

APPENDIX A

RECENT MAJOR SEDIMENT INVESTIGATIONS IN SAN FRANCISCO BAY

Study Name	Sampling Year(s)	Geographic Scope	Primary Contact	Sediment Chemistry							Toxicity		Infauna?
				Sampling Locations	Metals	PAHs	PCB/Pest	Dioxin/Furan	NOAA Database?	Sampling Locations	No. of Types of Tests	NOAA Database?	Sampled?
NOAA Status and Trends - Benthic Surveillance	Sediment: 1986-95; Tissue: 1984-91	S.F. Bay	Tom O'Connor (301) 713-3032 ext. 151	8	Yes	Yes	Yes	No	Yes	NA	NA	NA	No
NOAA Status and Trends - Mussel Watch	Sediment: 1986 and 1987; Tissue: 1986-1995	S.F. Bay	Tom O'Connor (301) 713-3032 ext. 151	5	Yes	Yes	Yes	No	Yes	NA	NA	NA	No
Chapman et al. 1986	1985	S.F. Bay	Bob Dexter (206)217-9337	30	Yes	Yes	Yes	No	No	30	1-4	No	Yes
NOAA/ Long and Buchman 1989	1987	S.F. Bay	Ed Long (206) 526-6338	15	Yes	Yes	Yes	No	No	15	5	No	No
NOAA/ Synoptic Survey	1990	S.F. Bay	Ed Long (206) 526-6338	45	Yes	Yes	Yes	No	No	45	3	No	No
BPTCP- Pilot Project	1991 and 1992	S.F. Bay	Karen Taberski (510) 286-1346	59	Yes	Yes	Yes	No	Yes	59	3	No	No
SFEI RMP: 1993	1993	S.F. Bay	Dr. Bruce Thompson (510) 231-9539	16	Yes	Yes	Yes	No	Yes	8	2	Yes	No
SFEI RMP: 1994	1994	S.F. Bay	Dr. Bruce Thompson (510) 231-9539	20	Yes	Yes	Yes	No	Yes	20	2	Yes	Yes
SFEI RMP 1995	1995	S.F. Bay	Dr. Bruce Thompson (510) 231-9539	22	Yes	Yes	Yes	No	Yes	22	2	Yes	Yes
SFEI RMP 1996	1996	S.F. Bay	Dr. Bruce Thompson (510) 231-9539	22	Yes	Yes	Yes	No	Yes	22	2	Yes	Yes
CA Fish & Game Reference Site Survey	1994 and 1995	S.F. Bay	Rusty Fairey (408) 633-6035	7	Yes	Yes	Yes	No	Yes	7	7-9	Yes	No
Bay Protection and Toxic Cleanup Program	1995, 1996, 1997	S.F. Bay	Rusty Fairey (406) 633-6035 Karen Taberski (510)286-1346	108; only 16 have chemistry (1995)	Yes	Yes	Yes	No	Yes	108 (1995)	2	Yes	No

MULTIPLE EMBAYMENTS

Study Name	Sampling Year(s)	Geographic Scope	Primary Contact	Sediment Chemistry						Toxicity		Infauna? Sampled?		
				Sampling Locations	Metals	PAHs	PCB/Pest	Dioxin/Furan	NOAA Database?	Sampling Locations	No. of Types of Tests		NOAA Database?	
Spies et al. 1985			RWOCB, Oakland							No		No		
Swartz et al. 1985										No		No		
Stallard et al. 1986										No		No		
US Navy 1987	1987	Hunters Point, Treasure Island, Alameda	US Navy, San Bruno	4 at HP; 8 at TI; 2 at Alameda	Yes	Yes	Yes	No	No	4 at HP; 8 at TI; 2 at Alameda	5	No	Yes	
Long et al. 1990	1987	S.F. Bay	Ed Long, NOAA	3 stations at Oakland Inner Harbor; 3 at Yerba Buena, 3 at Vallejo, and 3 in San Pablo Bay	Yes	Yes	Yes	No	No	Comp. from each of 4 areas in S.F. Bay	5	No	No	
Word and Kohn 1990	1989-90	John F. Baldwin channel	USACE, San Francisco District	47 stations in West RichmondP inole Shoal, and Carquinez Strait	Yes	Yes	Yes	No	No			No		
Kohn et al. 1991	1990	John F. Baldwin channel	USACE, San Francisco District	7 stations in W. Richmond reach; 17 stations in Pinole Shoal reach	Yes	Yes	Yes	No	No	NA	NA	No	No	
Flegal et al. 1992										No		No		
Katznelson et al. 1991										No		No		
Kohn et al. 1993		John F. Baldwin channel	USACE, San Francisco District							No		No		
Moore and Dillon 1993		Oakland Harbor area; Alcatraz disposal site; South Bay Bay Farm Borrow Pit	USACE, Vicksburg, MS	7 stations						No	7 stations	1	No	No

MULTIPLE EMBAYMENTS cont.

