5090
Ser 62210LT/L8022
21 Oct 1997

Mr. Chein Kao
California Department of Toxic Substances Control
Site Mitigation Branch
700 Heinz Avenue, Building F
Berkeley, CA 94710

Subj: IDENTIFICATION OF STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS FOR THE PARCELS C, E, AND F STUDIES AT HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA

Dear Mr. Kao:

Pursuant to paragraph 7.6 of the Federal Facilities Agreement (FFA) for Hunters Point Annex (HPA) in San Francisco, California and consistent with Section V.A.2.c of the August 1, 1990, Memorandum of Understanding Between the Department of Health Services, the State Water Resources Control Board, and the Regional Water Quality Control Boards For the Cleanup of Hazardous Waste Sites, the Department of the Navy (Navy) is hereby requesting that the Department of Toxic Substances Control (DTSC), as the lead agency for the State of California, identify potential state chemical-, location-, and action-specific applicable or relevant and appropriate requirements (ARAR) for Parcels C, E, and F at Hunters Point Shipyard.

Parcel-specific site characterization information is presented in the remedial investigation reports for Parcels C and E and in the ecological risk assessment reports for Parcel F. Enclosures (1), (2), and (3) to this letter provide a list of chemicals of potential concern (COPC), by installation restoration sites, and a list of remedial alternatives that are currently being evaluated in the feasibility studies for Parcels C, E, and F, respectively The information presented in Enclosure (1), (2), and (3) should allow you to begin to identify, with some specificity, state chemical-, location-, and action-specific ARARs for each parcel.

In addition, the Navy is requesting that DTSC identify any other criteria, advisories, guidance, and proposed standards that the state requests to be considered for the chemicals, locations, and actions identified in enclosures (1), (2), and (3).

Timely identification of potential state ARARs is required under Section 121(d)(2)(A) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and under the National Contingency Plan (NCP), 40 Code of Federal Regulation (CFR).300.400(g) and 300.515(d) and (h). To ensure timely and complete ARARs identification, please include the following information in your response:

1. A specific citation to the statutory or regulatory provision(s) for the potential state ARAR and the date of enactment or promulgation.

2. A brief description of why the potential state ARAR is applicable or relevant and appropriate.

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1. A description of how the potential state ARAR would apply to potential remedial actions, for example, specific numeric discharge, effluent, or emission limitations and hazardous substance action or cleanup levels.

2. The rationale and technical justification for using a state ARAR, if DTSC regards its proposed ARAR as more stringent than the corresponding federal ARAR.

3. A verbal request of data required, if DTSC needs more information to fully respond to this request.

Consistent with 40 CFR 300.515(h)(2), the Navy requests that DTSC send a response via first class mail addressed to this Command, attention: Mr. Richard Powell, Code 6221. The Navy also requests that DTSC meet the following response schedule:

Parcel E - 21 November 1997
Parcel C - 15 December 1997
Parcel F - 15 January 1998

Please direct any technical questions that you may have concerning this request to the undersigned at (650) 244-2655, and any legal questions to Mr. Marvin Norman, Code 09CMN, at (650) 244-2100.

Sincerely,

Original signed by:

RICHARD E. POWELL
Senior RPM/EIC for HPS/TI
By direction of
the Commanding Officer

Encls:
(1) Attachment 1, Parcel C list of COPCs and Proposed Remedial Alternatives
(2) Attachment 2, Parcel E list of COPCs and Proposed Remedial Alternatives
(3) Attachment 3, Parcel F list of COPCs and Proposed Remedial Alternatives

Copies to:
Tetra Tech EM Inc. (Attn: Mr. Jim Sickles)
U.S. Environmental Protection Agency (Attn: Ms. Claire Trombadore)
U.S. Environmental Protection Agency (Attn: Ms. Sheryl Lauth)
Regional Water Quality Control Board (Attn: Mr. Richard McMurtry)

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Blind copies to: (w/encls. except as noted)
622 (MM), 6221 (RP), 6223 (GC) (Encl. 1 only), 6227 (WM)
6229 (WR) (Encl. 3 only), 62210 (LT) (Encl. 2 only)
09CMN, 7024, 60B.1, 62C HPS CSO (Eddie Sarmiento)
Admin Records (3 Copies, w/encl)
RF
Chron File: L8022LT.DOC (ab)
Activity File: HPS

ATTACHMENT 1

PARCEL C

- LIST OF COPCs
- PROPOSED REMEDIAL ALTERNATIVES

(8 Sheets)

Enclosure (1)

TABLE N.2-1

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL C REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	Bedrock Water[d]
IR-27					
METAL	Aluminum		X		
METAL	Barium		X		
METAL	Cadmium		X		
METAL	Copper		X		
METAL	Lead		X		
METAL	Manganese		X		
METAL	Mercury		X		
METAL	Zinc		X		
SVOC	Benzo(a)anthracene		X		
SVOC	Benzo(a)pyrene		X		
SVOC	Benzo(b)fluoranthene		X		
SVOC	Benzo(g,h,i)perylene		X		
SVOC	Benzo(k)fluoranthene		X		
SVOC	Chrysene		X		
SVOC	Fluoranthene		X		
SVOC	Indeno(1,2,3-cd)pyrene		X		
SVOC	Phenanthrene		X		
SVOC	Pyrene		X		
VOC	Ethylbenzene		X		
VOC	Toluene		X		
VOC	Xylene (total)		X		
IR-28					
CYANIDE	Cyanide		X		
METAL	Aluminum	X	X		X
METAL	Antimony		X		X
METAL	Arsenic	X	X		X
METAL	Barium	X	X		X
METAL	Beryllium		X		
METAL	Cadmium		X		X
METAL	Chromium	X	X		
METAL	Chromium VI		X		X
METAL	Cobalt		X		X
METAL	Copper	X	X		X
METAL	Lead	X	X		X
METAL	Manganese	X	X		X
METAL	Mercury	X	X		X
METAL	Molybdenum		X		X
METAL	Nickel		X		X
METAL	Selenium		X		X
METAL	Silver		X		X
METAL	Thallium		X		X

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL C REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	Bedrock Water[d]
IR-28 (Continued)					
METAL	Vanadium		X		X
METAL	Zinc	X	X		X
PEST/PCB	4,4'-DDD		X		X
PEST/PCB	4,4'-DDE		X		
PEST/PCB	4,4'-DDT		X		
PEST/PCB	Aldrin		X		
PEST/PCB	Aroclor-1242		X		
PEST/PCB	Aroclor-1248		X		
PEST/PCB	Aroclor-1254		X		
PEST/PCB	Aroclor-1260		X		
PEST/PCB	Dieldrin		X		
PEST/PCB	Endosulfan I		X		
PEST/PCB	Endosulfan II		X		
PEST/PCB	Endosulfan sulfate		X		
PEST/PCB	Endrin		X		
PEST/PCB	Endrin aldehyde		X		
PEST/PCB	Endrin ketone		X		
PEST/PCB	Heptachlor		X		
PEST/PCB	Heptachlor epoxide	X	X		X
PEST/PCB	alpha-BHC		X		
PEST/PCB	alpha-Chlordane		X		
PEST/PCB	beta-BHC		X		
PEST/PCB	delta-BHC		X		
PEST/PCB	gamma-Chlordane		X		
SVOC	1,2,4-Trichlorobenzene		X		
SVOC	1,2-Dichlorobenzene		X		
SVOC	1,3-Dichlorobenzene		X		
SVOC	1,4-Dichlorobenzene		X		X
SVOC	2,4,6-Trichlorophenol		X		
SVOC	2,4-Dimethylphenol		X		
SVOC	2-Methylnaphthalene		X		
SVOC	3,3'-Dichlorobenzidine		X		
SVOC	4-Methylphenol		X		
SVOC	Acenaphthene		X		
SVOC	Acenaphthylene	X	X		
SVOC	Anthracene	X	X		
SVOC	Benzo(a)anthracene	X	X		
SVOC	Benzo(a)pyrene	X	X		
SVOC	Benzo(b)fluoranthene	X	X		
SVOC	Benzo(g,h,i)perylene	X	X		

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL C REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	Bedrock Water[d]
IR-28 (Continued)					
SVOC	Butylbenzylphthalate		X		
SVOC	Carbazole		X		
SVOC	Chrysene	X	X		
SVOC	Di-n-butylphthalate		X		
SVOC	Dibenz(a,h)anthracene		X		
SVOC	Dibenzofuran		X		
SVOC	Fluoranthene	X	X		
SVOC	Fluorene		X		
SVOC	Indeno(1,2,3-cd)pyrene	X	X		
SVOC	Naphthalene		X		
SVOC	Phenanthrene	X	X		
SVOC	Phenol	X	X		
SVOC	Pyrene	X	X		
SVOC	bis(2-Ethylhexyl)phthalate	X	X		
SVOC	n-Nitroso-di-n-propylamine		X		
SVOC	n-Nitrosodiphenylamine		X		
VOC	1,1,1-Trichloroethane		X		
VOC	1,1,2,2-Tetrachloroethane			X	
VOC	1,1,2-Trichloroethane		X		X
VOC	1,1-Dichloroethane			X	
VOC	1,1-Dichloroethene		X	X	
VOC	1,2-Dichloroethane		X		
VOC	1,2-Dichloroethene (total)		X	X	X
VOC	2-Butanone		X		
VOC	2-Hexanone		X		
VOC	4-Methyl-2-pentanone		X		
VOC	Acetone	X	X		
VOC	Benzene		X	X	
VOC	Bromodichloromethane			X	
VOC	Carbon disulfide		X	X	X
VOC	Carbon tetrachloride		X		X
VOC	Chlorobenzene		X	X	
VOC	Chloroform		X	X	X
VOC	Ethylbenzene		X	X	
VOC	Methylene chloride	X	X		
VOC	Styrene		X		
VOC	Tetrachloroethene	X	X	X	X
VOC	Toluene		X	X	
VOC	Trichloroethene		X	X	X
VOC	Vinyl chloride		X	X	X
VOC	Xylene (total)		X	X	

