, the approach for evaluating the data were not the same as required by the SWRCB Guidance Policy and, therefore, not directly comparable to the identification or ranking of toxic hot spots in San Diego Bay.		
17.2	Re-evaluate the hot spots in San Diego Bay as our Bay is the worst in California according to the State Boards' own reports. The sediment technical report even admits that the levels to designate toxicity in San Diego Bay were conservative compared to the other Bays and Harbors studied!	The reports produced by the BPTCP do not show that San Diego Bay is the worst in California. Each of the reports produced is focussed on each Region and not on a Statewide assessment. The San Diego RWQCB chose to use a more conservative toxicity threshold than other Regions. This judgement is allowed under the SWRCB Guidance Policy.	No	Regional Toxic Hot Spots Cleanup Plan. San Diego Region
17.3	Recommend that the SWRCB rank all five hot spots in San Diego Bay as high priority.	Please refer to the responses to Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
17.4	Suggest the Board implement a pollution prevention plan so that after the Bay is cleaned up, there will already be measures of protection in place.	Comment acknowledged.	No.	Regional Toxic Hot Spots Cleanup Plan. San Diego Region
18.1	Appreciate your commitment to protecting our bays and estuaries from pollution.	Comment acknowledged.	No	
18.2	The San Diego Regional Board has seen fit to give high priority to only one site, not all five. Omitting four toxic "hot spots" is simply not acceptable.	Please refer to response for Comment 1.2	Yes	Consolidated Cleanup Plan, Volume I
18.3	Make sure all five of the toxic areas in San Diego Bay are given top priority for cleanup.	Please refer to responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
19.1	Your commitment to our California bays and wetlands is to last for the coming hundreds of generations, and your work is to be commended.	Comment acknowledged.	No	
19.2	Five toxic hot spots in San Diego Bay need to be addressed.	Please refer to responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
20.1	Support ranking of all five designated San Diego Bay hot spots as "high priority".	Comment acknowledged. Please refer to responses for Comment 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
21.1	Urge the State Water Board to give all of San Diego's toxic hot spots a high priority.	Please refer to responses for Comment 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
22.1	It has been noted that the "hot spots" in the San Diego Bay are being prioritized...hope that all such spots would receive equal control and cleanup, so that when the government money becomes involved it will be applied equally.	Please refer to responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
22.2	In the past when polluters are found and fined, the fines are often reduced to a fraction of the initial amount. This is alright for accidental pollution, but those that have been polluting for a period of time should be fined heavily with no reductions.	Comment acknowledged.	No	
22.3	We in Coronado appreciate your insistence on a cleanup of the water being pumped into the ocean at north beach. Please keep up a "no fooling around" approach to your oversight. This includes the coming pollution of the Coronado-Imperial shoreline by the coming discharge of the south bay sewer plant.	Comment acknowledged.	No	
23.1	In the Los Angeles Region, of the 64 storm drain outlets along the beaches, only 4 are addressed in the consolidated Toxic Hot Spot cleanup plan. All of the urban storm drains that empty onto a public swimming beach need to be considered for a total approach to this plan.	The Regional Cleanup Plan is concentrated on the toxic hot spots in the Region. The concern is probably best addressed under the Region's stormwater permit.	No	Regional Toxic Hot Spots Cleanup Plan, Los Angeles Region
23.2	The total watershed must be considered and included into the plan, because contaminated water flows are not easily confinable to a specific area. Contaminated sediments will continue to accumulate if the pollutant sources are not controlled.	Comment acknowledged. Please refer to the response for Comment No. 23.1.	No	Regional Toxic Hot Spots Cleanup Plan, Los Angeles Region

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
23.3	More resources need to be allocated for the construction/acquisition of projects that will lead to the reduction of pollutants entering Santa Monica Bay.	Comment acknowledged.	No.	Regional Toxic Hot Spots Cleanup Plan, Los Angeles Region
23.4	Consolidating the number of outlets is good for the environment and will help maintain a safe environment for beach patrons.	Comment acknowledged.	No	Regional Toxic Hot Spots Cleanup Plan, Los Angeles Region
24.1	Urges support for designating all of San Diego's toxic hot spots as a high priority. San Diego has five hot spots, with only one ranked a high priority for action.	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
24.2	We find it inconsistent and inappropriate for only one of our sites to be listed as a high priority. This ranking is especially troubling because only high priority sites receive plans for remediation and prevention. Strongly encourage you to use your oversight authority to designate all of our hot spots a high priority.	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
24.3	The BPTCP program allows us to take the first steps towards restoring the health of San Diego Bay and making our waters "fishable and swimmable." We know of your strong commitment to a clean San Diego Bay and we believe this action is critical to move us swiftly to remediation of these "worst of the worst" toxic sites in the Bay.	Comment acknowledged.	No	Regional Toxic Hot Spots Cleanup Plan, San Diego Region
25.1	Like to express our strong support for the long-overdue cleanup and prevention of toxic hot spots in the (San Diego) Bay.	Comment acknowledged.	No	Regional Toxic Hot Spots Cleanup Plan, San Diego Region

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
25.2	Must express our extreme disappointment in the rankings of the five designated hot spots. San Diego Bay has recently been shown to be one of the most toxic bays in the nation. All of our toxic hot sites should be listed as a HIGH priority in the Cleanup Plan.	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
25.3	Urge the Board to take an important step in the protection of San Diego Bay by listing all of our toxic hot spots as a HIGH priority for cleanup.	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
26.1	Pleased that the State and Regional Boards are developing plans to clean up and prevent toxic hot spots in San Diego Bay.	Comment acknowledged.	No	
26.2	San Diego Bay is the second most toxic of 18 bays studied in the nation, yet it has just five toxic hot spots and only one designated a high priority. We need to give all of our hot spots a high priority for cleanup.	Please refer to the responses for Comment 1.2 and 1.4. The study referenced is a National Oceanic and Atmospheric Administration study that listed San Diego Bay as the second most toxic bay of those studied. The approach for evaluating the data were not the same as required by the SWRCB Guidance Policy.	Yes	Regional Toxic Hot Spots Cleanup Plan, San Diego Region
26.3	We urge the State Board to rank all five of San Diego's hot spots a high priority to help safeguard water quality and restore the Bay's health.	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
27.1	Due to the many years of heavy industrial and military activity on San Diego Bay, we have been concerned about the Bay's health. We were shocked to learn that our worst fears are true: San Diego Bay is one of the most toxic bays in the nation.	Please refer to the response for Comment No. 26.2.	No	Regional Toxic Hot Spots Cleanup Plan, San Diego Region
27.2	We are disappointed that only one of San Diego's five toxic hot spots was given a high priority for cleanup. It is imperative that all five sites get remediated now.	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
27.3	Please accurately reflect the health of San Diego Bay and rank all five of our hot spots a high priority.	Comment acknowledged.	No.	Regional Toxic Hot Spots Cleanup Plan,

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
				San Diego Region
28.1	Pleased that the state and regional water boards re developing plans to clean up and prevent toxic hot spots in San Diego and other coastal areas. These contaminated areas must get cleaned up to protect both marine life and public health.	Comments acknowledged.	No	
28.2	Concerned about the priority ranking of San Diego Bay's hot spots. San Diego Bay has five equally toxic hot spots, and despite this national infamy, only one has been designated a high priority,	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
28.3	Urge the State Board to rank all five of San Diego's hot spots a high priority to help safeguard water quality and restore the bay's health.	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
29.1	Thank you for the opportunity to review the "Consolidated Toxic Hot Spots Cleanup Plan." We do not see any direct impact to Caltrans activities. However, Caltrans does have facilities in bays and estuaries throughout the state. We recommend that the State Water Resources Control Board and Regional Water Quality Control Boards coordinate with Caltrans local district offices.	Comments acknowledged. As the Consolidated Cleanup Plan is implemented, the RWQCBs are required to comply with the provisions of CEQA. The RWQCB will continue to coordinate with Caltrans as projects develop or when Caltrans shares in the responsibility for the identified problem.	No	
30.1	Overall we are satisfied with the current status of the cleanup plan and process. After gaining the best and most comprehensive data on the ecological health of San Diego Bay, our Regional Board has finally identified some important toxic hot spots.	Comment acknowledged.	No	
30.2	Many other areas of the Bay, included the listed Sites of Concern, are also degraded and will need serious attention in the near future. We view this plan as the first stage in the overall cleanup and improvement of ecological health of the Bay.	Comments acknowledged.	No	
30.3	We continue to find it unacceptable that only one of San Diego's hot spots is designated a high priority.	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Regional Toxic Hot Spots Cleanup Plan,