Study Name	Sampling Year(s)	Geographic Scope	Primary Contact	Sediment Chemistry						Toxicity		Infauna? Sampled?	
				Sampling Locations	Metals	PAHs	PCB/Pest	Dioxin/ Furan	NOAA Database?	Sampling Locations	No. of Types of Tests		NOAA Database?
Bienert et al 1994		John F. Baldwin channel	USACE, San Francisco District						No			No	
Hostettler et al. 1994	1992	S.F. Bay	F. Hostettler, USGS	17 stations; 1 core from Richardson Bay	No	Yes	Pest./no PCBs	No	No	NA	NA	No	No
Lee et al. 1994		S.F. Bay	USACE, San Francisco District	sed chem. ?								No	
Pereira et al. 1994	1992	S.F. Bay	W. Pereira, USGS	17 stations	No	No	Yes	No	No	NA	NA	No	No
Pereira et al. 1997			W. Pereira, USGS										
Rice unpub.													

CENTRAL BAY

Study Name	Sampling Year(s)	Geographic Scope	Primary Contact	Sediment Chemistry						Toxicity		Infauna? Sampled?	
				Sampling Locations	Metals	PAHs	PCB/Pest	Dioxin/Furan	NOAA Database?	Sampling Locations	No. of Types of Tests		NOAA Database?
Levine Fricke 1985		Point Isabel	RWOCCB, Oakland										
Jefferson Associates 1987		Chevron Richmond deep water outfall	RWOCCB, Oakland										
ESA 1988	1988	Pt. Molate Fuel Pier, Richmond	U.S. Navy, San Bruno	Comp. cores from 2 sections near pier; Alcatraz dump site	Yes	Yes	Yes	Yes	No	Comp. cores from 2 sections near pier; Alcatraz dump site	1	No	No
Power and Chapman 1988	1988	Richmond Inner Harbor	USACE, S.F. District	Comp. cores in 5 sections of harbor; Alcatraz ref. site	Yes	Yes	Yes	No	No	Comp. cores in 5 sections of harbor; Alcatraz ref. site	1	No	No
Power and Chapman 1989	1989	Richmond Inner Harbor	USACE, S.F. District	12 stations in harbor; Alcatraz ref. site	Mercury	No	No	No	No	1 comp. from 12 stations; Alcatraz ref. site	1 (oyster)	No	No
McPherson, Power, Grindlay. 1989.	1989	Richmond Harbor Channel; Santa Fe Channel	USACE, S.F. District	48 stations in RH; 48 stations in Santa Fe	Yes	Yes	Yes	No	No	NA	NA	No	No
Brown et al. 1990		Richmond Harbor and Santa Fe Channel	USACE, S.F. District										
EVS 1990	1989	Richmond Inner and Outer Harbor	USACE, S.F. Dist.	34 stations in Harbor; Alcatraz Island	Yes	Yes	Yes	No	No	6 comp. cores from Harbor; Alcatraz Island	2	No	No
Kennedy, Jenks, Chilton. 1990.		Richmond Outer Harbor, Liquid Gold site	Southern Pacific										
EVS 1991	1990	Castro Cove	Chevron USA	11 stations in Castro Cove; 2 in San Pablo Bay	Yes	Yes	Yes	No	No	11 stations in Castro Cove; 2 in San Pablo Bay	2	No	No

CENTRAL BAY, cont.