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL C REMEDIAL INVESTIGATION

emical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	Bedrock Water[d]
IR-28 (Continued)					
C	cis-1,2-Dichloroethene			X	
C	trans-1,2-Dichloroethene			X	
IR-29					
ANIDE	Cyanide		X		
ETAL	Aluminum	X	X		X
ETAL	Antimony				X
ETAL	Arsenic		X		X
ETAL	Barium	X	X		X
ETAL	Beryllium		X		
ETAL	Cadmium		X		
ETAL	Chromium		X		
ETAL	Chromium VI		X		X
ETAL	Cobalt		X		X
ETAL	Copper	X	X		X
ETAL	Lead	X	X		X
ETAL	Manganese		X		X
ETAL	Mercury		X		X
ETAL	Molybdenum		X		X
ETAL	Nickel		X		X
ETAL	Selenium		X		X
ETAL	Silver		X		X
ETAL	Thallium		X		X
ETAL	Vanadium		X		X
ETAL	Zinc		X		X
PEST/PCB	4,4'-DDD		X		X
PEST/PCB	4,4'-DDE		X		
PEST/PCB	4,4'-DDT		X		
PEST/PCB	Aldrin		X		
PEST/PCB	Aroclor-1254		X		
PEST/PCB	Aroclor-1260		X		X
PEST/PCB	Dieldrin		X		X
PEST/PCB	Endosulfan I		X		
PEST/PCB	Endosulfan II		X		
PEST/PCB	Endosulfan sulfate		X		
PEST/PCB	Endrin		X		
PEST/PCB	Endrin aldehyde		X		
PEST/PCB	Heptachlor		X		
PEST/PCB	Heptachlor epoxide		X		
PEST/PCB	alpha-Chlordane		X		
PEST/PCB	beta-BHC		X		
PEST/PCB	gamma-BHC (Lindane)		X		

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL C REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	Bedrock Water[d]
IR-29 (Continued)					
PEST/PCB	gamma-Chlordane		X		
SVOC	1,2,4-Trichlorobenzene		X		
SVOC	1,4-Dichlorobenzene		X		
SVOC	2,4-Dimethylphenol		X		
SVOC	2-Chlorophenol		X		
SVOC	2-Methylnaphthalene	X	X		X
SVOC	2-Methylphenol		X		
SVOC	3,3'-Dichlorobenzidine		X		
SVOC	4-Chloro-3-methylphenol		X		
SVOC	4-Methylphenol		X		
SVOC	Acenaphthene		X		X
SVOC	Acenaphthylene		X		
SVOC	Anthracene		X		
SVOC	Benzo(a)anthracene		X		
SVOC	Benzo(a)pyrene		X		
SVOC	Benzo(b)fluoranthene		X		
SVOC	Benzo(g,h,i)perylene		X		
SVOC	Benzo(k)fluoranthene		X		
SVOC	Butylbenzylphthalate		X		
SVOC	Carbazole	X	X		X
SVOC	Chrysene	X	X		
SVOC	Di-n-butylphthalate	X	X		
SVOC	Dibenz(a,h)anthracene		X		
SVOC	Dibenzofuran	X	X		
SVOC	Fluoranthene	X	X		
SVOC	Fluorene	X	X		X
SVOC	Indeno(1,2,3-cd)pyrene		X		
SVOC	Naphthalene	X	X		X
SVOC	Pentachlorophenol		X		
SVOC	Phenanthrene	X	X		X
SVOC	Phenol		X		
SVOC	Pyrene	X	X		
SVOC	bis(2-Ethylhexyl)phthalate		X		
SVOC	n-Nitroso-di-n-propylamine		X		
VOC	1,2-Dichloroethane		X		
VOC	2-Butanone		X		
VOC	4-Methyl-2-pentanone		X		
VOC	Acetone		X		
VOC	Benzene	X	X		X
VOC	Carbon disulfide			X	X
VOC	Carbon tetrachloride		X		X

TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL C REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	Bedrock Water[d]
IR-29 (Continued)					
VOC	Chloroform			X	X
VOC	Ethylbenzene		X		
VOC	Methylene chloride		X		
VOC	Tetrachloroethene		X		
VOC	Toluene	X	X		
VOC	Trichloroethene		X	X	X
VOC	Xylene (total)	X	X		
IR-30					
CYANIDE	Cyanide		X		
METAL	Aluminum	X	X		X
METAL	Antimony				X
METAL	Arsenic		X		X
METAL	Barium	X	X		X
METAL	Beryllium		X		
METAL	Cadmium		X		
METAL	Chromium	X	X		
METAL	Chromium VI	X	X		X
METAL	Cobalt	X	X		X
METAL	Copper	X	X		X
METAL	Lead	X	X		
METAL	Manganese		X		X
METAL	Molybdenum	X	X		X
METAL	Nickel	X	X		X
METAL	Selenium		X		X
METAL	Silver		X		
METAL	Thallium		X		
METAL	Vanadium		X		X
METAL	Zinc	X	X		X
PEST/PCB	4,4'-DDD		X		
PEST/PCB	4,4'-DDE		X		
PEST/PCB	4,4'-DDT		X		
PEST/PCB	Aroclor-1260		X		
PEST/PCB	Endosulfan I		X		
PEST/PCB	Endosulfan II		X		
PEST/PCB	Endrin		X		
PEST/PCB	Endrin aldehyde		X		
PEST/PCB	Heptachlor		X		
PEST/PCB	alpha-Chlordane		X		
PEST/PCB	beta-BHC		X		
PEST/PCB	gamma-BHC (Lindane)		X		
PEST/PCB	gamma-Chlordane		X		

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL C REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	Bedrock Water[d]
IR-30 (Continued)					
SVOC	2,4-Dimethylphenol		X		
SVOC	2-Chlorophenol		X		
SVOC	2-Methylnaphthalene	X	X		
SVOC	2-Methylphenol		X		
SVOC	4-Chloro-3-methylphenol		X		
SVOC	4-Methylphenol		X		
SVOC	Anthracene	X	X		
SVOC	Benzo(a)anthracene	X	X		
SVOC	Benzo(a)pyrene		X		
SVOC	Benzo(b)fluoranthene	X	X		
SVOC	Benzo(g,h,i)perylene		X		
SVOC	Benzo(k)fluoranthene	X	X		
SVOC	Carbazole	X	X		
SVOC	Chrysene	X	X		
SVOC	Di-n-butylphthalate	X	X		
SVOC	Dibenzofuran	X	X		
SVOC	Fluoranthene	X	X		
SVOC	Fluorene	X	X		
SVOC	Indeno(1,2,3-cd)pyrene		X		
SVOC	Naphthalene	X	X		
SVOC	Phenanthrene	X	X		
SVOC	Phenol		X		
SVOC	Pyrene	X	X		
SVOC	bis(2-Ethylhexyl)phthalate	X	X		
VOC	1,2-Dichloroethane		X		
VOC	2-Butanone		X		
VOC	4-Methyl-2-pentanone		X		
VOC	Acetone		X		
VOC	Benzene	X	X		X
VOC	Ethylbenzene		X		
VOC	Tetrachloroethene		X		
VOC	Toluene	X	X		
VOC	Xylene (total)	X	X		
IR-57					
CYANIDE	Cyanide		X		
METAL	Aluminum		X		
METAL	Antimony		X		
METAL	Arsenic		X		
METAL	Barium		X		
METAL	Chromium VI		X		
METAL	Cobalt		X		

TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL C REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	Bedrock Water[d]
IR-57 (Continued)					
METAL	Copper		X		
METAL	Lead		X		
METAL	Manganese		X		
METAL	Mercury		X		
METAL	Molybdenum		X		
METAL	Selenium		X		
METAL	Vanadium		X		
METAL	Zinc		X		
PEST/PCB	4,4'-DDE		X		
PEST/PCB	Aldrin		X		
PEST/PCB	Aroclor-1254		X		
PEST/PCB	Aroclor-1260		X		
PEST/PCB	Endrin ketone		X		
PEST/PCB	alpha-Chlordane		X		
PEST/PCB	beta-BHC		X		
SVOC	2-Methylnaphthalene		X		
SVOC	Acenaphthylene		X		
SVOC	Anthracene		X		
SVOC	Benzo(a)anthracene		X		
SVOC	Benzo(a)pyrene		X		
SVOC	Benzo(b)fluoranthene		X		
SVOC	Benzo(g,h,i)perylene		X		
SVOC	Benzo(k)fluoranthene		X		
SVOC	Chrysene		X		
SVOC	Fluoranthene		X		
SVOC	Indeno(1,2,3-cd)pyrene		X		
SVOC	Naphthalene		X		
SVOC	Phenanthrene		X		
SVOC	Phenol		X		
SVOC	Pyrene		X		
VOC	Acetone		X		
VOC	Benzene		X		
VOC	Carbon disulfide		X		
VOC	Ethylbenzene		X		
VOC	Tetrachloroethene		X		
VOC	Xylene (total)		X		
IR-58					
METAL	Aluminum	X	X		X
METAL	Antimony		X		
METAL	Arsenic		X		X
METAL	Barium		X		X