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
				San Diego Region
30.4	There were inconsistent sampling and standards used in defining toxicity and chemistry exceedances. San Diego used the least protective measures for determining when a spot exhibited toxicity and/or chemical elevation, and therefore only the most severely degraded areas were identified as toxic hot spots.	Please refer to the response for Comment No. 17.1.	No	Regional Toxic Hot Spots Cleanup Plan, San Diego Region
30.5	All five sites are in immediate need of serious attention and cleanup.	Comment acknowledged.	No	
30.6	Our Regional Board has acknowledged that there was an extremely high threshold to pass before a site would qualify as a toxic hot spot under the Regional Board's guidelines. ..."only the worst of the worst" contaminated areas—virtual dead zones in our Bay—were identified as toxic hot spots. All five of our sites are in immediate need of remediation.	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
30.7	We have severe to moderate toxicity throughout the Bay. The main chemicals of concern are copper, zinc, mercury, PAHs, PCBs, and chlordane. Some of these chemicals are persistent, mobile, and bioaccumulative and pose a serious risk to public health and marine life.	Comments acknowledged.	No	
30.8	Unless we take action to remediate all of the "worst of the worst" contaminated areas, San Diego Bay is destined to supercede Newark Bay, New Jersey and become the #1 most toxic bay in the nation.	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
30.9	Remediating all five of our hot spots is clearly a great opportunity to implement an important aspect of the San Diego Bay Panel's goals and vision. These goals were also not considered by our Regional Board in their analysis of ranking our hot spots.	Comment acknowledged. Please refer to the responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan,. Volume I
31.1	Request that the SWRCB list all five San Diego Bay toxic hot spots as high priority in the Consolidated Statewide Cleanup Plan.	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
31.2	The SDRWQCB has chosen to ignore watershed concerns. By designating additional toxic hot spots, including the mouth of Switzer Creek, you will send the message that the Regional Board's approach is no longer acceptable.	Comment acknowledged. Please refer to the responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
32.1	Pleased that the State and Regional Boards are developing plans to clean up and prevent toxic hot spots in San Diego.	Comment acknowledged.	No	
32.2	The Bay Panel, a group of more than thirty agencies and institutions, spent ten years developing a plan for protecting and preserving San Diego Bay. The Comprehensive Management Plan identifies cleaning up contaminated sediments as a high priority for safeguarding human health and marine life.	Comment acknowledged.	No	
32.3	Urge the State Board to rank all five of San Diego's hot spots a high priority.	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
33.1	Pleased that the State and Regional Boards are developing plans to clean up and prevent toxic hot spots in San Diego.	Comment acknowledged.	No	
33.2	Urge the State Board to rank all five of San Diego's hot spots a high priority.	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
34.1	The State Board points out that under the current law and guidance, only high priority sites have received plans for remediation and prevention, including the estimated costs for cleanup of these sites. Moderate and low priority sites have not received any plans for remediation or prevention. They have only been identified. This means that of the 47 identified hot spots, only 21 have received plans for cleanup. This is a huge gap and contrary to the intent of the program.	It is true that the SWRCB Guidance Policy directs the RWQCBs to develop toxic hot spot characterizations and remediation plans for the high priority toxic hot spots. Emphasis was placed on high priority sites because the SWRCB and RWQCBs did not have the resources to complete the cleanup plans for all the sites in the time available (between October 1997 and June 1999). Setting priorities in this way allowed the SWRCB and the RWQCBs to concentrate efforts on the worst-of-the-worst toxic hot spots.	No	
34.2	The goal of the program was to identify, cleanup, and prevent all toxic hot spots. By only focusing on high priority sites, the State and Regional Boards	Comment acknowledged.	No	

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
	have skewed the results and implications of the monitoring data.			
34.3	All toxic hot spots, regardless of their priority ranking, need to receive serious and immediate attention and be remediated as soon as possible.	Comment acknowledged.	No	
34.4	The State Board makes no mention of the need to develop plans for the remediation and prevention of moderate and low priority hot spots. We urge the Board to amend the findings to say that the BPTCP should be expanded to include the development of plans for remediation and prevention at all hot spots (not just high priority), and that funding be provided to implement the cleanup plans for all of these sites.	Comment acknowledged.	No	Consolidated Cleanup Plan, Volume I
35.1	A recent survey of San Diego Bay's sediments revealed that it is the second most toxic of 18 bays studied in the U.S. In this survey, five toxic hot spots were identified.	Please refer to the response for Comment No. 17.1.	No	Regional Toxic Hot Spots Cleanup Plan, San Diego Region
35.2	In a recent vote, the San Diego RWQCB ignored this scientific information and recommended only one of the five hot spots as "high priority" for action.	Comment acknowledged.	No	Regional Toxic Hot Spots Cleanup Plan, San Diego Region
36.1	We appreciate the commitment that you have demonstrated in protecting the bays and estuaries of the State.	Comment acknowledged.	No	
36.2	A recent study has shown San Diego Bay to be the second most toxic bay in the United States. The San Diego RWQCB had the weakest of recommendations: that only one of five toxic hot spots be given a high priority for cleanup. Your Board is in a position to rectify this action by listing all five of the San Diego toxic hot spots as a high priority in the Consolidated Statewide Cleanup Plan.	Please refer to the responses for Comments 1.2, 1.4, and 17.1.	Yes	Consolidated Cleanup Plan, Volume I

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
37.1	This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act.	Comment acknowledged.	No	
38.1	The reviewer would like to compliment the SWRCB for an excellent integration of the individual plans, for identifying issues of program organization, and for defining future plans that will take this project forward.	Comment acknowledged.	No	
38.2	The Reviewer has one comment on the Implementation of Remediation at Identified Toxic Hot Spots (pg. 44-45). The proposed adoption of alternative 2 would require RWQCBs to implement cleanup for toxic hot spots where the discharger is identified. I think this requirement, if applied automatically, could create problems of inequity. Now that all the sampling numbers are in, it would seem unfair to require cleanup at one spot and not cleanup at another more contaminated spot, just because of availability of funding. If attention is focused on culprits, then an overview of the Consolidated Plan may be obscured.	Ideally, funding would be available for each toxic hot spot and implementation of the actions would occur simultaneously. It seems appropriate that those responsible for a toxic hot spot to pay a fair share of the cost to remediate the site. The problem comes with those sites were there is no identified responsible discharger. As required by the Water Code, the SWRCB is reporting the estimated costs of cleanup at the toxic hot spots and the costs recoverable from dischargers. If funding is made available then work can proceed on addressing the toxic hot spots where no responsible dischargers are identified. The focus is on identifying polluted sites, planning for their remediation and finding funding to address the sites (either through the California Legislature or dischargers).	No	Consolidated Cleanup Plan, Volume I
38.3	If the information in Table 18 (Areal Extent and Habitat at Toxic Hot Spots) were to be re-arranged and sorted according to size, the heterogeneous nature of the THSs become more recognizable. This would give a clearer picture of the generic classification of individual THSs. Clearly, the remediation of localized discharges and contamination can be managed.	Agree. The table has been reorganized as recommended.	Yes	FED, Potential Adverse Environ-mental Effects section
38.4	Thermometers are listed as possible sources of environmental mercury contamination. The quantitative dimension of this source of pollution is	This source of mercury has been removed from the cleanup plan.	Yes	Regional Toxic Hot Spots

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
	of insignificant magnitude.			Cleanup Plan, San Francisco Bay Region
38.5	The Central Valley Region mercury cleanup plan is sophisticated and scientific. The variables for mercury biotransformation, sediment flux, and accumulation in fish-eating birds are identified as key items of missing information. The acquisition of such information will help in making the correct decisions.	Comment acknowledged.	No	Regional Toxic Hot Spots Cleanup Plan, Central Valley Region
38.6	The greatest threat to water quality will come from run-off from agricultural fields sprayed with semi-persistent pesticides. These pesticide molecules are designed to be biotoxic agents; hence any widespread dissemination may create imbalances in biological ecosystems. Rigorous control of sources of pesticide contamination, similar to what is now required for toxic chemical wastes, will help prevent future problems.	Comment acknowledged.	No	
38.7	The sensitivity of bioassay methods used in all the BPTCP report creates problems of interpretation. The reviewer is of the opinion that results from "toxicity testing" and "benthic community analysis" should be interpreted with caution because the scientific foundations for using test results to predict "environmental quality degradation" have not yet been established. These bioassays are too sensitive and yield too many positives to be of practical utility.	We acknowledge that toxicity testing and benthic community analysis should be interpreted with caution just as the results of all scientific investigations. Unfortunately, there are few other approaches that are available to measure or determine impact on aquatic life. The BPTCP has evaluated a large number of approaches over the years (starting in 1991 (please refer to SWRCB, 1993)). The BPTCP has continued to use toxicity and benthic community analysis as indicators of environmental degradation after discussions with an independent scientific review panel (SPARC, 1997).	No	
38.8	The contamination of the Lower Rhine Channel, Santa Ana Region, does not constitute sufficient hazard to justify cleanup with dredging. Boatyard activities generate paint sediments that contain	Rhine Channel was designated a candidate toxic hot spot following the criteria contained in the SWRCB Guidance Policy (SWRCB, 1998a). The specific reasons for listing were recurrent sediment toxicity	No	Regional Toxic Hot Spots Cleanup Plan,

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
	metals, but there was little evidence of biotoxic hazards.	and exceedances of narrative water quality objectives. At the site there is evidence of biotoxic effects (recurrent sediment toxicity) and environmental degradation (impaired benthic community structure and bioaccumulation of metals).		Santa Ana Region
38.9	Helpful to include some of the abbreviations used in the San Francisco Regional Cleanup Plan into the main list of abbreviations. Include CSO and POTW.	The FED has been revised to include these abbreviations.	Yes	FED, List of Abbreviations
38.10	Change desecration to discretion.	The error has been corrected.	Yes	FED, Page 45.
39.1	Supportive of efforts of the SWRCB and RWQCB to protect water quality and to develop plans to clean up and prevent toxic hot spots in San Diego Bay.	Comment acknowledged.	No	
39.2	The known toxic hot spots in San Diego Bay are a high priority for action and should be designated as such.	Comment acknowledged.	No	
39.3	There is strong community support for remediation of the sediments of San Diego Bay. The Interagency Panel for San Diego Bay, a group of more than thirty agencies and institutions, spent ten years developing a plan for protecting and preserving San Diego Bay. The CCMP identifies cleaning up contaminated sediments as a high priority for safeguarding human health and marine life.	Comment acknowledged.	No	
39.4	Urge the State Board to rank all five of San Diego's hot spots as high priority.	Please refer to the responses for Comments 1.2 and 1.4	Yes	Consolidated Cleanup Plan, Volume I
40.1	Want to thank the State and San Diego Regional Board for developing plans to clean up and prevent toxic hot spots in San Diego and other coastal areas. The resources the RWQCB devoted to the development of the listing were well utilized and efficient.	Comment acknowledged.	No	
40.2	The issue of the listing and ranking process was addressed at the March SDRWQCB meeting. The	Comment acknowledged.	No.	