Study Name	Sampling Year(s)	Geographic Scope	Primary Contact	Sediment Chemistry						Toxicity		Infauna? Sampled?	
				Sampling Locations	Metals	PAHs	PCB/Pest	Dioxin/Furan	NOAA Database?	Sampling Locations	No. of Types of Tests		NOAA Database?
Pinza et al. 1992		Richmond Inner Harbor	USACE, San Francisco District	15 stations	Yes	Yes	Yes	No	No	3 comp. samples	1	No	No
Hart Crowser 1992		Port of Richmond Shipyard, No. 3 scrap area	Port of Richmond										
Hart Crowser 1993		Port of Richmond Shipyard, No. 3 scrap area	Port of Richmond										
Battelle 1994a		Richmond Harbor	Port of Richmond										
URS 1994		Stauffer Chemical	Stauffer Chemical										
Swartz et al. 1991 1994		Lauritzen Channel, Richmond Harbor	USEPA, Newport, Or.	Five grabs at 9 stations: 4 in Lauritzen Channel, 2 in Santa Fe; 3 in Richmond Harbor	Yes	Yes	Yes	No	No	9 stations	1	No	Yes
Pinza et al. 1995a		Richmond Harbor	USACE, San Francisco District										
Pinza et al. 1995b		Richmond Harbor	USACE, San Francisco District										
Kennedy/Jenks 1995		Richmond Harbor, Liquid Gold site	Southern Pacific										
Maruya 1996	1993-94	Hoffman Marsh	K. Maruya, UC-Berkeley	6 stations	No	Yes	No	No	No	NA	NA	No	No
Pereira et al. 1996	1993	Richmond Harbor, Lauritzen Channel	USGS, Palo Alto	16 stations	No	Yes	Yes	No	No	NA	NA	No	No

UNITED HECKATHORN, CENTRAL BAY CONT.

Study Name	Sampling Year(s)	Geographic Scope	Primary Contact	Sediment Chemistry						Toxicity		Infauna Sampled?	
				Sampling Locations	Metals	PAHs	PCB/Pest	Dioxin/Furan	NOAA Database?	Sampling Locations	No. of Types of Tests		NOAA Database?
HLA 1986		Lauritzen Canal		19 cores	2 comp. only	2 comp. only	each for DDT; only 2 comp. for PCBs /pest.	No	No	NA	NA	No	No
Levine-Fricke 1990		Lauritzen Canal			Yes	Yes	Yes	No	No				
Battelle 1994b	1994?	Inner Richmond Harbor	USEPA, Region 9	53 stations in Lauritzen Canal, Santa Fe Channel, Inner Harbor Channel, and Parr Canal	Selected stations	Selected stations	DDT, DDE, DDD, and Dieldrin	No	No	Composites from 53 cores	3	No	
USEPA 1994	1993	Lauritzen Canal, Parr Canal, Santa Fe Channel, Richmond Inner Harbor	USEPA, Region 9	16 LC; 17 upper Santa Fe; 16 in RIH; 3 in Parr;	Yes	Yes	Yes	No	No	11 comp. samples	2	No	No

SAN PABLO BAY

Study Name	Sampling Year(s)	Geographic Scope	Primary Contact	Sediment Chemistry						Toxicity		Infauna Sampled?	
				Sampling Locations	Metals	PAHs	PCB/Pest	Dioxin/Furan	NOAA Database?	No. of Types of Tests	NOAA Database?		
Ota 1986		Northern S.F. Bay	USGS, Palo Alto										
Stukas 1986		San Pablo Bay	Chevron USA										
EVS 1987	1987	San Pablo Bay	Chevron USA	Comp. cores from 4 sites in Bay; 1 comp. core from ref. site in Bay	Yes	Yes	Yes	No	No	Comp. cores from 4 sites in Bay; 1 comp. core from ref. site in Bay	2	No	No
MBL1987	1987	Mare Island and Carquinez disposal site	USACE, San Francisco District	6 stations near Mare; , Carquinez ref. site	Yes	Yes	Yes	No	No	2 stations near Mare; Carquinez ref. site	1	No	No
USACE 1987	1987	Petaluma River; San Pablo Bay	USACE, San Francisco District	Comp. cores from 10 areas in river, outlet to Bay	Yes	Yes	Yes	No	No	Comp. cores from 10 areas in river, outlet to Bay	1	No	No
EA Engineering 1989	1989	Pacific Refinery berth area; Carquinez disposal	Pacific Refinery	3 comp. at 12 stations; Carquinez ref.	Yes	Yes	Yes	No	No	?	?		
EVS 1989	1988	Pinole Shoal Channel; San Pablo Bay disposal site (reference)	USACE, San Francisco District	Comp. cores from 6 areas in channel; 1 core from S.P. Bay disposal site	Yes	Yes	Yes	No	No	Comp. cores from 2 areas in channel; 1 core from S.P. Bay disposal site	1	No	No

SAN PABLO BAY, cont.