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL C REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	Bedrock Water[d]
IR-58 (Continued)					
METAL	Beryllium		X		
METAL	Cadmium		X		
METAL	Chromium	X	X		
METAL	Chromium VI	X	X		X
METAL	Cobalt	X	X		X
METAL	Copper		X		
METAL	Lead	X	X		
METAL	Manganese	X	X		X
METAL	Mercury	X	X		X
METAL	Molybdenum		X		
METAL	Nickel	X	X		X
METAL	Selenium				X
METAL	Vanadium		X		X
METAL	Zinc	X	X		X
PEST/PCB	4,4'-DDE		X		
PEST/PCB	4,4'-DDT	X	X		
PEST/PCB	Aroclor-1242		X		
PEST/PCB	Aroclor-1254		X		
PEST/PCB	Aroclor-1260		X		
PEST/PCB	Dieldrin	X	X		
PEST/PCB	Endrin aldehyde		X		
PEST/PCB	Heptachlor epoxide	X	X		
SVOC	2-Methylnaphthalene		X		
SVOC	Benzo(a)anthracene		X		
SVOC	Benzo(a)pyrene		X		
SVOC	Benzo(b)fluoranthene	X	X		
SVOC	Benzo(g,h,i)perylene		X		
SVOC	Benzo(k)fluoranthene		X		
SVOC	Chrysene	X	X		
SVOC	Di-n-butylphthalate		X		
SVOC	Fluoranthene	X	X		
SVOC	Fluorene		X		
SVOC	Naphthalene		X		
SVOC	Phenanthrene	X	X		
SVOC	Phenol	X	X		
SVOC	Pyrene	X	X		
VOC	1,1,2,2-Tetrachloroethane			X	
VOC	1,1-Dichloroethane			X	
VOC	1,1-Dichloroethene			X	
VOC	1,2-Dichloroethene (total)		X	X	
VOC	2-Hexanone		X		

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL C REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	Bedrock Water[d]
IR-58 (Continued)					
VOC	4-Methyl-2-pentanone		X		
VOC	Acetone	X	X		
VOC	Benzene	X	X	X	
VOC	Carbon tetrachloride				X
VOC	Chlorobenzene			X	
VOC	Ethylbenzene		X		
VOC	Tetrachloroethene		X	X	
VOC	Toluene		X	X	
VOC	Trichloroethene		X	X	X
VOC	Vinyl chloride			X	
VOC	Xylene (total)		X	X	
IR-63					
METAL	Aluminum		X		
METAL	Arsenic		X		X
METAL	Barium		X		X
METAL	Chromium		X		
METAL	Chromium VI				X
METAL	Cobalt		X		
METAL	Copper		X		
METAL	Lead		X		
METAL	Manganese		X		X
METAL	Nickel				X
METAL	Selenium		X		
METAL	Thallium		X		
METAL	Vanadium				X
METAL	Zinc		X		
SVOC	2-Chlorophenol		X		
SVOC	2-Methylnaphthalene		X		
SVOC	4-Chloro-3-methylphenol		X		
SVOC	Benzo(a)anthracene		X		
SVOC	Benzo(a)pyrene		X		
SVOC	Benzo(b)fluoranthene		X		
SVOC	Benzo(k)fluoranthene		X		
SVOC	Chrysene		X		
SVOC	Dibenzofuran		X		
SVOC	Fluoranthene		X		
SVOC	Fluorene		X		
SVOC	Naphthalene		X		
SVOC	Phenanthrene		X		
SVOC	Phenol		X		
SVOC	Pyrene		X		

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL C REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	Bedrock Water[d]
IR-63 (Continued)					
VOC	Acetone		X		
VOC	Benzene		X		
VOC	Ethylbenzene		X		
VOC	Tetrachloroethene		X		
VOC	Toluene		X		
VOC	Trichloroethene				X
VOC	Xylene (total)		X		
IR-64					
METAL	Aluminum		X		
METAL	Arsenic		X		
METAL	Barium		X		
METAL	Lead		X		
METAL	Manganese		X		
METAL	Zinc		X		
SVOC	Benzo(a)anthracene		X		
SVOC	Benzo(a)pyrene		X		
SVOC	Benzo(b)fluoranthene		X		
SVOC	Benzo(k)fluoranthene		X		
SVOC	Chrysene		X		
SVOC	Fluoranthene		X		
SVOC	Phenanthrene		X		
SVOC	Pyrene		X		
VOC	1,2-Dichloroethene (total)			X	
VOC	Bromomethane		X		
VOC	Carbon disulfide		X	X	
VOC	Chlorobenzene		X		
VOC	Tetrachloroethene		X	X	
VOC	Toluene		X		
VOC	Trichloroethene			X	
VOC	Vinyl chloride			X	

Notes:

a Current Soil - Chemical data for soil 0 to 2 feet bgs in unpaved areas
b Future Soil - Chemical data for soil 0 to 10 feet bgs in paved and unpaved areas
c A-aquifer - VOCs detected in the A-aquifer groundwater
d Bedrock Water - Bedrock water-bearing zone groundwater

TABLE ES-6
SUMMARY OF SOIL REMEDIAL ALTERNATIVES
PARCEL C FEASIBILITY STUDY
HUNTERS POINT SHIPYARD - SAN FRANCISCO, CALIFORNIA

	Alternative S-1	Alternative S-2	Alternative S-3 (1)	Alternative S-4 (1)	Alternative S-5 (2)
No Action	X				
Institutional Controls					
Access Restrictions		X (3)	X (3)	X (3)	X
Removal Actions					
Mechanical Excavation		X	X	X	
Disposal Actions					
On-site Class III Landfill			X	X	
Off-site Class I Landfill		X			
Off-site Class II Landfill		X			
***Ex Situ* Treatment**					
Solidification / Stabilization			X	X	
Thermal Desorption				X	
***In Situ* Treatment**					
Soil-Vapor Extraction			X		X
Solidification / Stabilization, Shallow Soil Mixing					X

(1) Limited off-site soil disposal of untreated soil at a Class II facility is anticipated with Alternatives S-3 and S-4. This will applicable when chemicals in soil slightly exceed the placement criteria at the IR-1/21 landfill because local Class II disposal is less expensive than on-site treatment.

(2) Up to 40% of affected soil will require excavation and off-site disposal because of bulking which occurs during *in situ* stabilization/solidification.

(3) For soil cleanup goal scenarios 1 and 2, access restrictions are necessary to maintain industrial use only. However, for soil cleanup goal scenario 3, no access restrictions are expected.

TABLE ES-7
SUMMARY OF GROUNDWATER REMEDIAL ALTERNATIVES
PARCEL C FEASIBILITY STUDY
HUNTERS POINT SHIPYARD - SAN FRANCISCO, CALIFORNIA

	Alternative GW-1	Alternative GW-2	Alternative GW-3	Alternative GW-4	Alternative GW-5
No Action	X				
Mitigative Measures & Groundwater Monitoring					
Storm Drain Rehabilitation		X	X	X	X
Steam Line Removal		X	X	X	X
Fuel Line Removal		X	X	X	X
Groundwater Monitoring		X	X	X	X
Institutional Controls					
Access Restrictions		X	X	X	X
Excavation					
Excavation and Off-Site Disposal of Saturated Affected Soils from RU-1, RU-3, RU-4, and RU-5		X	X	X	X
Extraction/Treatment/Discharge					
Extraction Wells, On-site Treatment and Discharge to POTW at RU-2, RU-4 and RU-5			X		
In Situ Treatment					
Funnel and Gate at RU-2, RU-4, and RU-5				X	
Air Sparging/SVE at RU-2, RU-4, and RU-5					X

Notes:

GW-1 Groundwater alternative 1

POTW Publicly Owned Treatment Works

RU Groundwater Remedial Unit

SVE Soil-Vapor Extraction

ATTACHMENT 2

PARCEL E

- LIST OF COPCs
- PROPOSED REMEDIAL ALTERNATIVES

(16 Sheets)

Enclosure (2)

TABLE N.2-1

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-01/21						
CYANIDE	Cyanide	X	X			
METAL	Aluminum	X	X		X	
METAL	Antimony	X	X		X	
METAL	Arsenic	X	X		X	
METAL	Barium	X	X		X	
METAL	Beryllium	X	X		X	
METAL	Cadmium		X		X	
METAL	Chromium	X	X			
METAL	Chromium VI	X	X		X	
METAL	Cobalt	X	X		X	
METAL	Copper	X	X		X	
METAL	Lead	X	X		X	
METAL	Manganese	X	X		X	
METAL	Mercury	X	X		X	
METAL	Molybdenum		X		X	
METAL	Nickel	X	X		X	
METAL	Selenium	X	X			
METAL	Silver		X			
METAL	Tin	X	X			
METAL	Vanadium	X	X		X	
METAL	Zinc	X	X		X	
PEST/PCB	4,4'-DDD	X	X			
PEST/PCB	4,4'-DDE		X			
PEST/PCB	4,4'-DDT	X	X			
PEST/PCB	Aldrin		X			
PEST/PCB	Aroclor-1016		X			
PEST/PCB	Aroclor-1242		X			
PEST/PCB	Aroclor-1254	X	X			
PEST/PCB	Aroclor-1260	X	X			
PEST/PCB	Endosulfan I		X			
PEST/PCB	Endrin aldehyde	X	X			
PEST/PCB	Heptachlor epoxide		X			
PEST/PCB	alpha-Chlordane	X	X			
PEST/PCB	gamma-Chlordane	X	X			
SVOC	1,2,4-Trichlorobenzene	X	X			
SVOC	1,2,4-Trimethylbenzene		X			
SVOC	1,2-Dichlorobenzene		X			
SVOC	1,3,5-Trimethylbenzene		X			
SVOC	1,3-Dichlorobenzene		X			
SVOC	1,4-Dichlorobenzene		X			
SVOC	2,4-Dimethylphenol		X		X	

TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-01/21 (Continued)						
SVOC	2-Methylnaphthalene	X	X		X	
SVOC	2-Methylphenol		X			
SVOC	3,3'-Dichlorobenzidine		X			
SVOC	4-Methylphenol	X	X		X	
SVOC	Acenaphthene	X	X		X	
SVOC	Acenaphthylene	X	X			
SVOC	Anthracene	X	X			
SVOC	Benzo(a)anthracene	X	X			
SVOC	Benzo(a)pyrene	X	X			
SVOC	Benzo(b)fluoranthene	X	X			
SVOC	Benzo(g,h,i)perylene	X	X			
SVOC	Benzo(k)fluoranthene	X	X			
SVOC	Butylbenzylphthalate		X			
SVOC	Chrysene	X	X			
SVOC	Di-n-butylphthalate	X	X			
SVOC	Dibenz(a,h)anthracene	X	X			
SVOC	Dibenzofuran	X	X		X	
SVOC	Diethylphthalate	X	X			
SVOC	Fluoranthene	X	X		X	
SVOC	Fluorene	X	X		X	
SVOC	Indeno(1,2,3-cd)pyrene	X	X			
SVOC	Naphthalene	X	X		X	
SVOC	Pentachlorophenol	X	X			
SVOC	Phenanthrene	X	X		X	
SVOC	Phenol	X	X			
SVOC	Pyrene	X	X		X	
SVOC	bis(2-Ethylhexyl)phthalate	X	X		X	
SVOC	n-Nitrosodiphenylamine		X			
VOC	1,1,1-Trichloroethane	X	X			
VOC	1,1,2-Trichloroethane		X			
VOC	1,2-Dichloroethene (total)	X	X			
VOC	2-Butanone	X	X			
VOC	2-Hexanone		X			
VOC	4-Methyl-2-pentanone		X			
VOC	Acetone	X	X			
VOC	Benzene		X			
VOC	Carbon disulfide		X		X	
VOC	Carbon tetrachloride				X	
VOC	Chlorobenzene		X			
VOC	Chloroethane		X			
VOC	Chloroform		X		X	

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-01/21 (Continued)						
VOC	Ethylbenzene		X		X	
VOC	Methylene chloride	X	X			
VOC	Styrene		X			
VOC	Toluene	X	X			
VOC	Trichloroethene	X	X		X	
VOC	Vinyl acetate		X			
VOC	Xylene (total)	X	X		X	
IR-02C						
	1,2,3,4,6,7,8-HpCDD	X	X			
	HpCDDs(total)	X	X			
	Octachlorodibenzo-p-dioxin	X	X			
METAL	Aluminum	X	X			
METAL	Antimony	X	X			
METAL	Arsenic	X	X			
METAL	Barium	X	X			
METAL	Beryllium	X	X			
METAL	Cadmium	X	X			
METAL	Chromium		X			
METAL	Chromium VI		X			
METAL	Cobalt	X	X			
METAL	Copper	X	X			
METAL	Lead	X	X			
METAL	Manganese	X	X			
METAL	Mercury	X	X			
METAL	Molybdenum	X	X			
METAL	Selenium	X	X			
METAL	Silver	X	X			
METAL	Vanadium	X	X			
METAL	Zinc	X	X			
PEST/PCB	4,4'-DDD		X			
PEST/PCB	4,4'-DDE		X			
PEST/PCB	4,4'-DDT	X	X			
PEST/PCB	Aldrin		X			
PEST/PCB	Aroclor-1254		X			
PEST/PCB	Aroclor-1260	X	X			
PEST/PCB	Endrin ketone	X	X			
SVOC	1,2-Dichlorobenzene		X			
SVOC	1,4-Dichlorobenzene		X			
SVOC	2-Chloronaphthalene		X			
SVOC	2-Methylnaphthalene	X	X			
SVOC	2-Methylphenol		X			

TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-02C (Continued)						
SVOC	4-Methylphenol		X			
SVOC	Acenaphthene	X	X			
SVOC	Anthracene	X	X			
SVOC	Benzo(a)anthracene	X	X			
SVOC	Benzo(a)pyrene	X	X			
SVOC	Benzo(b)fluoranthene	X	X			
SVOC	Benzo(g,h,i)perylene	X	X			
SVOC	Benzo(k)fluoranthene	X	X			
SVOC	Butylbenzylphthalate	X	X			
SVOC	Chrysene	X	X			
SVOC	Di-n-butylphthalate	X	X			
SVOC	Di-n-octylphthalate	X	X			
SVOC	Dibenz(a,h)anthracene	X	X			
SVOC	Dibenzofuran	X	X			
SVOC	Diethylphthalate	X	X			
SVOC	Fluoranthene	X	X			
SVOC	Fluorene	X	X			
SVOC	Indeno(1,2,3-cd)pyrene	X	X			
SVOC	Naphthalene	X	X			
SVOC	Pentachlorophenol	X	X			
SVOC	Phenanthrene	X	X			
SVOC	Phenol	X	X			
SVOC	Pyrene	X	X			
SVOC	Toluene	X	X			
SVOC	bis(2-Ethylhexyl)phthalate	X	X			
VOC	1,1,2,2-Tetrachloroethane		X			
VOC	1,1,2-Trichloroethane		X			
VOC	1,2-Dichloroethene (total)		X			
VOC	2-Butanone	X	X			
VOC	Acetone	X	X			
VOC	Benzene		X			
VOC	Carbon disulfide	X	X			
VOC	Chlorobenzene		X			
VOC	Ethylbenzene		X			
VOC	Methylene chloride	X	X			
VOC	Tetrachloroethene		X			
VOC	Toluene	X	X			
VOC	Trichloroethene	X	X			
VOC	Xylene (total)	X	X			
IR-02NW						
CYANIDE	Cyanide	X	X			

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-02NW (Continued)						
METAL	Aluminum	X	X			
METAL	Antimony	X	X			
METAL	Arsenic	X	X		X	
METAL	Barium	X	X		X	
METAL	Beryllium	X	X			
METAL	Cadmium	X	X		X	
METAL	Chromium	X	X			
METAL	Chromium VI		X			
METAL	Cobalt	X	X			
METAL	Copper	X	X			
METAL	Lead	X	X		X	
METAL	Manganese	X	X		X	
METAL	Mercury	X	X			
METAL	Molybdenum	X	X		X	
METAL	Nickel	X	X			
METAL	Selenium	X	X			
METAL	Silver	X	X			
METAL	Vanadium	X	X			
METAL	Zinc	X	X		X	
PEST/PCB	4,4'-DDD	X	X			
PEST/PCB	4,4'-DDE	X	X			
PEST/PCB	4,4'-DDT	X	X			
PEST/PCB	Aldrin		X			
PEST/PCB	Aroclor-1254	X	X			
PEST/PCB	Aroclor-1260	X	X			
PEST/PCB	gamma-Chlordane	X	X			
SVOC	1,2,4-Trichlorobenzene		X			
SVOC	1,2-Dichlorobenzene	X	X			
SVOC	1,4-Dichlorobenzene		X			
SVOC	2-Methylnaphthalene	X	X			
SVOC	2-Methylphenol		X			
SVOC	4-Methylphenol	X	X			
SVOC	Acenaphthene	X	X			
SVOC	Anthracene	X	X			
SVOC	Benzo(a)anthracene	X	X			
SVOC	Benzo(a)pyrene	X	X			
SVOC	Benzo(b)fluoranthene	X	X			
SVOC	Benzo(g,h,i)perylene	X	X			
SVOC	Benzo(k)fluoranthene	X	X			
SVOC	Benzoic acid		X			
SVOC	Butylbenzylphthalate		X			

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-02NW (Continued)						
SVOC	Carbazole		X			
SVOC	Chrysene	X	X			
SVOC	Di-n-butylphthalate		X			
SVOC	Di-n-octylphthalate	X	X			
SVOC	Dibenz(a,h)anthracene		X			
SVOC	Dibenzofuran	X	X			
SVOC	Diethylphthalate		X			
SVOC	Fluoranthene	X	X			
SVOC	Fluorene	X	X			
SVOC	Indeno(1,2,3-cd)pyrene	X	X			
SVOC	Naphthalene	X	X			
SVOC	Pentachlorophenol	X	X			
SVOC	Phenanthrene	X	X			
SVOC	Phenol	X	X			
SVOC	Pyrene	X	X			
SVOC	bis(2-Ethylhexyl)phthalate	X	X			
SVOC	n-Nitrosodiphenylamine		X			
VOC	1,2-Dichloroethene (total)		X			
VOC	2-Butanone	X	X			
VOC	4-Methyl-2-pentanone	X	X			
VOC	Acetone	X	X			
VOC	Benzene	X	X			
VOC	Carbon disulfide	X	X			
VOC	Chlorobenzene		X			
VOC	Ethylbenzene	X	X			
VOC	Methylene chloride	X	X			
VOC	Tetrachloroethene		X			
VOC	Toluene	X	X			
VOC	Trichloroethene	X	X			
VOC	Vinyl chloride		X			
VOC	Xylene (total)	X	X			
IR-02SE						
	1,2,3,4,6,7,8-HPCDD	X	X			
	1,2,3,4,6,7,8-HpCDD	X	X			
	HPCDDS (TOTAL)	X	X			
	HpCDDs(total)	X	X			
	OCDD	X	X			
	Octachlorodibenzo-p-dioxin	X	X			
METAL	Aluminum	X	X			
METAL	Antimony	X	X			
METAL	Arsenic	X	X			X