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
	RWQCB was unanimous in deciding not to reopen the listing and ranking process unless significant "new" information was provided. This has not occurred. We are extremely pleased that these hot spots were based on science and specific guidance.			
40.3	The NOAA study being referred to by commenters refers to the spatial extent of contamination.	Comment acknowledged.	No	
40.4	The priority ratings of the hot spots were based on science, which was proper. Believe resources should now be focused on termination on the source of contamination, such as non point source pollution.	Comment acknowledged.	No	
40.5	Highly support the recommendations of the SDRWQCB and their listing and ranking of the identified toxic hot spots in San Diego Bay.	Comment acknowledged.	No	
41.1	We formally request the classification for McGrath Lake be changed from "impaired" to "Candidate Toxic Hot Spot" in the Consolidated Toxic Hot Spot Cleanup Plan. The Los Angeles Regional Water Quality Control Board supports this request.	Comment acknowledged. Please refer to the response for Comment No. 3.1.	Yes	Consolidated Cleanup Plan, Volume I and the Regional Toxic Hot Spots Cleanup Plan, Los Angeles Region
41.2	The LARWQCB/Moss Landing Marine laboratory study of water and sediment in McGrath Lake provides findings that place McGrath Lake in the category of "Candidate" for the Toxic Hot Spot list with a ranking of "High".	Comment acknowledged.	Yes	Consolidated Cleanup Plan, Volume I and the Regional Toxic Hot Spots Cleanup Plan, Los Angeles Region
41.3	Inclusion of McGrath Lake within the Consolidated Toxic Hot Spots Cleanup Plan as a "Known Site" with a "High" ranking would assist the California	Comment acknowledged.	Yes	

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
	State Parks and the Trustee Council in securing the attention and possible funding needed to address appropriate and timely remediation activities for this valuable resource.			
42.1	Requesting support for designating all five of San Diego's toxic hot spots as high priority for cleanup action in the Consolidated Toxic Hot Spots Cleanup Plan.	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
42.2	SDRWQCB recently completed a comprehensive investigation of San Diego Bay sediments as part of a statewide program to identify and cleanup toxic hot spots. This study found that we have severe to moderate toxicity throughout the Bay. A recent report from NOAA found that San Diego was the second most toxic of 18 bays studied in the nation, second only to Newark Bay, New Jersey. The Regional Board identified five sites as toxic hot spots, the "worst of the worst" contaminated areas.	Comment acknowledged. Please refer to the response for Comment No. 17.1.	No	Regional Toxic Hot Spots Cleanup Plan, San Diego Region
42.3	Unfortunately, the Regional Board only gave one of our toxic hot spots a high priority for action. High priority for all of the Bay's five toxic hot spots is critical because only high priority sites get plans for cleanup and prevention. If no change is made to these rankings. San Diego Bay's four moderate priority sites will not get plans for remediation or prevention of recontamination under this program- even though they are still toxic hot spots.	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
42.4	There has been no registered opposition to a high priority designation for all five sites.	Comment acknowledged. The San Diego RWQCB does not agree with the change.	No	Regional Toxic Hot Spots Cleanup Plan, San Diego Region
42.5	We strongly request that you use your oversight authority and commitment to safeguarding water quality to rank all of our hot spots a high priority.	Comment acknowledged.	No	Regional Toxic Hot Spots

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
				Cleanup Plan, San Diego Region
43.1	We feel that the sound scientific approach and high quality data produced in the BPTCP has provided the foundation for the toxic hot spots cleanup plans to move forward without significant controversy regarding these data or the methodology used to produce them.	Comment acknowledged.	No	
43.2	The Department of Fish and Game requests that it continue to be consulted by the Regional Boards and the State Board as the process for implementing the Toxic Hot Spots Cleanup Plans moves forward.	The SWRCB draft resolution adopting the Consolidated Cleanup Plan contains a commitment to continue to consult on compliance with the California Endangered Species Act.	Yes	SWRCB Resolution adopting the Consolidated Cleanup Plan
43.3	Based on new evidence, the Department officially requests that McGrath Lake be included on the "Known Toxic Hot Spots" list in the FED.	Please refer to the response for Comment No. 3.1.	Yes	Consolidated Cleanup Plan, Volume I and the, Los Angeles Region
43.4	We applaud the efforts of the SDRWQCB staff and Board in complying with State Board guidance, and we acknowledge a difference of opinion in the application and interpretation of the guidance for the prioritization levels.	Comment acknowledged.	No	Regional Toxic Hot Spots Cleanup Plan, San Diego Region
43.5	The Department has expressed its concern, in previous letters to the SDRWQCB concerning CESA consultation, with the prioritization levels assigned to several toxic hot spot sites in the SDRWQCB cleanup plan. We feel that there is sufficient data to classify these currently classified moderate priority sites as high priority.	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
43.6	We understand that the SDRWQCB intends to blend many of its regulatory powers and programmatic tools to ensure that proper planning for cleanup and	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
	source control/prevention is implemented in a timely manner at all of these sites, regardless of prioritization category. We wish to be on record in support of that concept, and request that the concept become a reality.			
43.7	DFG's mission of protection and enhancement of the state's flora and fauna, as well as protection and enhancement of the habitat upon which they depend, is greatly strengthened by such programs and policies as developed by this FED.	Comment acknowledged.	No	FED
44.1	The San Diego Regional Board had no specific objectives for the numbers of toxic hot spots or high-priority sites in the Region. Our goals in putting together the hot spot list and site ranking list were to follow the law, the State Board's Guidance, and the principles of good science. The information in the record indicates we have done just that.	Comment acknowledged.	No.	Regional Toxic Hot Spots Cleanup Plan, San Diego Region
44.2	The BPTCP ranking approach allows the Board to concentrate on the worst sites first. The San Diego Region was one of only two regions which has enough date to use the toxicity reference envelope approach, the approach recommended by the State Board.	Comment acknowledged.	No	
44.3	The Regional Board devoted a great deal of effort to follow the State Board Guidance for regional cleanup plans. To assure ourselves that we were using objective methods to identify sites, we created a series of eight decision tables for identifying toxic hot spots. We followed the State Board Guidance for ranking sites. These procedures are in the record.	Comment acknowledged.	No	
44.4	We received more than sixty written comments before the (Regional) Board adopted the Plan. Several comments were directed at our procedures and we made appropriate changes; however, none of the comments claimed we failed to follow the	Comment acknowledged.	No	

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
	procedures. In December the Regional Board held a public hearing and adopted the Plan.			
45.1	We recommend that the SWRCB consider reranking to "high" the four "moderate" THS identified by the SDRWQCB.	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Regional Consolidated Toxic Hot Spots Cleanup Plan, San Diego Region
45.2	The U.S.EPA has estimated that as much as 80% of the contamination in San Diego Bay comes from upland sources (runoff). The San Diego Bay Watershed Task Force believes that the most critical element in the protection and cleanup of San Diego Bay is programs and projects that cease the discharge of such contamination into San Diego Bay.	Comment acknowledged.	No	Regional Consolidated Toxic Hot Spots Cleanup Plan, San Diego Region
45.3	We have noticed that three of the four moderate priority sites are at the mouths of significant creeks. The locations of these sites and the substances that were found strongly suggest that the contamination is from upstream runoff.	Comment acknowledged.	No	Regional Consolidated Toxic Hot Spots Cleanup Plan, San Diego Region
45.4	We have advised the RWQCB that we are recommending that the Board of Port Commissioners authorize $100,000 to be included in our FY 1999/2000 budget for each "moderate" priority site.	Comment acknowledged.	No	Regional Consolidated Toxic Hot Spots Cleanup Plan, San Diego Region

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
45.5	We understand that the process utilized by the RWQCB and the ranking that they obtained is appropriate and within the scope of the guidelines. ...the same analysis, conducted by other, qualified persons, could have produced different results.	Comment acknowledged.	No	Regional Consolidated Toxic Hot Spots Cleanup Plan, San Diego Region
45.6	The RWQCB has made it clear that, regardless of the ranking of these five sites, they believe that the information demonstrates that there are problems at each site that require attention. As a result, they intend to take action at all five sites simultaneously.	Comment acknowledged.	No	Regional Consolidated Toxic Hot Spots Cleanup Plan, San Diego Region
45.7	We recommend that all five sites be ranked as high priorities, and respectfully request that they all be ranked as "high" priorities.	Please refer to the responses for Comments 1.2 and 1.4.	Yes	Consolidated Cleanup Plan, Volume I
46.1	Request an extension of the public comment period to June 15, 1999.	The close of the comment period was changed from 5:00 p.m. on June 3, 1999 to 5:00 p.m. on June 4, 1999.	No	
47.1	Generally support the proposed Consolidated Toxic Hot Spots Cleanup Plan. Support is dependent on approval of the variances the CVRWQCB is seeking for its cleanup plans that address pesticides. These plans address diazinon used as a dormant spray, pesticides in urban stormwater, and pesticides in irrigation return flow.	Comment acknowledged.	No	pp. 236-246 of the draft FED.
47.2	These variances are necessary to reduce regulatory redundancy when addressing water quality problems caused by currently registered pesticides.	Comment acknowledged.	No	
47.3	In earlier testimony to the SWRCB and CVWQCB, DPR maintained that when pesticides occur in water in transitory pulses, the BPTCP need not be applied because SWRCB and DPR are already mandated to protect water quality from the adverse effects of	Comment acknowledged.	No	Regional Toxic Hot Spots Cleanup Plan, Central

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
	pesticides.			Valley Region
47.4	Basin planning under the Water Code and pesticide regulation under the Food and Agricultural Code provide the state with powerful authorities for addressing water quality impairments due to pesticides, including impairments occurring in enclosed bays, estuaries, or adjacent waters. The MAA between SWRCB and DPR harmonizes and makes more efficient agency activities related to pesticides and water quality.	Comment acknowledged.	No	Regional Toxic Hot Spots Cleanup Plan, Central Valley Region
47.5	Together, the 303(d) mandates and the authorities granted to the state to fulfill them will result in improvements in water quality, regardless of the application of the BPTCP.	Comment acknowledged.	No	Regional Toxic Hot Spots Cleanup Plan, Central Valley Region
47.6	Urge the SWRCB to approve the variances proposed by CVRWQCB.	Comment acknowledged.	No	Regional Toxic Hot Spots Cleanup Plan, Central Valley Region
48.1	The Consolidated Plan draft should reflect ongoing progress on mercury issues in the San Francisco Bay Region.	Comment acknowledged.	No	Regional Toxic Hot Spots Cleanup Plan, San Francisco Bay Region
48.2	Recommendations on pages 137 – 140 do not take into account the recently established Mercury Council. The inclusion of these recommendations may undermine the work being done by the Mercury Council and is inappropriate and premature.	The FED and Regional Cleanup Plan have been revised to reflect this new information.	Yes	Regional Toxic Hot Spots Cleanup Plan, San Francisco