Study Name	Sampling Year(s)	Geographic Scope	Primary Contact	Sediment Chemistry						Toxicity		Infauna Sampled?	
				Sampling Locations	Metals	PAHs	PCB/Pest	Dioxin/Furan	NOAA Database?	Sampling Locations	No. of Types of Tests		NOAA Database?
Power, McPherson, Chapman. 1989.	1988	Mare Island Strait and Carquinez disposal site	USACE, San Francisco District	Comp. cores from 6 areas in Mare Island Strait; Carquinez disposal ref. site	Yes	Yes	Yes	No	No	Comp. cores from 2 areas in Mare Island Strait; Carquinez disposal ref. site	1 (OL)	No	No
Entrix 1990	1987-90	Castro Cove, San Pablo Bay	Richmond Refinery	10 stations at Castro Cove, 11 stations offshore	Yes	Yes	Yes	No	No	NA	NA	NA	NA
MEC 1990	1990	Pacific Refinery pier area; Carquinez ref. site	Pacific Refinery	No sed. chem.	NA	NA	NA	NA	NA	3 comp. at 8 stations	1	No	No
EVS 1991	1991	Castro Cove	Richmond Refinery	11 stations in Castro Cove; 2 ref.	Yes	Yes	Yes	No	No	11 stations; 2 ref.	2	No	No
ToxScan 1993		Pinole Shoal	USACE, San Francisco District										
MEC 1993		Bahia Lagoon/San Pablo Bay Disposal Site											
ABT 1994a		San Pablo Bay Disposal Site											
MEC & ABT 1994		San Pablo Bay Disposal Site											
USDOI. 1994	1994	Cullinan Ranch marsh area	National Biological Survey, Columbia, Missouri	30 stations	Yes	No	No	No	No	NA	NA	No	No
PRC 1995	1994	Mare Island Strait off IR 4	U.S. Navy	4 cores	Yes	Yes	Yes	No	No	NA	NA	NA	No
Collins and May 1996	1995	China Camp State Park; Petaluma Marsh	SFEI, Richmond	12 stations	Yes	Yes	Yes	No	No	NA	NA	NA	No
Hostettler In Review		Sonoma Baylands	USGS, Menlo Park										

HAMILTON ARMY AIRFIELD, SAN PABLO BAY

Study Name	Sampling Year(s)	Geographic Scope	Primary Contact	Sediment Chemistry						Toxicity		Infauna	
				Sampling Locations	Metals	PAHs	PCB/Pest	Dioxin/Furan	NOAA Database?	Sampling Locations	No. of Types of Tests	NOAA Database?	Sampled?
ESI 1993; USACE 1994	1993	Salt marsh adjacent to HAF	U.S. Army	19	Yes	Yes	Yes	No	No	NA	NA	No	No
USACE 1996	1996	Salt marsh adjacent to HAF	U.S. Army	33	Yes	Yes	Yes	No	No	NA	NA	No	No

MARE ISLAND NAVAL SHIPYARD, SAN PABLO BAY

Richesin and Associates. 1987	1986	Mare Island Strait		1 core									
IT Corp. 1992	1988	Mare Island Strait near 900 Area	US Navy, San Bruno	24 in marsh; 3 in Strait	Yes; Organotin	No	No	No	No	NA	NA	NA	No

SOUTH BAY (without Oakland Harbor)

Study Name	Sampling Year(s)	Geographic Scope	Primary Contact	Sediment Chemistry						Toxicity		Infauna	
				Sampling Locations	Metals	PAHs	PCB/Pest	Dioxin/Furan	NOAA Database?	Sampling Locations	No. of Types of Tests	NOAA Database?	Sampled?
Baumgartner unpub. SFBRWOCB 1986		South S.F. Bay	USEPA, Newport, OR S.B. Dischargers Authority										
Bendix 1987	1986, 1987	Piers 94 and 96	Port of San Francisco	25 stations near piers; 1 ref. site	Yes	Yes	Yes	No	No	25 stations near piers; 1 ref. site	2	No	No
Marine Bioassay Laboratories 1987; ESA 1987 Spies 1987	1987	Hunters Point Dry Dock 4	U.S. Navy, San Bruno	?	Yes	Yes	Yes	No	No	?	6	No	No
Stevenson et al. 1987		South Bay	S.B. Dischargers Authority										
ESA 1988; Herman and Cronin 1989	1988	Guadalupe Slough, mouth of slough, near Moffett	U.S. Navy, San Bruno	4 cores in 4 sampling areas	Yes	No	Yes	No	No	1 comp. from each sampling area	2	No	No
Power and Chapman 1988	1988	S.F. Harbor, Piers 80 and 94	USACE, S.F. District	Comp. cores in 2 sections off Islais Creek; Alcatraz Dump site	Yes	Yes	Yes	No	No		2	No	No
SFPC 1988	1988	S.F. Port piers	Port of San Francisco	Comp. cores at Piers 27, 35, 45, 48, 80; Alcatraz Dump site	Yes	Yes	Yes	No	No	6 locations	1	No	No
EVS 1989a	1989	Palo Alto outfall	City of Palo Alto	No sed. chemistry	NA	NA	NA	NA	NA	3 stations off outfall	4	No	No
EVS 1989b	1989	Redwood City Harbor; Alcatraz disposal site	USACE, S.F. District	Comp. cores from 6 areas in harbor; Alcatraz disposal site	Yes	Yes	Yes	No	No	Comp. cores from 2 areas in harbor; Alcatraz disposal site	1	No	No

SOUTH BAY (without Oakland Harbor) cont.