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-02SE (Continued)						
METAL	Barium	X	X			X
METAL	Beryllium	X	X			
METAL	Cadmium		X			
METAL	Chromium	X	X			
METAL	Chromium VI	X	X			
METAL	Cobalt		X			
METAL	Copper	X	X			X
METAL	Lead	X	X			X
METAL	Manganese	X	X			X
METAL	Mercury	X	X			
METAL	Molybdenum	X	X			X
METAL	Nickel		X			X
METAL	Selenium	X	X			X
METAL	Silver	X	X			
METAL	Thallium	X	X			
METAL	Vanadium	X	X			X
METAL	Zinc	X	X			
PEST/PCB	4,4'-DDD	X	X			
PEST/PCB	4,4'-DDE	X	X			
PEST/PCB	4,4'-DDT	X	X			
PEST/PCB	Aldrin		X			
PEST/PCB	Aroclor-1248		X			
PEST/PCB	Aroclor-1254	X	X			
PEST/PCB	Aroclor-1260	X	X			
PEST/PCB	Dieldrin	X	X			
PEST/PCB	Endosulfan I		X			
PEST/PCB	Heptachlor		X			
PEST/PCB	Heptachlor epoxide	X	X			
PEST/PCB	alpha-Chlordane	X	X			
PEST/PCB	beta-BHC		X			
PEST/PCB	gamma-BHC (Lindane)	X	X			
PEST/PCB	gamma-Chlordane	X	X			
SVOC	1,2-Dichlorobenzene		X			
SVOC	2-Methylnaphthalene	X	X			
SVOC	2-Methylphenol		X			
SVOC	4-Methylphenol		X			
SVOC	4-Nitrophenol	X	X			
SVOC	Acenaphthene		X			
SVOC	Acenaphthylene		X			
SVOC	Anthracene	X	X			
SVOC	Benzo(a)anthracene	X	X			

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-02SE (Continued)						
SVOC	Benzo(a)pyrene	X	X			
SVOC	Benzo(b)fluoranthene	X	X			
SVOC	Benzo(g,h,i)perylene	X	X			
SVOC	Benzo(k)fluoranthene	X	X			
SVOC	Benzoic acid		X			
SVOC	Butylbenzylphthalate	X	X			
SVOC	Chrysene	X	X			
SVOC	Di-n-butylphthalate	X	X			
SVOC	Di-n-octylphthalate		X			
SVOC	Dibenz(a,h)anthracene	X	X			
SVOC	Dibenzofuran	X	X			
SVOC	Diethylphthalate		X			
SVOC	Fluoranthene	X	X			
SVOC	Fluorene		X			
SVOC	Indeno(1,2,3-cd)pyrene	X	X			
SVOC	MCPA		X			
SVOC	Naphthalene	X	X			
SVOC	Pentachlorophenol	X	X			
SVOC	Phenanthrene	X	X			
SVOC	Phenol	X	X			
SVOC	Pyrene	X	X			
SVOC	bis(2-Ethylhexyl)phthalate	X	X			
SVOC	n-Nitroso-di-n-propylamine	X	X			
VOC	1,1-Dichloroethene	X	X			
VOC	1,2-Dichloroethane		X	X		
VOC	2-Hexanone	X	X			
VOC	4-Methyl-2-pentanone		X			
VOC	Acetone	X	X	X		
VOC	Carbon disulfide	X	X	X		
VOC	Carbon tetrachloride		X			
VOC	Chloroform			X		
VOC	Ethylbenzene		X			
VOC	Methylene chloride	X	X			
VOC	Tetrachloroethene			X		
VOC	Toluene	X	X			
VOC	Trichloroethene		X			X
VOC	Xylene (total)		X			
IR-03						
METAL	Aluminum	X	X		X	
METAL	Antimony	X	X			
METAL	Arsenic	X	X		X	

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-03 (Continued)						
METAL	Barium	X	X		X	
METAL	Beryllium	X	X			
METAL	Cadmium		X		X	
METAL	Chromium VI	X	X		X	
METAL	Cobalt	X	X			
METAL	Copper	X	X		X	
METAL	Lead	X	X			
METAL	Manganese	X	X		X	
METAL	Mercury	X	X			
METAL	Molybdenum	X	X		X	
METAL	Nickel		X			
METAL	Selenium	X	X			
METAL	Silver	X	X			
METAL	Vanadium	X	X		X	
METAL	Zinc	X	X		X	
PEST/PCB	4,4'-DDD	X	X			
PEST/PCB	4,4'-DDE	X	X			
PEST/PCB	4,4'-DDT	X	X			
PEST/PCB	Aroclor-1260	X	X			
PEST/PCB	Endrin aldehyde	X	X			
PEST/PCB	alpha-Chlordane	X	X			
PEST/PCB	beta-BHC		X			
PEST/PCB	gamma-Chlordane	X	X			
SVOC	1,2,4-Trichlorobenzene	X	X			
SVOC	1,3-Dichlorobenzene		X			
SVOC	1,4-Dichlorobenzene	X	X			
SVOC	2,4-Dinitrotoluene	X	X			
SVOC	2-Chlorophenol	X	X			
SVOC	2-Methylnaphthalene	X	X			
SVOC	2-Nitroaniline		X			
SVOC	4-Chloro-3-methylphenol	X	X			
SVOC	4-Nitrophenol	X	X			
SVOC	Acenaphthene	X	X			
SVOC	Acenaphthylene	X	X			
SVOC	Anthracene	X	X			
SVOC	Benzo(a)anthracene	X	X			
SVOC	Benzo(a)pyrene	X	X			
SVOC	Benzo(b)fluoranthene	X	X			
SVOC	Benzo(g,h,i)perylene	X	X			
SVOC	Benzo(k)fluoranthene	X	X			
SVOC	Benzoic acid	X	X			

TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-03 (Continued)						
SVOC	Butylbenzylphthalate	X	X			
SVOC	Chrysene	X	X			
SVOC	Dibenz(a,h)anthracene	X	X			
SVOC	Dibenzofuran	X	X			
SVOC	Diethylphthalate	X	X			
SVOC	Fluoranthene	X	X			
SVOC	Fluorene	X	X			
SVOC	Indeno(1,2,3-cd)pyrene	X	X			
SVOC	MCPA	X	X			
SVOC	Naphthalene	X	X			
SVOC	Pentachlorophenol	X	X			
SVOC	Phenanthrene	X	X			
SVOC	Phenol	X	X			
SVOC	Pyrene	X	X			
SVOC	bis(2-Ethylhexyl)phthalate	X	X		X	
SVOC	n-Nitroso-di-n-propylamine	X	X			
SVOC	n-Nitrosodiphenylamine		X			
VOC	1,1,2-Trichloroethane	X	X			
VOC	2-Butanone	X	X			
VOC	2-Hexanone	X	X			
VOC	4-Methyl-2-pentanone	X	X			
VOC	Acetone	X	X		X	
VOC	Benzene		X			
VOC	Carbon disulfide	X	X			
VOC	Chlorobenzene		X			
VOC	Ethylbenzene		X		X	
VOC	Methylene chloride	X	X			
VOC	Tetrachloroethene		X			
VOC	Toluene	X	X		X	
VOC	Trichloroethene	X	X			
VOC	Xylene (total)		X		X	
IR-04						
CYANIDE	Cyanide	X	X			
METAL	Aluminum	X	X		X	
METAL	Antimony	X	X			
METAL	Arsenic		X		X	
METAL	Barium	X	X		X	
METAL	Beryllium	X	X			
METAL	Cadmium	X	X			
METAL	Chromium	X	X			
METAL	Chromium VI	X	X		X	

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-04 (Continued)						
METAL	Cobalt		X			
METAL	Copper	X	X		X	
METAL	Lead	X	X			
METAL	Manganese		X		X	
METAL	Mercury	X	X			
METAL	Molybdenum	X	X			
METAL	Selenium	X	X			
METAL	Silver		X			
METAL	Thallium		X			
METAL	Vanadium		X			
METAL	Zinc	X	X			
PEST/PCB	4,4'-DDT	X	X			
PEST/PCB	Aroclor-1260	X	X			
SVOC	1,2,4-Trichlorobenzene		X			
SVOC	2-Methylnaphthalene	X	X			
SVOC	Acenaphthylene	X	X			
SVOC	Anthracene	X	X			
SVOC	Benzo(a)anthracene	X	X			
SVOC	Benzo(a)pyrene	X	X			
SVOC	Benzo(b)fluoranthene	X	X			
SVOC	Benzo(g,h,i)perylene	X	X			
SVOC	Benzo(k)fluoranthene	X	X			
SVOC	Benzoic acid		X			
SVOC	Chrysene	X	X			
SVOC	Di-n-butylphthalate	X	X			
SVOC	Dibenzofuran		X			
SVOC	Fluoranthene	X	X			
SVOC	Fluorene		X			
SVOC	Indeno(1,2,3-cd)pyrene	X	X			
SVOC	Naphthalene	X	X			
SVOC	Phenanthrene	X	X			
SVOC	Phenol		X			
SVOC	Pyrene	X	X			
SVOC	bis(2-Ethylhexyl)phthalate	X	X			
VOC	1,1,1-Trichloroethane		X			
VOC	1,1-Dichloroethane	X	X			
VOC	1,1-Dichloroethene		X			
VOC	1,2-Dichloroethene (total)	X	X			
VOC	2-Butanone		X			
VOC	4-Methyl-2-pentanone		X			
VOC	Acetone	X	X			

TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-04 (Continued)						
VOC	Benzene		X			
VOC	Carbon disulfide		X		X	
VOC	Chloroethane		X			
VOC	Ethylbenzene		X			
VOC	Methylene chloride	X	X			
VOC	Tetrachloroethene	X	X			
VOC	Toluene	X	X			
VOC	Trichloroethene	X	X			
VOC	Xylene (total)	X	X			
IR-05						
CYANIDE	Cyanide	X	X			
METAL	Aluminum	X	X			
METAL	Antimony	X	X			
METAL	Arsenic	X	X			
METAL	Barium	X	X			
METAL	Beryllium	X	X			
METAL	Cadmium	X	X			
METAL	Chromium VI		X			
METAL	Cobalt		X			
METAL	Copper	X	X			
METAL	Lead	X	X			
METAL	Manganese	X	X			
METAL	Mercury	X	X			
METAL	Molybdenum	X	X			
METAL	Nickel		X			
METAL	Silver	X	X			
METAL	Vanadium	X	X			
METAL	Zinc	X	X			
PEST/PCB	4,4'-DDD	X	X			
PEST/PCB	4,4'-DDE	X	X			
PEST/PCB	4,4'-DDT	X	X			
PEST/PCB	Aldrin		X			
PEST/PCB	Aroclor-1260	X	X			
SVOC	2-Methylnaphthalene	X	X			
SVOC	Acenaphthene		X			
SVOC	Acenaphthylene		X			
SVOC	Anthracene	X	X			
SVOC	Benzo(a)anthracene	X	X			
SVOC	Benzo(a)pyrene	X	X			
SVOC	Benzo(b)fluoranthene	X	X			
SVOC	Benzo(g,h,i)perylene	X	X			

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-05 (Continued)						
SVOC	Benzo(k)fluoranthene	X	X			
SVOC	Benzoic acid	X	X			
SVOC	Chrysene	X	X			
SVOC	Di-n-butylphthalate	X	X			
SVOC	Dibenz(a,h)anthracene		X			
SVOC	Dibenzofuran	X	X			
SVOC	Fluoranthene	X	X			
SVOC	Fluorene		X			
SVOC	Indeno(1,2,3-cd)pyrene	X	X			
SVOC	Naphthalene	X	X			
SVOC	Pentachlorophenol	X	X			
SVOC	Phenanthrene	X	X			
SVOC	Pyrene	X	X			
SVOC	bis(2-Ethylhexyl)phthalate	X	X			
VOC	1,2-Dichloroethene (total)		X			
VOC	Acetone	X	X			
VOC	Carbon disulfide		X			
VOC	Ethylbenzene		X			
VOC	Methylene chloride		X			
VOC	Tetrachloroethene		X			
VOC	Toluene	X	X			
VOC	Trichloroethene		X			
VOC	Xylene (total)		X			
IR-11/14/15						
	1,2,3,4,6,7,8-HpCDD	X	X			
	Heptachlorodibenzofurans(total	X	X			
	HpCDDs(total)	X	X			
	Octachlorodibenzo-p-dioxin	X	X			
	Octachlorodibenzofuran	X	X			
METAL	Aluminum	X	X			
METAL	Antimony	X	X			
METAL	Arsenic	X	X			
METAL	Barium	X	X			X
METAL	Beryllium	X	X			X
METAL	Cadmium	X	X			
METAL	Chromium		X			
METAL	Chromium VI					X
METAL	Cobalt	X	X			
METAL	Copper	X	X			X
METAL	Lead	X	X			X
METAL	Manganese	X	X			X

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-11/14/15 (Continued)						
METAL	Mercury	X	X			
METAL	Molybdenum	X	X			X
METAL	Nickel		X			X
METAL	Selenium		X			X
METAL	Silver	X	X			
METAL	Thallium		X			
METAL	Vanadium	X	X			X
METAL	Zinc	X	X			
PEST/PCB	4,4'-DDD	X	X			
PEST/PCB	4,4'-DDE	X	X			
PEST/PCB	4,4'-DDT	X	X			
PEST/PCB	Aroclor-1254	X	X			
PEST/PCB	Aroclor-1260	X	X			
PEST/PCB	Dieldrin		X			
PEST/PCB	Endrin aldehyde	X	X			
PEST/PCB	Endrin ketone	X	X			
PEST/PCB	Heptachlor epoxide	X	X			
PEST/PCB	alpha-Chlordane	X	X			
PEST/PCB	gamma-BHC (Lindane)	X	X			
PEST/PCB	gamma-Chlordane	X	X			
SVOC	2-Methylnaphthalene	X	X			
SVOC	4-Nitrophenol		X			
SVOC	Acenaphthene		X			
SVOC	Acenaphthylene		X			
SVOC	Anthracene	X	X			
SVOC	Benzo(a)anthracene	X	X			
SVOC	Benzo(a)pyrene	X	X			
SVOC	Benzo(b)fluoranthene	X	X			
SVOC	Benzo(g,h,i)perylene	X	X			
SVOC	Benzo(k)fluoranthene	X	X			
SVOC	Benzoic acid	X	X			
SVOC	Butylbenzylphthalate	X	X			
SVOC	Chrysene	X	X			
SVOC	Di-n-butylphthalate	X	X			
SVOC	Dibenz(a,h)anthracene	X	X			
SVOC	Dibenzofuran		X			
SVOC	Diethylphthalate		X			
SVOC	Fluoranthene	X	X			
SVOC	Fluorene		X			
SVOC	Hexachlorobutadiene		X			
SVOC	Indeno(1,2,3-cd)pyrene	X	X			

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil [a]	Future Soil [b]	A-Aquifer [c]	B-Aquifer [d]	Bedrock Water [e]
IR-11/14/15 (Continued)						
SVOC	Naphthalene	X	X			
SVOC	Pentachlorophenol	X	X			
SVOC	Phenanthrene	X	X			
SVOC	Phenol		X			
SVOC	Pyrene	X	X			
SVOC	bis(2-Ethylhexyl)phthalate	X	X			
SVOC	n-Nitroso-di-n-propylamine	X	X			X
VOC	1,1-Dichloroethane			X		
VOC	1,1-Dichloroethene	X	X			
VOC	1,2-Dichloroethene (total)		X			
VOC	2-Butanone	X	X			
VOC	2-Hexanone		X			
VOC	4-Methyl-2-pentanone		X			
VOC	Acetone		X			
VOC	Benzene		X			
VOC	Carbon disulfide		X			
VOC	Carbon tetrachloride			X		
VOC	Chloroform		X			
VOC	Methylene chloride	X	X			
VOC	Tetrachloroethene			X		
VOC	Toluene	X	X			
VOC	Trichloroethene		X	X		X
IR-12						
CYANIDE	Cyanide	X	X			
METAL	Aluminum	X	X			
METAL	Antimony	X	X			
METAL	Arsenic		X			
METAL	Barium	X	X			
METAL	Beryllium	X	X			
METAL	Cadmium	X	X			
METAL	Chromium		X			
METAL	Chromium VI	X	X			
METAL	Cobalt		X			
METAL	Copper	X	X			
METAL	Lead	X	X			
METAL	Manganese	X	X			
METAL	Mercury	X	X			
METAL	Molybdenum	X	X			
METAL	Silver		X			
METAL	Thallium		X			
METAL	Vanadium	X	X			

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-12 (Continued)						
METAL	Zinc	X	X			
PEST/PCB	4,4'-DDD	X	X			
PEST/PCB	4,4'-DDE	X	X			
PEST/PCB	4,4'-DDT	X	X			
PEST/PCB	Aldrin	X	X			
PEST/PCB	Aroclor-1254	X	X			
PEST/PCB	Aroclor-1260	X	X			
PEST/PCB	gamma-BHC (Lindane)	X	X			
SVOC	1,2,4-Trichlorobenzene	X	X			
SVOC	1,4-Dichlorobenzene		X			
SVOC	2,4-Dimethylphenol	X	X			
SVOC	2-Chloronaphthalene		X			
SVOC	2-Methylnaphthalene	X	X			
SVOC	2-Methylphenol	X	X			
SVOC	4-Methylphenol	X	X			
SVOC	4-Nitrophenol		X			
SVOC	Acenaphthene	X	X			
SVOC	Anthracene	X	X			
SVOC	Benzo(a)anthracene	X	X			
SVOC	Benzo(a)pyrene	X	X			
SVOC	Benzo(b)fluoranthene	X	X			
SVOC	Benzo(g,h,i)perylene	X	X			
SVOC	Benzo(k)fluoranthene	X	X			
SVOC	Benzoic acid	X	X			
SVOC	Butylbenzylphthalate	X	X			
SVOC	Chrysene	X	X			
SVOC	Di-n-butylphthalate	X	X			
SVOC	Di-n-octylphthalate	X	X			
SVOC	Dibenz(a,h)anthracene	X	X			
SVOC	Dibenzofuran	X	X			
SVOC	Diethylphthalate	X	X			
SVOC	Dimethylphthalate	X	X			
SVOC	Fluoranthene	X	X			
SVOC	Fluorene	X	X			
SVOC	Indeno(1,2,3-cd)pyrene	X	X			
SVOC	Naphthalene	X	X			
SVOC	Pentachlorophenol	X	X			
SVOC	Phenanthrene	X	X			
SVOC	Phenol	X	X			
SVOC	Pyrene	X	X			
SVOC	bis(2-Ethylhexyl)phthalate	X	X			