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
				Bay Region
48.3	Text on page 133 needs to be updated to reflect current progress made by the RWQCB and the Mercury Council.	The FED and Regional Cleanup Plan have been revised to reflect this new information.	Yes	Regional Toxic Hot Spots Cleanup Plan, San Francisco Bay Region
48.4	The Santa Clara Basin Watershed Management Initiative is developing a watershed management plan that is intended to prioritize and address problems in the watershed. The linkage to this initiative is unclear.	The FED and Regional Cleanup Plan have been revised to present a brief discussion of this work.	Yes	FED and Regional Toxic Hot Spots Cleanup Plan, San Francisco Bay Region
48.5	The Consolidated Plan does not distinguish between sites that pose a significant versus a minimal risk to public health, and thus, it is not possible to judge whether significant public resources are being appropriately expended on the most significant problems.	This comment was addressed when the SWRCB developed the Guidance Policy (SWRCB, 1998a).	No	
48.6	Listing the entire Bay as a THS is counter to the intent of the law and would be more appropriately addressed in the TMDL program.	This comment was addressed when the SWRCB developed the Guidance Policy (SWRCB, 1998a).	No	
48.7	The proposed process to delist a site is vague and ambiguous relative to delisting criteria. How does the SWRCB define "adequately remediated?" Does this term mean: approved remediation actions have been implemented; constituents of concern are below background levels; a reduction in concentration with an expectation of continued reductions has been demonstrated; or that a significant change in the factor(s) used to list the site has occurred?	The phrase "adequately remediated" is intended to allow the RWQCBs significant discretion in determining if cleanup actions have addressed the site. The phrase could mean each of the alternatives presented in the comment. "Adequately remediated" could be made more specific but it is probable that more detailed guidance would not be applicable to the specific situation being evaluated by the RWQCB.	No	Consolidated Cleanup Plan, Volume I
48.8	Clarification of the delisting process is needed to allow delisting of sites. In addition, without specific	Please refer to the response for Comment No. 48.7. We see no reason that the RWQCB cannot consider	No	Consolidated Cleanup Plan,

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
	criteria, it is not feasible to conduct the analysis of possible alternatives required by CEQA.	alternatives under CEQA in the absence of specific delisting criteria.		Volume I
49.1	We remain very concerned with the prospect that the SWRCB may affirm or possibly let stand, the interpretation of the Toxic Hot Spots Policy advanced by the CVRWQCB, as incorporated in Appendix B, Volume II of the FED, PP 5-1, et seq.	Comment acknowledged.	No	Regional Toxic Hot Spots Cleanup Plan, Central Valley Region
49.2	Evidence provided by the agricultural industry demonstrated: (a) the supersensitivity of C. daphnia; (b) the low levels of residues; (c) the infrequency of such residues; (d) the chemical breakdown rate; and (e) the fact that the residues do not accumulate.	This comment was addressed when the SWRCB developed the Guidance Policy (SWRCB, 1998a).		Regional Toxic Hot Spots Cleanup Plan, Central Valley Region
49.3	The statutory definition of THS is limited to spots where such materials have accumulated.	This comment was addressed when the SWRCB developed the Guidance Policy (SWRCB, 1998a).	No	
49.4	The existence of accumulation is pivotal as to whether or not a THS exists. If the levels are instantaneous, temporary or decreasing, there is not a THS. Temporary levels of pesticides in agricultural runoff, or levels which occur in seasonal episodes, including winter storm runoff, categorically are not accumulating and, therefore, do not qualify as a THS.	This comment was addressed when the SWRCB developed the Guidance Policy (SWRCB, 1998a).	No	
49.5	The Water Code clarifies that pesticide residues are not "hazardous substances".	This comment was addressed when the SWRCB developed the Guidance Policy (SWRCB, 1998a).	No	
49.6	Nonaccumulating drainage does not constitute a "spot" and is not conducive to a spot cleanup plan.	This comment was addressed when the SWRCB developed the Guidance Policy (SWRCB, 1998a).	No	
49.7	Language inserted by the SWRCB (page 8 in Appendix A) regarding pesticide residues clarified that drainage pulses in the water diminishing and flowing down the drain do not constitute a hot spot as those issues are managed under separate statutory	Comment acknowledged. The provision of the Guidance Policy states that problems that are caused by infrequent pulses of pesticide residues are to be addressed outside the BPTCP.	No	

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
	and MAA programs. Conversely, if such residues accumulate in the sediment or accumulate in a stable water body that does appropriately fit in the toxic cleanup program.			
49.8	The CVRWQCB interpreted "infrequent" to be one exceedance in three years. This incorrect interpretation will trigger the THS designation on virtually every agricultural drainage.	Comment acknowledged.	No	Regional Toxic Hot Spots Cleanup Plan, Central Valley Region
49.9	The CVRWQCB departed from the SWRCB policy by adopting the "two hits and you're a hot spot" approach. Page 121 if the FED fails to set forth the entirety of the State Board policy, but merely references the CVRWQCB Oct. 23, 1998 interpretation of the word "infrequent".	Interpretation of "infrequent" as used in the Guidance Policy is a RWQCB decision.	No	
49.10	The CVRWQCB is seeking a waiver to relieve their Board from developing a clean up plan, which is the entire purpose of the statute. Therefore there is no purpose in designating agricultural areas as hot spots.	Comment acknowledged.	No	Regional Toxic Hot Spots Cleanup Plan, Central Valley Region
49.11	The CVRWQCBs proposed hot spot cleanup plan fails to satisfy the statutory requirements necessary so as to allow the State Board's approval of the plan. The CVRWQCB proposal is deficient in five of the eight prerequisite requirements of CWC Sections 13392 and 13394.	The SWRCB is considering whether to grant variances for the need to comply with all BPTCP requirements.	No	Regional Toxic Hot Spots Cleanup Plan, Central Valley Region
49.12	The designation of such drains and their associated farm areas as THS would have direct and dire consequences on farmers' abilities to finance and manage their farms.	This comment was addressed when the SWRCB developed the Guidance Policy (SWRCB, 1998a).	No	Regional Toxic Hot Spots Cleanup Plan, Central

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
				Valley Region
49.13	Pesticides are not accumulating and there is not a "hot spot". Pesticides are also not hazardous substances as defined by the Water Code.	This comment was addressed when the SWRCB developed the Guidance Policy (SWRCB, 1998a).	No	
49.14	There are better programs for managing non-point runoff containing pesticides, such as: the MAA, the CWA, the TMDL watershed process, and the Porter-Cologne state law. Adapting a "point source" program, such as the BPTCP to non-point, pulse type pesticide detections will not add any additional measures of protection to California's waterways.	This comment was addressed when the SWRCB developed the Guidance Policy (SWRCB, 1998a).	No	
49.15	The State Board should reverse the CVRWQCBs action and direct the CVRWQCB to comply with the State Board's Toxic Hot Spot policy.	Comment acknowledged.	No	Regional Toxic Hot Spots Cleanup Plan, Central Valley Region
49.16	Suggest modifying the State Board's guidance language on page 8 of Appendix A as follows: (1)remove the word "infrequent"; (2) redefine such pulses as "temporal"; or (3) amend the language so that only residues that are accumulating shall be regarded as a THS.	It is unfair to the RWQCB to change the definition of a toxic hot spot after they have made a judgement on the frequency of the pesticide pulses. The SWRCB allowed the RWQCB to determine the definition of "infrequent." With regard to whether pesticide residues are accumulating, this comment was addressed when the SWRCB developed the Guidance Policy (SWRCB, 1998a).	No	Consolidated Cleanup Plan, Volume I
50.1	Commenter believes that impaired water bodies and THS exist because regulatory agencies have failed to enforce the clear statutory provisions of laws such as the CWA and the Porter-Cologne.	Comment acknowledged.	No	
50.2	We believe that Staff's recommendation regarding the WDR reevaluation guidance contained in the FED contravenes and is inconsistent with the specific statutory requirements of Water Code Section 13395.	It is an impossible task to complete WDR revision within one year of the Plan's adoption. The approach recommended in the Consolidated Cleanup Plan is doable within existing resources and complies with the requirements of Section 13395.	No	Consolidated Cleanup Plan, Volume I

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
50.3	Staff's recommendation regarding the Implementation of Remediation at identified THS contravenes and is inconsistent with the specific statutory requirements of WC Section 13392 and 13395. Region 5 should begin revising the WDRs of sources identified as contributing to or causing THSs, identify recoverable costs and conduct other aspects of remediation as funds become available.	The Central Valley RWQCB approaches for addressing toxic hot spots is consistent with the SWRCB Guidance Policy. The RWQCB decided that they will address toxic hot spots by first developing TMDLs.	No	Regional Toxic Hot Spots Cleanup Plan, Central Valley Region
50.4	Failure to develop and adopt sediment quality objectives contravenes and is inconsistent with the requirements of Section 13393. Staff should begin development of sediment quality objectives as required by the Water Code. A shortage of funding is no reason to delay or not develop sediment quality objectives.	Development of sediment quality objective is required by the Water Code. In 1994 it became clear that funding levels would not allow completion of all the tasks outlined in Chapter 5.6 of the Water Code. Priority was given to completion of monitoring throughout California's bays and estuaries because this information would be most useful in completion of the Regional and Consolidated Cleanup Plans. While desirable, the sediment quality objectives are not needed to complete the cleanup plans.	No	Consolidated Cleanup Plan, Volume I
50.5	There is no provision for the issuance of a variance from Section 13390 et seq.; Chapter 5.6 BPTCP, therefore, staff should deny Region 5's request for a variance.	While this statement is true, the SWRCB acknowledged that there may be circumstances that would need an alternate approach not covered by the Guidance Policy. The SWRCB adopted a variance procedure to address these circumstances. The RWQCB application for a variance is allowed procedurally.	No	Regional Toxic Hot Spots Cleanup Plan, Central Valley Region
50.6	We believe staff should insert Section 302(a) of the CWA and EPA regulations at 40 CFR 122.4(1), 122.44(d) and the definition of a compliance schedule at 40 CFR 122.2 into the implementation sections of Region 5's cleanup plans. Insert CWC Sections 13392, 13394(h) and 13395 into the introductory sections of Region 5's cleanup plans because the CVRWQCBs proposed cleanup plans are inconsistent and do not comport with the statutory requirements of the California Water Code and the federal CWA.	Comment acknowledged.	No	Regional Toxic Hot Spots Cleanup Plan, Central Valley Region