Study Name	Sampling Year(s)	Geographic Scope	Primary Contact	Sediment Chemistry							Toxicity		Infauna
				Sampling Locations	Metals	PAHs	PCB/Pest	Dioxin/Furan	NOAA Database?	Sampling Locations	No. of Types of Tests	NOAA Database?	Sampled?
EVS 1989c	1989	Redwood City Harbor; Alcatraz disposal site	USACE, S.F. Dist.	Comp. core from 1 area in harbor; Alcatraz disposal site	Yes	Yes	Yes	No	No	Comp. core from 1 area in harbor; Alcatraz disposal site	1	No	No
Hostettler et al. 1989	1986	South Bay	USGS, Menlo Park	7 stations near San Francisqui to Creek; 7 in streams	No	Yes	No	No	No	NA	NA	No	No
Mark Group 1989		San Bruno Channel											
ToxScan 1989a; Larry Walker 1991a	1989	Coyote Creek, Artesian Slough, San Jose/Santa Clara outfall	Cities of San Jose and Santa Clara	No sed. chemistry	NA	NA	NA	NA	NA	3 stations and 3 reference	4	No	No
ToxScan 1989b		Sunnyvale outfall	City of Sunnyvale										
CCSF 1990		Southeast and Islais Creek											
EVS 1990a	1990	San Leandro Bay	Alameda County	5 stations	Yes	Yes	Yes	No	No	5 stations	1	No	No
EVS 1990b	1990	Palo Alto outfall	City of Palo Alto	No sed. chem.	NA	NA	NA	NA	NA	3 stations; 1 ref.	3	No	No
MEC 1990		Shearwater Marina											
SFPC 1990	1989	S.F. Pier s 35, 94,96,48-50,70,94/96,29, Fish. Wharf, Alcatraz ref.	S.F. Port Commission	4 comp. cores at 12 sites	Yes	Yes	Yes	No	No	1 comp. core at 12 sites	1	No	No
ToxScan 1990	1990	City of Sunnyvale outfall	City of Sunnyvale	No sed. chem.	NA	NA	NA	NA	NA	2 stations and 2 ref.	4	No	No
EVS 1991	1989, 1990, 1991	Palo Alto outfall	City of Palo Alto	4	Yes	No	No	No	No	4	4	No	No
HLA 1991	1991	Sloughs adjacent to Cooley Landing salt pond in East Palo Alto	Romic Chemical Corp., East Palo Alto	9 stations	Trace elements and VOCs	No	No	No	No	NA	NA	No	No

SOUTH BAY (without Oakland Harbor) cont.

Study Name	Sampling Year(s)	Geographic Scope	Primary Contact	Sediment Chemistry						Toxicity		Infauna		
				Sampling Locations	Metals	PAHs	PCB/Pest	Dioxin/Furan	NOAA Database?	Sampling Locations	No. of Types of Tests	NOAA Database?	Sampled?	
Larry Walker 1991b	1989-90	Sunnyvale outfall	City of Sunnyvale	No sed. chem.	NA	NA	NA	NA	NA	NA	3 stations, 3 ref.	3	No	No
Luoma et al. 1991	1990-1991	Palo Alto mudflat	Sam Luoma (415) 329-4481	9 stations	Yes	No	No	No	No	No	NA	NA	NA	No
Dames & Moore 1992	1991	off Army Street, near Islais Creek	Union Pacific Realty Co.	26 locations	No	Yes	No	No	No	No	No	No	No	No
Luoma et al. 1992	1991-1992	Palo Alto mudflat	Sam Luoma (415) 329-4481	9 stations	Yes	No	No	No	No	No	NA	NA	NA	No
JSA 1993	1992	Slough adjacent to Cooley Landing salt pond	Romic Chemical Corp., East Palo Alto	20 stations	No	No; VOCs only	No	No	No	No	5 stations	1	No	Yes
Luoma et al. 1993	1992-1993	Palo Alto mudflat	Sam Luoma (415) 329-4481	9 station	Yes	No	No	No	No	No	NA	NA	NA	No
JSA 1994	1994	Slough adjacent to Cooley Landing salt pond	Romic Chemical Corp., East Palo Alto	5 stations	No	Yes	Yes; no PCBs	No	No	No	5 stations	1	No	No
PTI 1994	1994	Pacific Dry Dock - Yard 1 and 2	Crowley Marine Services, Inc.	12 comp. cores	Yes	Yes	No	No	No	No	12 comp. cores	3	No	No
Treadwell & Rollo 1995	1990	Oyster Point, Shearwater Marina	???	9 stations	Yes	Yes	Yes	No	No	No	No	No	No	No
Luoma et al. 1995	1993-1994	Palo Alto mudflat, San Jose	Sam Luoma (415) 329-4481	9 stations	Yes	No	No	No	No	No	NA	NA	NA	No
Luoma et al. 1996	1994-1995	Palo Alto mudflat, San Jose	Sam Luoma (415) 329-4481	9 stations	Yes	No	No	No	No	No	NA	NA	NA	No