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-12 (Continued)						
VOC	1,1,1-Trichloroethane	X	X			
VOC	1,1,2-Trichloroethane	X	X			
VOC	1,1-Dichloroethane		X			
VOC	1,1-Dichloroethene	X	X			
VOC	1,2-Dichloroethene (total)	X	X			
VOC	2-Butanone	X	X			
VOC	4-Methyl-2-pentanone		X			
VOC	Acetone	X	X			
VOC	Benzene	X	X			
VOC	Carbon disulfide		X			
VOC	Chlorobenzene	X	X			
VOC	Ethylbenzene	X	X			
VOC	Methylene chloride	X	X			
VOC	Tetrachloroethene	X	X			
VOC	Toluene	X	X			
VOC	Trichloroethene	X	X			
VOC	Xylene (total)	X	X			
IR-13						
METAL	Aluminum	X	X			
METAL	Antimony	X	X			
METAL	Arsenic		X			
METAL	Barium		X			
METAL	Beryllium		X			
METAL	Cadmium	X	X			
METAL	Chromium	X				
METAL	Chromium VI	X	X			
METAL	Copper	X	X			
METAL	Lead	X	X			
METAL	Manganese		X			
METAL	Mercury	X	X			
METAL	Selenium	X	X			
METAL	Silver		X			
METAL	Vanadium		X			
METAL	Zinc	X	X			
PEST/PCB	4,4'-DDD	X	X			
PEST/PCB	4,4'-DDE	X	X			
PEST/PCB	4,4'-DDT	X	X			
PEST/PCB	Aldrin	X	X			
PEST/PCB	Aroclor-1254		X			
PEST/PCB	Aroclor-1260	X	X			
PEST/PCB	Endosulfan I	X	X			

TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-13 (Continued)						
PEST/PCB	Endosulfan II	X	X			
PEST/PCB	Endosulfan sulfate	X	X			
PEST/PCB	Endrin aldehyde	X	X			
PEST/PCB	Endrin ketone	X	X			
PEST/PCB	alpha-Chlordane	X	X			
PEST/PCB	beta-BHC		X			
PEST/PCB	gamma-Chlordane	X	X			
SVOC	1,2,4-Trichlorobenzene		X			
SVOC	2-Methylnaphthalene	X	X			
SVOC	4-Chloro-3-methylphenol		X			
SVOC	4-Nitrophenol		X			
SVOC	Acenaphthene	X	X			
SVOC	Anthracene	X	X			
SVOC	Benzo(a)anthracene	X	X			
SVOC	Benzo(a)pyrene	X	X			
SVOC	Benzo(b)fluoranthene	X	X			
SVOC	Benzo(g,h,i)perylene	X	X			
SVOC	Benzo(k)fluoranthene	X	X			
SVOC	Benzoic acid	X	X			
SVOC	Carbazole	X	X			
SVOC	Chrysene	X	X			
SVOC	Dibenz(a,h)anthracene	X	X			
SVOC	Dibenzofuran	X	X			
SVOC	Fluoranthene	X	X			
SVOC	Fluorene	X	X			
SVOC	Indeno(1,2,3-cd)pyrene	X	X			
SVOC	Naphthalene	X	X			
SVOC	Pentachlorophenol		X			
SVOC	Phenanthrene	X	X			
SVOC	Pyrene	X	X			
SVOC	bis(2-Ethylhexyl)phthalate		X			
VOC	1,1,1-Trichloroethane	X	X			
VOC	1,1-Dichloroethene	X	X			
VOC	Acetone	X	X			
VOC	Benzene		X			
VOC	Carbon disulfide	X	X			
VOC	Ethylbenzene		X			
VOC	Methylene chloride		X			
VOC	Tetrachloroethene	X	X			
VOC	Toluene	X	X			
VOC	Xylene (total)	X	X			

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-38						
METAL	Aluminum	X	X			
METAL	Antimony		X			
METAL	Arsenic		X			
METAL	Barium		X			
METAL	Beryllium	X	X			
METAL	Chromium VI		X			
METAL	Copper	X	X			
METAL	Lead	X	X			
METAL	Manganese		X			
METAL	Mercury		X			
METAL	Selenium		X			
METAL	Vanadium		X			
METAL	Zinc	X	X			
PEST/PCB	4,4'-DDD	X	X			
PEST/PCB	4,4'-DDE	X	X			
PEST/PCB	4,4'-DDT	X	X			
PEST/PCB	Aroclor-1260	X	X			
SVOC	2-Methylnaphthalene		X			
SVOC	Acenaphthylene		X			
SVOC	Anthracene		X			
SVOC	Benzo(a)anthracene	X	X			
SVOC	Benzo(a)pyrene		X			
SVOC	Benzo(b)fluoranthene		X			
SVOC	Benzo(g,h,i)perylene		X			
SVOC	Benzo(k)fluoranthene		X			
SVOC	Butylbenzylphthalate		X			
SVOC	Chrysene	X	X			
SVOC	Di-n-butylphthalate		X			
SVOC	Dibenzofuran		X			
SVOC	Diethylphthalate		X			
SVOC	Fluoranthene	X	X			
SVOC	Fluorene		X			
SVOC	Indeno(1,2,3-cd)pyrene		X			
SVOC	Naphthalene		X			
SVOC	Phenanthrene	X	X			
SVOC	Pyrene	X	X			
SVOC	bis(2-Ethylhexyl)phthalate		X			
VOC	1,1,1-Trichloroethane		X			
VOC	2-Butanone		X			
VOC	2-Hexanone		X			
VOC	Acetone		X			

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-38 (Continued)						
VOC	Benzene		X			
VOC	Ethylbenzene		X			
VOC	Methylene chloride	X	X			
VOC	Tetrachloroethene		X			
VOC	Toluene	X	X			
VOC	Xylene (total)		X			
IR-39						
METAL	Aluminum	X	X			
METAL	Antimony		X			
METAL	Arsenic		X			
METAL	Beryllium		X			
METAL	Lead	X	X			
METAL	Manganese		X			
METAL	Silver		X			
METAL	Vanadium		X			
METAL	Zinc	X	X			
PEST/PCB	4,4'-DDD	X	X			
PEST/PCB	4,4'-DDE	X	X			
PEST/PCB	4,4'-DDT	X	X			
PEST/PCB	Aroclor-1260		X			
PEST/PCB	Endosulfan I	X	X			
PEST/PCB	Endosulfan II	X	X			
PEST/PCB	Endosulfan sulfate	X	X			
PEST/PCB	Endrin		X			
PEST/PCB	Endrin aldehyde	X	X			
PEST/PCB	Endrin ketone		X			
PEST/PCB	Heptachlor		X			
PEST/PCB	Heptachlor epoxide	X	X			
PEST/PCB	Methoxychlor		X			
PEST/PCB	alpha-BHC		X			
PEST/PCB	alpha-Chlordane	X	X			
PEST/PCB	beta-BHC	X	X			
PEST/PCB	delta-BHC		X			
PEST/PCB	gamma-BHC (Lindane)		X			
PEST/PCB	gamma-Chlordane	X	X			
SVOC	2-Methylnaphthalene	X	X			
SVOC	Acenaphthene	X	X			
SVOC	Anthracene	X	X			
SVOC	Benzo(a)anthracene	X	X			
SVOC	Benzo(a)pyrene	X	X			
SVOC	Benzo(b)fluoranthene	X	X			

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-39 (Continued)						
SVOC	Benzo(g,h,i)perylene	X	X			
SVOC	Benzo(k)fluoranthene	X	X			
SVOC	Chrysene	X	X			
SVOC	Dibenzofuran	X	X			
SVOC	Fluoranthene	X	X			
SVOC	Fluorene	X	X			
SVOC	Naphthalene	X	X			
SVOC	Phenanthrene	X	X			
SVOC	Pyrene	X	X			
SVOC	Toluene	X	X			
VOC	2-Hexanone	X	X			
VOC	Acetone		X			
VOC	Benzene		X			
VOC	Methylene chloride		X			
VOC	Toluene		X			
VOC	Trichloroethene		X			
IR-52						
METAL	Aluminum	X	X			
METAL	Arsenic	X	X			
METAL	Barium	X	X			
METAL	Beryllium	X	X			
METAL	Cadmium	X	X			
METAL	Chromium		X			
METAL	Chromium VI		X			
METAL	Cobalt		X			
METAL	Copper	X	X			
METAL	Lead	X	X			
METAL	Mercury		X			
METAL	Nickel	X	X			
METAL	Thallium		X			
METAL	Zinc	X	X			
PEST/PCB	4,4'-DDE	X	X			
PEST/PCB	4,4'-DDT	X	X			
PEST/PCB	Aroclor-1254		X			
PEST/PCB	Aroclor-1260	X	X			
PEST/PCB	Dieldrin		X			
PEST/PCB	Endrin	X	X			
PEST/PCB	Methoxychlor	X	X			
PEST/PCB	alpha-Chlordane	X	X			
PEST/PCB	gamma-Chlordane	X	X			
SVOC	2-Methylnaphthalene		X			