COMMENT NUMBER	SUMMARY OF COMMENT	RESPONSE	REVISION	SECTION/ AREA
50.7	Region 5 failed to submit a pesticide cleanup plan as required by Water Code Sections 13392 and 13394, and should be required to do so.	The RWQCB has applied for a variance from these provisions as allowed by the SWRCB Guidance Policy (SWRCB, 1998a). The SWRCB is considering whether to grant the variance.	No	Regional Toxic Hot Spots Cleanup Plan, Central Valley Region
50.8	Region 5 improperly deleted the urban dissolved oxygen as required by Water Code Sections 13394 et seq., and it needs to be reinstated.	The Central Valley RWQCB's Cleanup Plan contains a cleanup plan for dissolved oxygen.	No	Regional Toxic Hot Spots Cleanup Plan, Central Valley Region
50.9	Pesticides are the most pervasive and well-documented source of aquatic life toxicity in the Sacramento and San Joaquin Rivers and the Sacramento-San Joaquin Delta Estuary. The presence and duration of pesticide toxicity cannot be considered "infrequent". The State Board needs to accept Region 5's finding that pesticide detection patterns in the Central Valley are frequent.	Comment acknowledged.	No	Regional Toxic Hot Spots Cleanup Plan, Central Valley Region
50.10	The SWRCB needs to present findings and recommendations to the Legislature that a THS Program is clearly needed in California.	Comment acknowledged.	No	Consolidated Cleanup Plan, Volume I
50.11	Failure to follow the statutory provisions of the Water Code will lead to unreasonable delays in cleaning up THS or possibly prevent the remediation of THS.	Comment acknowledged.	No	Consolidated Cleanup Plan, Volume I

REFERENCES

ABA Consultants. 1989. Elkhorn Slough Wetland Management Plan. Prepared for the California State Coastal Conservancy and the Monterey County Planning Department.

Action Plan 1: Implementing Solutions to Urban Runoff. 1996. Water Quality Protection Program for the Monterey Bay National Marine Sanctuary.

Action Plan III: Marinas and Boating. 1996. Water Quality Protection Program for the Monterey Bay National Marine Sanctuary.

Advanced Biological Testing Inc. 1998a. Results of Chemical, Physical, and Bioassay Testing of Sediments for Maintenance Dredging at Pier 80A, San Francisco, California. Prepared for the Port of San Francisco.

Advanced Biological Testing Inc. 1998b. Results of Chemical, Physical, and Bioassay Testing of Sediments for Maintenance Dredging at Pier 80B, San Francisco, California. Prepared for the Port of San Francisco.

AMBAG. 1997. Northern Salinas Valley Watershed Restoration Plan: Final Report of AMBAG's Water Quality Planning Project entitled Nonpoint Source Pollution in Coastal Harbors & Sloughs of the Monterey Bay Region: Problem Assessment and Best Management Practices.

Anderson-Nichols & Co., 1985. Salinas River Study Phase 3 Report: Phreatophyte Water Use.

Anderson, S.L., Knezovich, J.P., Jelinski, J., and Steichen, D.J. 1995. The Utility of Using Pore-Water Toxicity Testing to develop Site-Specific Marine Sediment Quality Objectives for Metals. Final Report. LBL-37615 UC-000. Lawrence Berkeley National Laboratory, University of California, Berkeley, California.

Anderson, B., J. Hunt, B. Phillips, J. Newman, R. Tjeerdema, C.J. Wilson, G. Kapahi, R. Sapudar, M. Stephenson, M. Puckett, R. Fairey, J. Oakden, M. Lyons and S. Birosik. 1998. Sediment Chemistry, Toxicity and Benthic Community Conditions in Selected Water Bodies of the Los Angeles Region. Bay Protection and Toxic Cleanup Program. Final Report. 232 pp. + 6 appendices.

Attwater, W.R. 1999. Memorandum to RWQCB Executive Officers titled "Regional Water Board Responsibilities Under the California Endangered Species Act After Repeal of State Agency Consultation Provisions" Dated January 27, 1999. 9 pp.

Bailey, H. L. Deanovic, K. Luhman, T. Shed, D. Hinton, and V. Connor. 1996. Pesticides in urban stormwater from the Sacramento Valley and San Francisco Bay Area. Poster presentation at State of the Estuary Conference. October 10-12 1996, San Francisco CA. p 51.

Bailey, H., J. Miller, M. Miller, L. Wiborg. 1997. Joint toxicity of diazinon and chlorpyrifos under the conditions of acute exposure to *Ceriodaphnia*. J. Env. Cont. Toxicol. 16(11):2304-2309

BIOS. 1995. BIOS for almonds. A practical guide to biologically integrated orchard system management. Community Alliance with family farmers foundation, Davis, CA.

Boggs, Melissa. California Department of Fish and Game. Telephone conversation on July 31, 1998.

BPTCP Advisory Committee. 1998. Consensus Recommendations for the Consolidated Toxic Hot Spot Cleanup Plan. Letter dated December 18, 1998. 4 pp.

California Department of Fish and Game (CDFG). 1995. State Mussel Watch Program, 1987-1993 Data Report, 94-1WQ. State Water Resources Control Board.

California Department of Fish and Game (CDFG). 1997. California Sport Fishing Regulations, Public Health Advisory on Fish Consumption, Richmond Harbor Channel, California

California Office of Environmental Health Hazard Assessment (OEHHA). 1994. Health Advisory on Catching and Eating Fish-Interim Sport Fish Advisory for San Francisco Bay. Sacramento, CA.

California Office of Environmental Health Hazard Assessment (OEHHA). 1994. Public Health Advisory on Fish Consumption , Richmond Harbor Channel, California.

California Regional Water Quality Control Board - Santa Ana Region (CRWQCB - SAR). 1995. Water Quality Control Plan for the Santa Ana River Basin. 7 sections + appendices.

Central Coast Basin Plan. 1996. Central Coast Regional Water Quality Control Board.

Central Coast Regional Water Quality Control Board, Region 3. May, 1998. Watershed Management Initiative Chapter. Prepared for the U.S. Environmental Protection Agency.

Chapman, P.M., Dexter, R.N., and Long, E.R. 1987. Synoptic Measures of Sediment Contamination, Toxicity and Infaunal Community Composition. The Sediment Quality Triad in San Francisco Bay. Marine Ecology Progress Series 37:75-96.

CH2M Hill. 1979. Bayside Overflows. Report for City and County of San Francisco.

CH2M Hill. 1986. Equivalent Protection Study for Stauffer Chemical Company, Martinez Sulfuric Acid Plant. Prepared for Stauffer Chemicals. December 1986. 78 p. and Appendices

Chen, C. and W. Tsai. 1997. Evaluation of alternatives to meet the dissolved oxygen objectives of the lower San Joaquin River. Prepared for SWRCB by Systech Engineering Inc. San Ramon, CA.

City and County of San Francisco, Department of Public Works, Bureau of Water Pollution Control. 1990-1993. Tabulated data on Southeast and Islais Creek Sediment submitted by Jim Salerno to the California Regional Water Quality Control Board, San Francisco Bay Region.

Coastlinks. 1997. News from the Water Quality Protection Program for the Monterey Bay National Marine Sanctuary. Winter, 1997.

Connor, V., C. Foe and L. Deanovic. 1993. Sacramento River Basin biotoxicity Survey Results, 1988-90. Staff report, Central Valley Regional Water Quality Control Board, Sacramento, CA.

Connor, V. 1994. Toxicity and diazinon levels associated with urban storm runoff. Staff memorandum, Central Valley Regional Water Quality Control Board, Sacramento, CA.

Connor, V. 1995a. Status of urban storm runoff project. Staff memorandum, Central Valley Regional Water Quality Control Board, Sacramento, CA.

Connor, V. 1995b. Algal toxicity and herbicide levels associated with urban storm runoff. Staff memorandum, Central Valley Regional Water Quality Control Board, Sacramento, CA.

Connor, V. 1996. Chlorpyrifos in urban storm runoff. Staff memorandum, Central Valley Regional Water Quality Control Board, Sacramento, CA.

Cotter, P. and L. Strnad. 1997. Compilation of Monitoring Data for the Elkhorn Slough Watershed and the Lower Salinas River Drainage Area. California Coastal Commission.

Dames & Moore Consultants. January 15, 1998 "September 1997 Quarterly Sampling, Hercules Gas Plant Site, Area Energy LLC. Prepared for Area Energy LLC.

Dames & Moore Consultants. July 1, 1998. March 1998 Quarterly Sampling, Hercules Gas Plant Site, Area Energy LLC. Prepared for Area Energy LLC.

Dames & Moore Consultants. March 12, 1998. December 1997 Quarterly Sampling, Hercules Gas Plant Site, Area Energy LLC. Prepared for Area Energy LLC.

Dames & Moore Consultants. October 5, 1998. June 1998 Quarterly Sampling, Hercules Gas Plant Site, Area Energy LLC. Prepared for Area Energy LLC.

Deanovic, L. H. Bailey, T.W. Shed and D. Hinton. 1996. Sacramento-San Joaquin Delta Bioassay monitoring report. 1993-94. First annual report to the Central Valley Regional Water Quality Control Board.

Deanovic, L. H. Bailey, T.W. Shed and D. Hinton. 1998. Sacramento-San Joaquin Delta Bioassay monitoring report. 1994-95. Second Annual Report to the Central Valley Regional Water Quality Control Board.

Department of Ecology. 1995. Sediment Management Standards (Chapter 173-204 WAC). State of Washington. 66 pp.

Department of Pesticide Regulation. 1996. Pesticide use report, annual 1994. Information systems Branch, Department of Pesticide Regulation, Sacramento CA.