ALAMEDA NAVAL AIR STATION, SOUTH BAY

Study Name	Sampling Year(s)	Geographic Scope	Primary Contact	Sediment Chemistry						Toxicity		Infauna Sampled?	
				Sampling Locations	Metals	PAHs	PCB/Pest	Dioxin/Furan	NOAA Database?	Sampling Locations	No. of Types of Tests		NOAA Database?
E&E 1983		Seaplane Lagoon	U.S. Navy, San Bruno										
Wahler Associates 1985	1985	Seaplane Lagoon, adjacent channel	U.S. Navy, San Bruno	10 stations	Yes	No	Yes	No	No	NA	NA	NA	No
HLA 1988		Piers 1,2,3 adjacent to Seaplane Lagoon											
PRC 1991	1991	West Beach landfill area	U.S. Navy, San Bruno	12 wetland sediment stations	Yes	Yes	Yes	No	?	?		No	?
PRC 1994; MEC 1994	1993	Seaplane Lagoon, West Beach Landfill, Western Bayside, Oakland Inner Harbor	U.S. Navy, San Bruno	37	Yes	Yes	Yes	No	No	37	3	No	Yes

HUNTERS POINT NAVAL SHIPYARD, SOUTH BAY

EMCON 1987	1987	Dry Dock 4 at HPS		5 stations; 3 samples per station	Yes	Yes	Yes	No	No	5 stations	2	No	No
ESA 1987a		North Pier, South Pier, Dry Dock 4		4 stations; 5 cores per station	Yes	Yes	Yes	No	No	20	8	No	Yes
ATT 1991	1991	Intertidal and offshore perimeter of HPS	U.S. Navy, San Bruno	17 HPS stations; 3 ref.	Yes	Yes	Yes	No	No	17	?	No	?
HLA 1991:b HLA 1993a,b	1991-1992	India Basin, South Basin	U.S. Navy, San Bruno	?	Yes	Yes	Yes	No	No	?	?	No	?
PRC 1996	1995-1996	India Basin, South Basin, Berthing Slips	U.S. Navy, San Bruno	105 surficial; 19 cores	Yes	Yes	Yes	No	No	72	3	No	Yes

OAKLAND HARBOR AREA

Study Name	Sampling Year(s)	Geographic Scope	Primary Contact	Sediment Chemistry						Toxicity		Infauna Sampled?	
				Sampling Locations	Metals	PAHs	PCB/Pest	Dioxin/Furan	NOAA Database?	Sampling Locations	No. of Types of Tests		NOAA Database?
ESA 1987		Oakland Naval Supply Center											
ESA 1988a		Oakland NSC, Middle Harbor	U.S. Navy, San Bruno										
ESA 1988b; HLA 1988b	1988	Piers 2 and 3,	U.S. Navy, San Bruno	11 cores	Yes	Yes	Yes	No	No	NA	NA	NA	No
ESA 1988c; HLA 1988a	1988	Piers 4 and 5	U.S. Navy, San Bruno	31 cores	Yes	Yes	Yes	No	No	NA	NA	NA	No
Power and Chapman 1988a	1988	Oakland Inner Harbor; Alcatraz Island ref. site	USACE, San Francisco District	Comp. cores from 6 IH areas; 1 area at Alcatraz	Yes	Yes	Yes	No	No	Comp. cores from 2 IH areas; 1 comp. at Alcatraz	1 (OL)	No	No
Power and Chapman 1988b	1987	Oakland Outer Harbor, Alcatraz Island	USACE, San Francisco District	Comp. cores from 6 areas of harbor; 4 areas at Alcatraz	Yes	Yes	Yes	No	No	6 sections of harbor; 4 sections at Alcatraz	7	No	No
USACE 1988	1986	Oakland Inner and Outer Harbors	USACE, San Francisco District	15 stations in IH; 3 in OH	Yes	Yes	Yes	No	No	Comp. samples from IH and OH	3	No	No
Word et al. 1988	1988	Oakland Inner Harbor	Dr. J. Word, Battelle	14 stations in IH; 2 ref. sites	Yes	Yes	Yes	No	No	14 stations in IH; 2 ref. sites	7	No	
McPherson et al. 1989	1988	Oakland Inner and Outer Harbors; Alcatraz Island reference site	Dr. Peter Chapman (604) 986-4331	Comp. cores from 6 areas in OH; 6 areas in IH; 2 areas at Alcatraz	Yes	Yes	Yes	No	No	Comp. cores from 2 areas of IH; 2 areas of OH; 1 comp. from Alcatraz	1 (OL)	No	No
MEC 1990a-1		Port of Oakland - Berths 20, 22, 23,24,30,31, 32,33,35,36,60-63	Port of Oakland										
Word et al. 1990a		Oakland Inner Harbor	USACE, San Francisco District	20 stations	Yes	Yes	Yes	No	No	20 stations	4	No	No
Word et al. 1990b		Oakland Inner Harbor and Outer Harbors	USACE, San Francisco District	6 stations in IH; 15 stations in OH	Yes	Yes	Yes	No	No	6 comp. stations in IH; 15 stations in OH	4	No	No

OAKLAND HARBOR AREA, cont.

Study Name	Sampling Year(s)	Geographic Scope	Primary Contact	Sediment Chemistry						Toxicity		Infauna Sampled?	
				Sampling Locations	Metals	PAHs	PCB/Pest	Dioxin/Furan	NOAA Database?	Sampling Locations	No. of Types of Tests		NOAA Database?
Word et al. 1990c	1987	Oakland Inner Harbor; Alcatraz Island ref. site	USACE, San Francisco District	Comp. cores from 3 stations near Schnitzer Steel; 3 stations near Todd Shipyard; Alcatraz Island	Yes	Yes	Yes	No	No	Comp. cores from 3 stations near Schnitzer Steel; 3 stations near Todd Shipyard; Alcatraz Island	1	No	No
Smith et al. 1991	1990	Oakland Inner and Outer Harbors; Alcatraz Island	USACE, San Francisco District	20 in OH; 21 in IH; 1 composite from Alcatraz Island	Yes	Yes	Yes	No	No	3 comp. from IH; 3 comp. from OH; Alcatraz Island	2	No	No
Herman et al. 1991	1990	Oakland Inner and Outer Harbors; Alcatraz Island	USACE, San Francisco District	20 in IH; 16 in OH; comp. from Alcatraz Island	Yes	Yes	Yes	No	No	4 from IH; 2 from OH; Alcatraz island	2	No	No
Mayhew et al. 1992	1990	Oakland Inner Harbor; Alcatraz Island	USACE, San Francisco District	29 stations in IH; 8 at Alcatraz ref. site	Yes	Yes	Yes	No	No	Comp. cores from 6 areas of IH; Alcatraz Island	7	No	No
Ward et al. 1992a	1990	Oakland Inner Harbor	USACE, San Francisco District	30 stations	Yes	Yes	Yes	No	No		6	No	
Ward et al. 1992b	1990	Inner and Outer Harbor	USACE, San Francisco District	22 stations	Yes	Yes	Yes	No	No				
Kohn et al. 1992a	1990	Oakland Harbor Berth areas	Port of Oakland	2 comp. stations in OH; 3 in IH; 1 in MH	Yes	Yes	Yes	No	No		3	No	
Kohn et al. 1992b	1990	Oakland Outer Harbor	USACE, San Francisco District	13 stations in OH; 2 in MH; 1 in IH	Yes	Yes	Yes	No	No		3	No	
Versar 1992		Pacific Dry Dock and Repair Yard II											
Karle et al. 1993		Oakland Inner Harbor	USACE, San Francisco District		Yes	Yes	Yes	No	No				

OAKLAND HARBOR AREA, cont.