Domagalski, J. 1995. Nonpoint source pesticides in the San Joaquin River and California, inputs from winter storms: 1992-93. U.S. Geological Survey Open file report 95-165. 15p.

Dow AgroSciences LLC. 1998. A monitoring study to characterize chlorpyrifos concentration patterns and ecological risk in an agriculturally dominated tributary of the San Joaquin River. Study ENV 96055 for Dow AgroSciences, 9330 Zionsville Road, Indianapolis, Indiana 46268.

Downing, J., R. Fairey, C. Roberts, E. Landrau, R. Clark, J. Hunt, B. Anderson, B. Phillips, C.J. Wilson, G. Kapahi, F. LaCaro, K. Worcester, M. Stephenson, and M. Puckett. 1998. Chemical and Biological Measures of Sediment Quality in the Central Coast Region. Bay Protection and Toxic Cleanup Program. Final Report. New Series No. 5. 84 pp. + 6 appendices.

EDAW, Inc. 1998. Draft Environmental Impact Report: Salinas River Vegetation Management Program. State Clearinghouse No. 98021039.

E.V.S. Consultants, Inc. 1987. A Chemical And Toxicological Evaluation of Sediments From San Pablo Bay. Prepared for Chevron Environmental Health Center, Inc. Project No. 2/320-01. Seattle, WA.

E.V.S. Consultants, Inc. 1991. Chemical and Toxicological Analyses of Sediments From Castro Cove, San Francisco Bay. Vol. 1. For Chevron USA, Richmond.

Entrix. 1990a. Surface Sediment Monitoring Program for Castro Cove and Areas Adjacent to the Deep Water Outfall. Final Report Prepared for Chevron U.S.A., Richmond Refinery. 96 pp. and Appendices.

Entrix. 1990b. Benthic Community Monitoring Program for Castro Cove and Areas Adjacent to the Deep Water Outfall. Final Report Prepared for Chevron U.S.A., Richmond Refinery. 100 pp. and Appendices.

Fairey, R., C. Bretz, S. Lamerdin, J. Hunt, B. Anderson, S. Tudor, C.J. Wilson, F. LaCaro, M. Stephenson, M. Puckett, and E.R. Long. 1996. Chemistry, Toxicity and Benthic Community Conditions in Sediments of the San Diego Region. Bay Protection and Toxic Cleanup Program. Final Report. 169 pp. + 6 appendices.

Fairey, R., J. Downing, C. Roberts, E. Landrau, J. Hunt, B. Anderson, C.J. Wilson, G. Kapahi, F. LaCaro, P. Michael, M. Stephenson, and M. Puckett. 1998. Chemistry, Toxicity and Benthic Community Conditions in Sediments of the San Diego Region. Bay Protection and Toxic Cleanup Program. Final Addendum Report. 21 pp. + 7 appendices.

Flegal, A.R., R.W. Riseborough, B. Anderson, J. Hunt, S. Anderson, J. Oliver, M. Stephenson and R. Packard. 1994. San Francisco Estuary Pilot Regional Monitoring Program: Sediment Studies. Final Report for San Francisco Bay Regional Water Quality Control Board. July, 1994.

Foe, C and V. Connor. 1991a. San Joaquin bioassay results: 1988-90. Staff report, Central Valley Regional Water Quality Control Board, Sacramento, CA.

Foe, C. and V. Connor 1991b. 1989 Rice season toxicity monitoring results. Staff report, Central Valley Regional Water Quality Control Board, Sacramento, CA.

Foe, C. and W. Croyle. 1998. Mercury concentrations and loads from the Sacramento River and from Cache Creek to the Sacramento-San Joaquin Delta Estuary. Central Valley Regional Water Quality Control Board Staff Report. Sacramento Office.

Foe, C. and R. Sheipline. 1993. Pesticides in surface water from application on orchards and alfalfa during the winter and spring of 1991-92. Staff report, Central Valley Regional Water Quality Control Board, Sacramento, CA.

Foe, C. 1995. Insecticide concentrations and invertebrate bioassay mortality in Agricultural return water from the San Joaquin Basin. Staff report, Central Valley Regional Water Quality Control Board, Sacramento, CA.

Foe, C., L. Deanovic, D. Hinton. 1998. Toxicity identification evaluations of orchard dormant spray runoff. Central Valley Regional Water Quality Control Board staff report. Sacramento Office.

Fox, P. and E. Archibald. 1997. Aquatic toxicity and pesticides in surface waters of the Central Valley. Final report. Prepared for the California Urban Water Agencies , Sacramento, CA.

Ganapathy, C., C. Nordmark, K. Bennett, A. Bradley, H. Feng, J. Hernandez, J. White. In draft. Temporal Distribution of Insecticide Residues in Four California Rivers. Environmental Hazards Assessment Program, Environmental Monitoring and Pest Management Branch, California Dept. of Pesticide Regulation, Sacramento.

Gilmour, C. 1994. Mercury methylation in fresh water. In National Forum on mercury in fish, proceedings. EPA 823-R-95-002.

Glotfelty, D., J. Seiber, L. Liljedahl. 1987. Nature 325(6105):602-605.

Glotfelty, D., C. Schomburg, M.M. McChesney, J. Sugebiel and J. Seiber. 1990. Chemosphere, 21:1303-1314.

Habitat Restoration Group, 1996. Moro Cojo Slough Management and Enhancement Plan. Prepared for the Monterey County

Planning and Building Inspection Department and the State Coastal Conservancy.

Harding Lawson & Associates. 1997. Amphipod toxicity and sediment chemistry testing for the Moss Landing Harbor District.

Harding Lawson Associates (HLA). 1998. Results-Peyton Slough Sediment Investigation-Rhodia Inc. Martinez, CA.

Hart Crowser, Inc. 1993. Final Remedial Investigation Report, Volume I, Port of Richmond, Shipyard No. 3 Scrap Area Site. Richmond, CA.

Hart Crowser, Inc. 1994. Final Feasibility Study Operable Unit 1: Soil and Groundwater, Port of Richmond, Shipyard No. 3 Scrap Area Site. Richmond, CA.

Hart Crowser, Inc. 1995. Final Remedial Action Plan, Port of Richmond, Shipyard No. 3 Scrap Area Site. Richmond, CA.

Hart Crowser, Inc. 1997. Final Work Plan for Supplemental Sediment Characterization, Port of Richmond, Shipyard No. 3 Scrap Area Site, Operable Unit 2 and Operable Unit 3. Richmond, CA.

Herzog, Donald and Associates, Inc. 1989. Final Report, Remedial Investigation/Feasibility Study, Seacliff Marina, Richmond Shipyard No. 3, Richmond.

Hornberger, M.I., S.N. Luoma, A. van Geen, C. Fuller, R. Anima. 1999. Historical Trends of Metals in the Sediments of San Francisco Bay, California. Mar. Chem. 64: 39-55.

Hunt, J. W., B.A. Anderson, B. M. Phillips, R.S. Tjeerdema, H. M. Puckett, and V. deVlaming. In press. Patterns of aquatic toxicity in an agriculturally dominated coastal watershed in California. Agriculture, Ecosystems and Environment.

Hunt J.W., B.S. Anderson, J. Newman, R.S. Tjeerdema, K. Taberski, C.J. Wilson, M. Stephenson, H.M. Puckett, R. Fairey and J. Oakden. 1998. Sediment Quality and Biological Effects in San Francisco Bay. Final Technical Report. Pp. 118. Appendices A-E.

Hunt, J.W., B.S. Anderson, B. Phillips, J. Newman, R. Tjeerdema, M. Stephenson, M. Puckett, R. Fairey, R. Smith, K. Taberski. 1998a. Evaluation and Use of Sediment Reference Sites and Toxicity Tests in San Francisco Bay. For Ca. State Water Resources Control Board. pp. 133 + Appendices A-D.

Hunt, J., B. Anderson, B. Phillips, J. Newman, R. Tjeerdema, M. Stephenson, M. Puckett, R. Fairey, R. Smith, K. Taberski. 1998b. Evaluation and Use of Sediment Reference Sites and Toxicity Tests in San Francisco Bay. For Ca. State Water Resources Control Board. pp. 133 + Appendices A-D.

Hunt, J.W., Anderson, B.S., Phillips, B.M., Newman, J., Tjeerdema, R.S., Taberski, K.M., Wilson, C.J., Stephenson, M., Puckett, H.M., Fairey, R., and Oakden, J. 1998a. Sediment Quality and Biological Effects in San Francisco Bay. pp. 118 + Appendices A-E.

Hunt, J.W., B.S. Anderson, B. Phillips, J. Newman, R. Tjeerdema, K. Taberski, C. Wilson, M. Stephenson, H. Puckett, R. Fairey and J. Oakden. 1998b. Sediment Quality and Biological Effects in San Francisco Bay. Pp. 188 + Appendices A-E.

ICF Kaiser. 1997. Wetlands Area Sampling Program, Zeneca Ag Products, Richmond Facility. November 1997.

ICI Americas Inc. 1987. Assessment of Surface Impoundments at ICI Americas, Richmond, CA for TPCA. November 2, 1987.

ICI Americas Inc. 1990. Solid Waste Assessment Test Proposal. July 23, 1990.

Jacobi, M., R. Fairey, C. Roberts, E. Landrau, J. Hunt, B. Anderson, B. Phillips, C.J. Wilson, G. Kapahi, F. LaCaro, B. Gwynne, M. Stephenson, and M. Puckett. 1998. Chemical and Biological Measures of Sediment Quality and Tissue Accumulation in the North Coast Region. Bay Protection and Toxic Cleanup Program. Final Report. 79 pp. + 6 appendices.

Jones and Stokes Associates. 1998. Potential Solutions for Achieving the San Joaquin River Dissolved Oxygen Objective. Report prepared for De Cuir and Somach and the City of Stockton.

Jones and Stokes Associates, 2600 V Street, Suite 100, Sacramento, CA. 95818.

Katznelson, R. and T. Mumley. 1997. Diazinon in surface water in the San Francisco Bay area: occurrence and potential impact. Report prepared for the Alameda Countywide Clean Water Program, Hayward, CA.

Kennedy/Jenks Consultants. April 1994. Final Remedial Action Plan, Hercules Gas Plant Site, Santa Barbara County, California. Prepared for Shell Western E&P Inc. K/J 920042.00.

Kratzer, C. 1997. Transport of diazinon in the San Joaquin River Basin, California. U.S. Geological Survey open file report 97-411. Sacramento 22p.

Kleinfelder. 1993. Uplands Water Quality Management Plan for Elkhorn Slough. Prepared for the Association of Monterey Bay Area Governments.

Kuivila, K and C. Foe. 1995. Concentration, transport and biological impact of dormant spray insecticides in the San Francisco Estuary, California. Env. Toxicol. and Chem. 14:1141-1150.

Larry Walker and Associates. 1997. Sacramento River mercury control planning project. Prepared for the Sacramento Regional County Sanitation District.

Larsen, K., V. Connor, L. Deanovic and D. Hinton. 1998a. Sacramento River Watershed Program Toxicity Monitoring Results: 1996-1997. Prepared for the Sacramento Regional County Sanitation District by the U.C. Davis Aquatic Toxicology Laboratory.

Larsen, K., V. Connor, L. Deanovic and D. Hinton. 1998b. Sacramento River Watershed Program Toxicity Monitoring Results: 1997-1998. Prepared for the Sacramento Regional County Sanitation District by the U.C. Davis Aquatic Toxicology Laboratory.

Larson, K., K. Cortright, V. Connor, P. Young, L. Deanovic and D. Hinton. 1998c. Stockton fish kills associated with urban storm

runoff: the role of low dissolved oxygen. University of California Report prepared for the Central Valley Regional Water Quality Control Board.

Long, E. R., and L. Morgan. 1990. The potential effects of sediment-sorbed contaminants tested in the National Status and Trends Program. NOAA Technical Memorandum NOS OMA 52.

Long, E. R., D.D. MacDonald, S. L. Smith, and F. D. Calder. 1995. Incidence of adverse biological effects within ranges of chemical concentrations in marine and estuarine sediments. *Environmental Management* 19:81-97.

Long, E.R. and Markel. 1992. An Evaluation of the Extent and Magnitude of Biological Effects Associated with Chemical Contaminants in San Francisco Bay, California. NOAA Technical Memorandum NOS ORCA 64. National Oceanic and Atmospheric Administration.

Los Angeles Regional Water Quality Control Board. Chemical and biological measures of sediment quality in McGrath Lake. February 1999.

LTMS. 1996. Long-Term Management Strategy (LTMS) for the Placement of Dredged Material in the San Francisco Bay Region. Volume I. Draft Policy Environmental Impact Statement/ Programmatic Environmental Impact Report. Prepared by the U.S. EPA, Region 9; U.S. Army Corps of Engineers, San Francisco District; San Francisco Bay RWQCB; and the SWRCB.

The MARK Group. 1987. Interim Report of Subsurface Conditions. Stauffer Chemical Company, Martinez, California. August 1987.

The MARK Group. 1988. Report of Field Investigations Stege Plant. Prepared for ICI Americas. January 22, 1988.

The MARK Group. 1988a. Work Plan-Site Investigations Report. Sulphur Products Facility. Stauffer Chemical Company, Martinez, California. May 1988.

The MARK Group. 1988b. Two Solar Evaporation Surface Impoundments. Amended Closure Plan

The MARK Group. 1989a. Site Investigation Report. Sulfur Products Facility. Stauffer Chemical Company, Martinez, California. March 1989.

The MARK Group. 1989b. Addendum to Site Investigation Report. Sulfur Products Facility. Stauffer Chemical Company, Martinez, California. May 1989.

The Mark Group. 1991. Water Quality Solid Waste Assessment Test Report, Cinder Fill Area, ICI Americas Inc., Richmond, California. Prepared for ICI Americas. July 1, 1991.

MacDonald, D.D., 1994. Approach to assessment of sediment quality in Florida coastal waters. Volumes I and II. Prepared for the Office of Water Policy, Florida Department of Environmental Regulation. MacDonald Environmental Services, Ltd., Ladysmith, British Columbia.

MEC Analytical Systems Inc. 1996. Sampling and Analysis of Sediment at Islais Creek, San Francisco, CA. Report prepared for the City and County of San Francisco, Department of Public Works, Water Quality Planning.

Menconi M. and C. Cox. 1994a. Hazard Assessment to the insecticide diazinon to aquatic organisms in the Sacramento San Joaquin River System. California Department of Fish and Game Env. Serv. Div. Administrative Report 94-2. Sacramento CA.

Menconi M. and A. Paul. 1994b. Hazard Assessment to the insecticide chlorpyrifos to aquatic organisms in the Sacramento San Joaquin River System. California Department of Fish and Game Env. Serv. Div. Administrative Report 94-1. Sacramento CA.

Mills, T. and F. Fisher. 1994. Central Valley anadromous sport fish annual run-size, harvest and population estimates, 1967 through 1991. Cal Dept. Fish and Game. Inland fisheries Div. Tech Report.

Model Urban Runoff Program – A How-To Guide For Developing Urban Runoff Programs for Small Municipalities. April, 1998 Draft. MBNMS, Calif. Coastal Commission, RWQCB, City of Monterey, City of Santa Cruz, AMBAG.

Montoya, B. 1991. An analysis of the toxic water quality impairments in the Sacramento-San Joaquin Delta Estuary. Staff report, Central Valley Regional Water Quality Control Board, Sacramento, CA.

National Academy of Sciences. 1973. Water Quality Criteria, 1972.

NBNMS. 1996. NBNMS Action Plan for Implementing Solutions to Urban Runoff.

Novartis Crop Protection. 1997. An ecological risk assessment of diazinon in the Sacramento and San Joaquin River Basins. Technical report 11/07 Environmental and Public affairs department Greensboro, NC.

Oakden, J.M. and J.S. Oliver. 1988. Pesticide Persistence in Fields and Drainages of the Central Monterey Bay Area. Prepared for the Regional Water Quality Control Board.

Office of Environmental Health Hazard Assessment (OEHHA). 1994. Health Advisory on Catching and Eating Fish-Interim Sport Fish Advisory for San Francisco Bay. Sacramento, CA.

Pacific Eco-Risk Laboratories. 1998. Initial Data Report for the Phase I: Stage 2 Evaluation of Stege Marsh Sediments, Draft. September 30, 1998.

Parkin, J. L. 1998. Ecology of Breeding Caspian Terns (*Sterna caspia*) in Elkhorn Slough, California. Thesis presented to the Faculty of Moss Landing Marine Laboratories, San Jose State University.

Phillips, B., B. Anderson, J. Hunt, , J. Newman, R. Tjeerdema, C.J. Wilson, E.R. Long, M. Stephenson, M. Puckett, R. Fairey, J. Oakden, S. Dawson and H. Smythe. 1998. Sediment Chemistry, Toxicity and Benthic Community Conditions in Selected Water

Bodies of the Santa Ana Region. Bay Protection and Toxic Cleanup Program. Final Report. 105 pp. + 6 appendices.

RWQCB. Central Coast Region. 1996. Basin Plan.

RWQCB. Central Coast Region. 1997. Watershed management Initiative Chapter.

RWQCB. Central Coast Region. 1999b. Final regional toxic hot spot cleanup plan. 95 pp.

RWQCB. Central Coast Region. 1997c. Proposed regional toxic hot spot cleanup plan. 79 pp.

RWQCB. Central Valley Region. 1997e. Proposed regional toxic hot spot cleanup plan. 73 pp.

RWQCB. Central Valley Region. 1999d. Draft final regional toxic hot spot cleanup plan. 63 pp.

RWQCB. Los Angeles Region. 1997d. Proposed regional toxic hot spot cleanup plan. 45 pp.

RWQCB. Los Angeles Region. 1999c. Draft final regional toxic hot spot cleanup plan. 62 pp.

RWQCB. North Coast Region. 1998a. Final regional toxic hot spot cleanup plan. 28 pp.

RWQCB. San Diego Region. 1997g. Proposed regional toxic hot spot cleanup plan. 34 pp.

RWQCB. San Diego Region. 1998c. Final regional toxic hot spot cleanup plan. 44 pp.

RWQCB. San Francisco Bay Region. 1997b. Proposed regional toxic hot spot cleanup plan. 64 pp.

RWQCB. San Francisco Bay Region. 1999a. Draft final regional toxic hot spot cleanup plan. 131 pp.

RWQCB. Santa Ana Region. 1997f. Proposed regional toxic hot spot cleanup plan. 19 pp.

RWQCB. Santa Ana Region. 1998b. Final regional toxic hot spot cleanup plan. 31 pp.

Rasmussen, D. and H. Blethrow. 1991. Toxic Substances Monitoring Program 1988-89 Data Report. State Water Resources Control Board, California Environmental Protection Agency. 91-1WQ

Rasmussen, D. 1992. Toxic Substances Monitoring Program 1990 Data Report. State Water Resources Control Board, California Environmental Protection Agency. 92-1WQ.

Rasmussen, D. 1993. Toxic Substances Monitoring Program 1991 Data Report. State Water Resources Control Board, California Environmental Protection Agency. 93-1WQ.

Rasmussen, D. 1995a. State Mussel Watch Program 1987-1993 Data Report (94-1WQ). State Water Resources Control Board, California Environmental Protection Agency.

Rasmussen, D. 1995b. Toxic Substances Monitoring Program 1993-94 Data Report. State Water Resources Control Board, California Environmental Protection Agency. 95-1WQ.

Rasmussen, D. 1996. State Mussel Watch Program 1993-1995 Data Report (96-2WQ). November. State Water Resources Control Board, California Environmental Protection Agency.

Rasmussen, D. 1997. Toxic Substances Monitoring Program 1994-95 Data Report. State Water Resources Control Board, California Environmental Protection Agency.

Regional Water Quality Control Board, Central Coast Region. January 1997. Pre-Remediation Monitoring Report, Canada de la Huerta, Gaviota, Santa Barbara County.

Regional Water Quality Control Board Central Coast Region. October 1997. Post-Remediation Monitoring Report, Canada de la Huerta, Gaviota, Santa Barbara County.

Regional Water Quality Control Board, Central Coast Region. November 6, 1998. Position Paper, Shell Hercules Gas Plant, Canada de la Huerta, Santa Barbara County.