Study Name	Sampling Year(s)	Geographic Scope	Primary Contact	Sediment Chemistry						Toxicity		Infauna Sampled?
				Sampling Locations	Metals	PAHs	PCB/Pest	Dioxin/Furan	NOAA Database?	Sampling Locations	No. of Types of Tests	
Pinza et al. 1993	1993	Near 7th St. complex	USACE, San Francisco District	14 stations	Yes	Yes	Yes	No	No			
Kohn et al. 1994a	1994	Berths 20,21,23,24,25,60-63,67,68	Port of Oakland	50 stations	Yes	Yes	Yes	No	No			
Kohn et al. 1994b	1994	Berths 23,24,60-63	Port of Oakland	13 stations	Yes	Yes	Yes	No	No			
Kohn et al. 1994c		Berths 26,30:Outer Harbor channel	Port of Oakland		Yes	Yes	Yes	No	No			
PTI 1994		Pacific Drydock Yards I & II			Yes	Yes	Yes	No	No			
Kohn et al. 1995a	1995	Berths 25,26,30,37	Port of Oakland	9 stations	Yes	Yes	Yes	No	No			
Kohn et al. 1995b	1995	Berths 22,23,24,35,67,68	Port of Oakland	26 stations	Yes	Yes	Yes	No	No			
Kohn et al. 1996	1995	Berths 22-26	Port of Oakland	31 stations	Yes	Yes	Yes	No	No			

SUISUN BAY

Study Name	Sampling Year(s)	Geographic Scope	Primary Contact	Sediment Chemistry						Toxicity		Infauna Sampled?	
				Sampling Locations	Metals	PAHs	PCB/Pest	Dioxin/Furan	NOAA Database?	Sampling Locations	No. of Types of Tests		NOAA Database?
Luoma et al. 1984	1983	Suisun Bay	Sam Luoma (415) 329-4481	10 stations	Yes	No	No	No	No	NA	NA	No	No
CH2M Hill 1986	1986	Peyton Slough, Suisun Bay, Carquinez Strait	Stauffer Chemical	8 stations in Peyton Slough, Suisun Bay, Carquinez Strait	Yes	Yes	Yes	No	No	5 stations	Multiple	No	Yes
Luoma et al. 1987/Luoma et al. 1990	1983-86	Suisun Bay/San Joaquin Delta	Sam Luoma (415) 329-4481	9 stations	Yes	No	No	No	No	NA	NA	No	No
SFBRWQCB 1987		Selby Slag site											
EVS 1990	1990	Suisun Channel Slough; Pierce Is. and Carquinez disposal sites	USACE, San Francisco District	25 stations	Yes	Yes	Yes	No	No	25	1	No	No
MEC 1990	1990	Unocal Marine Terminal	Unocal	4 comp. stations from 3 areas; Carquinez ref. site	Yes	Yes	Yes	No	No	4 comp. stations from 3 areas; Carquinez ref. site	1	NA	No
Levin Fricke 1992	1991	offshore at Selby Slag site dredging area	Wickland Oil Co.	29 stations	Yes	Yes	No	No	No	NA	NA	NA	No
Domagalski and Kuivala 1993	1991	Suisun Bay, Carquinez Strait, Chipps Island	Domagalski	10	No	Yes	Pest.	No	No	NA	NA	NA	No
ABT. 1994a.		Port of Benicia; disposed at Carquinez St. disposal site											
ABT 1994b.		Benicia Loading Terminal; disposed at Carquinez St. disposal site											

SUISUN BAY, cont.

Study Name	Sampling Year(s)	Geographic Scope	Primary Contact	Sediment Chemistry						Toxicity		Infauna Sampled?	
				Sampling Locations	Metals	PAHs	PCB/Pest	Dioxin/Furan	NOAA Database?	Sampling Locations	No. of Types of Tests		NOAA Database?
Kohn et al. 1994		Bulls Head Channel											
ABT 1995		Exxon Benicia Refinery pier; disposed at Carquinez St. disposal site											

NAVAL WEAPONS STATION CONCORD, SUISUN BAY

Lee et al. 1988	1986-1987	Suisun Bay			Yes	No	No	No	No	NA	NA	NA	Clam biomonitoring
IT Corp. 1992	1990	Suisun Bay-Four Tidal Area sites	U.S. Navy, San Bruno	14	Yes	Yes	Yes	No	No	NA	NA	NA	Clam biomonitoring
Confirmation Sampling in PRC 1996 a	1993	Suisun Bay-Two Tidal Area sites	U.S. Navy, San Bruno	3	Yes	Yes	Yes	No		NA	NA	NA	No
PRC 1996b	1995-1996	Suisun Bay-Four Tidal Area sites	U.S. Navy, San Bruno	5	Yes	Yes	Yes	No	No	NA	NA	NA	No