Regional Water Quality Control Board (RWQCB). North Coast Region. 1997a. Proposed regional toxic hot spot cleanup plan. 19 pp.

Ross, L. 1992. Preliminary results of the San Joaquin River study: winter 91-92. Staff memorandum to Kean Goh. Environmental Hazard Assessment Branch, Department of Pesticide Regulation. Sacramento CA.

Ross, L. 1993. Preliminary results of the San Joaquin River study: winter 92-93. Staff memorandum to Kean Goh. Environmental Hazard Assessment Branch, Department of Pesticide Regulation. Sacramento CA.

Ross, L., K. Bennett, K. Kim, K. Hefner and J. Hernandez. 1997. Reducing dormant spray runoff for orchards. Staff report Environmental Monitoring and Pest Management Department of Pesticide Regulation Sacramento, CA.

SAIC. 1998. Ecological evaluation report for the Palos Verdes Shelf. Draft Report. Prepared for the U.S. EPA.

Salinas River Watershed Team. 1996. Salinas River Watershed Team Strategy.

San Francisco Bay Regional Water Quality Control Board. 1995. Contaminant levels in fish tissue from San Francisco Bay. Staff report prepared jointly by the San Francisco Regional Board, the State Water Resources Control Board, and the Department of Fish and Game.

San Francisco Bay Regional Water Quality Control Board (SFBRWQCB). 1996. Fact Sheet. Prepared by staff of the California Regional Water Quality Control Board, San Francisco Bay Region for Amendment of Waste Discharge Requirements for Order No. 94-149 for City and County of San Francisco, Southeast Water Pollution Control Plant.

San Francisco Bay Regional Water Quality Control Board (SFBRWQCB). Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments. May 1998.

San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), SWRCB, CDFG. 1995. Contaminant Levels in Fish Tissue from San Francisco Bay.

San Francisco Estuary Institute (SFEI). 1994. 1993 Annual Report, San Francisco Estuary Regional Monitoring Program for Trace Substances. Richmond, CA.

SFBRWQCB. 1998. Mines Report. Pp. 75.

SFEI. 1995. 1994 Annual Report, San Francisco Estuary Regional Monitoring Program for Trace Substances. Richmond, CA.

SFEI. 1996. Annual Report: San Francisco Estuary Regional Monitoring Program for Trace Substances. Prepared by the San Francisco Estuary Institute, Richmond, CA. 324 p.

SFEI. 1997. 1996 Annual Report, San Francisco Estuary Regional Monitoring Program for Trace Substances. Richmond, CA.

SMBRP. 1993. State of the Bay, 1993.

SFBRWQCB. Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments. May 1998

SFBRWQCB. 1996. Fact Sheet. Prepared by staff of the California Regional Water Quality Control Board, San Francisco Bay Region for Amendment of Waste Discharge Requirements for Order No. 94-149 for City and County of San Francisco, Southeast Water Pollution Control Plant.

SFBRWQCB. 1997. Chemical Analytical Results for a Stege marsh Sediment.

Spies, R.B., A.J. Gunther, J. Stegeman, B. Woodin, R. Smolowitz, B. Saunders and L. Hain. 1993. Induction of Biochemical, Genetic and Morphological Markers of Contamination in Speckled

Sanddabs *Citharichthys stigmaeus* Experimentally Exposed to Sediments from San Francisco Bay. Prepared for the SFBRWQCB.

S.R. Hansen & Assoc. 1996. Development and Application of Estuarine Sediment Toxicity Identification Evaluations. Prepared for San Jose State Foundation. pp. 79 Appendix A&B.

Salinas River Watershed Team Strategy, 1996. Central Coast Regional Water Quality Control Board.

Salinas River Lagoon Management and Enhancement Plan (March, 1997). Prepared by John Gilchrist & Assoc., the Habitat Restoration Group, Philip Williams and Associates, Wetlands Research Associates, and the staff of the Monterey County Water Resources Agency for the Salinas River Lagoon Task Force.

Scanlin, J. and A. Cooper 1997. Outdoor use of diazinon and other insecticides in Alameda County. Report prepared for the Alameda County Flood Control and Water Conservation District, Hayward CA.

Scanlin, J. and A. Feng. 1997. Characterization of the presence and sources of diazinon in the Castro Valley Creek Watershed. Prepared for Alameda County Clean Water Program and Alameda County Flood Control and Water Conservation District.

Scanlin, J. and S. Gosselin 1997. Strategy to reduce diazinon levels in Creeks in the San Francisco Bay Area. Prepared for Alameda County Clean Water Program and Alameda County Flood Control and Water Conservation District.

Schantz, R. and C. Chen, 1993. City of Stockton water quality model: Volume I. Model development and calibration. Prepared by Phillip Williams and Associates, San Francisco, CA.

Slotton D., S. Ayers, J. Reuter, and C. Goldman. 1997a. Goldmining impacts on foodchain mercury in Northwestern Sierra Nevada Streams. Final Report. Div. of Env. Studies U.C. Davis, Ca.

Slotton D., S. Ayers, J. Reuter, and C. Goldman. 1997b. Cache Creek watershed preliminary mercury assessment, using benthic

macroinvertebrates. Final Report. Div. of Env. Studies U.C. Davis, CA.

State Water Resources Control Board (SWRCB). 1997. Draft policy for implementation of toxics standards for inland waters, enclosed bays and estuaries of California (Phase 1 of the Inland Surface Waters Plan and Enclosed Bays and Estuaries Plan) and functional equivalent document. September 11, 1997.

SWRCB. 1998a. Water Quality Control Policy for Guidance on the Development of Regional Toxic Hot Spot Cleanup Plans. SWRCB Resolution No. 98-090. 44 pp.

SWRCB. 1998b. Final Functional Equivalent Document – Water Quality Control Policy for Guidance on the Development of Regional Toxic Hot Spot Cleanup Plans. Division of Water Quality. SWRCB Resolution No. 98-090. 297 pp.

SWRCB. 1998c. Chemistry, Toxicity and Benthic Community Conditions in Sediments of the San Diego Bay Region. Addendum Report.

SWRCB. 1999. Draft Functional Equivalent Document – Consolidated Hot Spots Cleanup Plan. Division of Water Quality. April, 1999. 339 pp. + 2 Appendices.

SWRCB, Central Coast Regional Water Quality Control Board California Department of Fish and Game, Moss Landing Marine Laboratories, University of California Santa Cruz. 1998. Chemical and Biological Measures of Sediment Quality in the Central Coast Region.

SWRCB and DPR. 1997. California Pesticide Management Plan for Water Quality. An Implementation Plan for the Management Agency Agreement between the Department of Pesticide and the State Water Resources Control Board. California Environmental Protection Agency. 72 pp.

Stauffer Chemical Company. 1987. Proposed Sample and Analysis Plan for NPDES Impoundments per the Toxic Pits Clean-up Act (TPCA). July 16, 1987.

Stillwell, Jim. Moss Landing Harbor District. Telephone conversation in November, 1997.

Sustainable Conservation. 1996. Partners in Restoration: Creating Model Incentives and Access for Watershed Restoration. Grant No. 95-8694. Final Report to the David and Lucille Packard Foundation.

Terra Verde. 1998. Draft Remedial Action workplan, Operable Units 2 and 3, Port of Richmond, Shipyard No. 3 Scrap Area Site, Richmond, California. April 9, 1998.

URS Consultants. 1994. CERCLA Site Inspection, Stauffer Chemical Company.

U.S. Army Corps of Engineers and Port of Richmond. 1996. Final Supplemental Environmental Impact Statement/ Environmental Impact Report, Richmond Harbor Navigation Improvements.

U.S. COE. 1998. Options for In-Situ Capping of Palos Verdes Shelf Contaminated Sediment. Draft Report. Prepared for the U.S. EPA.

U.S. Environmental Protection Agency, 1990. Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters. USEPA Office of Water. 840-B-92-002.

U.S. EPA. 1993. Guidance Specifying Management Measures For Sources of Nonpoint Pollution in Coastal Waters (6217(g)). Issued under the Authority of the Coastal Zone Act Reauthorization Amendments of 1990.

U.S. EPA. 1993. Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories. Volume 1. Fish Sampling and Analysis. EPA 823-R-93-002. Office of Water. Washington, D.C.

U.S. EPA. 1993b. Guidance for assessing chemical contaminant data for use in fish advisories. Volume 1. EPA 823-R-93-002. Office of Water. Washington, D.C.

U.S. EPA 1994. Short-term methods for estimating the chronic toxicity of effluents and receiving water to freshwater organisms. (3rd edition). Research and Development. EPA-600-4-91-002.

U.S. EPA 1995. Guidance for assessing chemical contaminant data for use in fish advisories, Volume 1, Fish Sampling and analysis, 2nd edition, Office of Water. EPA 823-R-95-007, September 1995.

U.S. EPA. 1995. Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories. Volume 1. Fish Sampling and Analysis. Second Edition. EPA 823-R-95-007. Office of Water. Washington, D.C.

U.S. EPA 1997. Mercury Report to Congress Volume VI: An Ecological Assessment of anthropogenic mercury emissions in the United States. Office of Air Quality Planning and Standards and Office of Research and Development.

U.S. EPA, 1997. The incidence and severity of sediment contamination in surface waters of the United States. Volume 1, National Sediment Quality Survey. Document No. EPA 823-R-97-006.

U.S. EPA 1998. TMDL Program Update. Presented at the U.S. EPA Water Quality Standards meeting in Philadelphia Pa. 24-27 August, 1998.

U.S. EPA Envirofacts, 1998. U.S. EPA World Wide Web Site.

U.S. Food and Drug Administration. 1984. Shellfish Sanitation Interpretation: Action Levels for Chemical and Poisonous Substances.

Washington State Department of Ecology. 1997. Developing Health Based Sediment Quality Criteria for Cleanup Sites: A Case Study Report. Ecology Publication 97-114.

Woodward-Clyde Consultants. 1993. Supplemental Site Subsurface Investigation at Zeneca's Agricultural Facility, Richmond, California. Prepared for Zeneca Agricultural Products. June 23, 1993.