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-52 (Continued)						
SVOC	Acenaphthene		X			
SVOC	Acenaphthylene		X			
SVOC	Anthracene	X	X			
SVOC	Benzo(a)anthracene	X	X			
SVOC	Benzo(a)pyrene	X	X			
SVOC	Benzo(b)fluoranthene	X	X			
SVOC	Benzo(g,h,i)perylene	X	X			
SVOC	Benzo(k)fluoranthene	X	X			
SVOC	Carbazole		X			
SVOC	Chrysene	X	X			
SVOC	Dibenz(a,h)anthracene	X	X			
SVOC	Fluoranthene	X	X			
SVOC	Fluorene		X			
SVOC	Indeno(1,2,3-cd)pyrene	X	X			
SVOC	Naphthalene		X			
SVOC	Phenanthrene	X	X			
SVOC	Pyrene	X	X			
SVOC	bis(2-Ethylhexyl)phthalate	X	X			
VOC	1,1-Dichloroethane		X			
VOC	2-Hexanone		X			
VOC	Acetone		X			
VOC	Tetrachloroethene		X			
VOC	Xylene (total)	X	X			
IR-54						
METAL	Aluminum	X	X			
METAL	Copper	X	X			
METAL	Lead	X	X			
METAL	Molybdenum	X	X			
METAL	Zinc	X	X			
SVOC	Benzo(k)fluoranthene	X	X			
SVOC	Pyrene	X	X			
SVOC	bis(2-Ethylhexyl)phthalate	X	X			
VOC	2-Hexanone		X			
VOC	4-Methyl-2-pentanone		X			
VOC	Methylene chloride	X	X			
IR-56						
METAL	Aluminum		X			
METAL	Antimony		X			
METAL	Arsenic		X			
METAL	Barium		X			
METAL	Beryllium		X			

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-56 (Continued)						
METAL	Cadmium		X			
METAL	Chromium		X			
METAL	Chromium VI		X			
METAL	Copper		X			
METAL	Lead		X			
METAL	Manganese		X			
METAL	Mercury		X			
METAL	Molybdenum		X			
METAL	Nickel		X			
METAL	Silver		X			
METAL	Thallium		X			
METAL	Vanadium		X			
METAL	Zinc		X			
PEST/PCB	4,4'-DDE		X			
PEST/PCB	4,4'-DDT		X			
PEST/PCB	Aroclor-1260		X			
PEST/PCB	Dieldrin		X			
PEST/PCB	Endosulfan II		X			
PEST/PCB	Endosulfan sulfate		X			
PEST/PCB	Endrin aldehyde		X			
PEST/PCB	Heptachlor epoxide		X			
SVOC	2-Methylnaphthalene		X			
SVOC	4-Chloro-3-methylphenol		X			
SVOC	Acenaphthene		X			
SVOC	Acenaphthylene		X			
SVOC	Anthracene		X			
SVOC	Benzo(a)anthracene		X			
SVOC	Benzo(a)pyrene		X			
SVOC	Benzo(b)fluoranthene		X			
SVOC	Benzo(g,h,i)perylene		X			
SVOC	Benzo(k)fluoranthene		X			
SVOC	Chrysene		X			
SVOC	Dibenz(a,h)anthracene		X			
SVOC	Dibenzofuran		X			
SVOC	Fluoranthene		X			
SVOC	Fluorene		X			
SVOC	Indeno(1,2,3-cd)pyrene		X			
SVOC	Naphthalene		X			
SVOC	Pentachlorophenol		X			
SVOC	Phenanthrene		X			
SVOC	Phenol		X			

TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-56 (Continued)						
SVOC	Pyrene		X			
SVOC	bis(2-Ethylhexyl)phthalate		X			
VOC	1,1,1-Trichloroethane		X			
VOC	2-Hexanone		X			
VOC	4-Methyl-2-pentanone		X			
VOC	Acetone		X			
VOC	Benzene		X			
VOC	Carbon disulfide		X			
VOC	Methylene chloride		X			
VOC	Toluene		X			
VOC	Trichloroethene		X			
VOC	Xylene (total)		X			
IR-72						
METAL	Aluminum	X	X			
METAL	Antimony	X	X			
METAL	Arsenic		X			
METAL	Barium	X	X			
METAL	Beryllium	X	X			
METAL	Cadmium		X			
METAL	Chromium		X			
METAL	Chromium VI		X			
METAL	Cobalt		X			
METAL	Copper	X	X			
METAL	Lead	X	X			
METAL	Manganese		X			
METAL	Mercury		X			
METAL	Molybdenum	X	X			
METAL	Nickel		X			
METAL	Silver		X			
METAL	Thallium		X			
METAL	Vanadium		X			
METAL	Zinc	X	X			
PEST/PCB	4,4'-DDE		X			
PEST/PCB	4,4'-DDT		X			
PEST/PCB	Aroclor-1254		X			
PEST/PCB	Aroclor-1260	X	X			
PEST/PCB	Dieldrin	X	X			
PEST/PCB	Endosulfan II	X	X			
PEST/PCB	Endosulfan sulfate	X	X			
PEST/PCB	Heptachlor epoxide		X			
PEST/PCB	alpha-Chlordane		X			

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-72 (Continued)						
PEST/PCB	gamma-Chlordane	X	X			
SVOC	2-Methylnaphthalene	X	X			
SVOC	4-Chloro-3-methylphenol		X			
SVOC	Acenaphthene	X	X			
SVOC	Acenaphthylene	X	X			
SVOC	Anthracene	X	X			
SVOC	Benzo(a)anthracene	X	X			
SVOC	Benzo(a)pyrene	X	X			
SVOC	Benzo(b)fluoranthene	X	X			
SVOC	Benzo(g,h,i)perylene	X	X			
SVOC	Benzo(k)fluoranthene	X	X			
SVOC	Chrysene	X	X			
SVOC	Dibenz(a,h)anthracene	X	X			
SVOC	Dibenzofuran	X	X			
SVOC	Fluoranthene	X	X			
SVOC	Fluorene	X	X			
SVOC	Indeno(1,2,3-cd)pyrene	X	X			
SVOC	Naphthalene	X	X			
SVOC	Pentachlorophenol		X			
SVOC	Phenanthrene	X	X			
SVOC	Phenol	X	X			
SVOC	Pyrene	X	X			
SVOC	bis(2-Ethylhexyl)phthalate		X			
VOC	1,1,1-Trichloroethane		X			
VOC	4-Methyl-2-pentanone		X			
VOC	Acetone	X	X			
VOC	Benzene		X			
VOC	Carbon disulfide		X			
VOC	Ethylbenzene	X	X			
VOC	Methylene chloride		X			
VOC	Tetrachloroethene		X			
VOC	Toluene	X	X			
VOC	Trichloroethene		X			
VOC	Xylene (total)	X	X			
IR-73						
METAL	Aluminum	X	X			
METAL	Copper	X	X			
METAL	Lead	X	X			
METAL	Mercury		X			
METAL	Molybdenum	X	X			
METAL	Zinc	X	X			

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil [a]	Future Soil [b]	A-Aquifer [c]	B-Aquifer [d]	Bedrock Water [e]
IR-73 (Continued)						
PEST/PCB	4,4'-DDD	X	X			
PEST/PCB	4,4'-DDE	X	X			
PEST/PCB	4,4'-DDT	X	X			
PEST/PCB	Aroclor-1260	X	X			
PEST/PCB	gamma-Chlordane	X	X			
SVOC	Benzo(a)pyrene		X			
SVOC	Benzo(k)fluoranthene	X	X			
SVOC	Fluoranthene		X			
SVOC	Phenanthrene		X			
SVOC	Pyrene	X	X			
SVOC	bis(2-Ethylhexyl)phthalate	X	X			
VOC	2-Hexanone		X			
VOC	4-Methyl-2-pentanone		X			
VOC	Methylene chloride	X	X			
IR-75						
METAL	Aluminum	X	X			
METAL	Nickel		X			
VOC	Chloroform			X		
IR-76						
CYANIDE	Cyanide	X	X			
METAL	Aluminum	X	X		X	
METAL	Antimony		X			
METAL	Arsenic		X		X	
METAL	Barium	X	X		X	
METAL	Beryllium	X	X			
METAL	Cadmium		X			
METAL	Chromium		X			
METAL	Chromium VI		X		X	
METAL	Cobalt		X		X	
METAL	Copper	X	X		X	
METAL	Lead	X	X		X	
METAL	Manganese	X	X		X	
METAL	Mercury	X	X		X	
METAL	Molybdenum		X			
METAL	Nickel		X		X	
METAL	Selenium		X			
METAL	Silver		X			
METAL	Tin	X	X			
METAL	Vanadium	X	X		X	
METAL	Zinc	X	X		X	
PEST/PCB	4,4'-DDD	X	X			

TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-76 (Continued)						
PEST/PCB	4,4'-DDE	X	X			
PEST/PCB	4,4'-DDT	X	X			
PEST/PCB	Aldrin		X			
PEST/PCB	Aroclor-1016		X			
PEST/PCB	Aroclor-1254	X	X			
PEST/PCB	Aroclor-1260	X	X			
PEST/PCB	Dieldrin		X			
PEST/PCB	Endosulfan I		X			
PEST/PCB	Endosulfan II		X			
PEST/PCB	Endrin aldehyde	X	X			
PEST/PCB	Endrin ketone		X			
PEST/PCB	Heptachlor epoxide		X			
PEST/PCB	alpha-Chlordane	X	X			
PEST/PCB	gamma-Chlordane	X	X			
SVOC	1,2,4-Trichlorobenzene		X			
SVOC	1,2-Dichlorobenzene		X			
SVOC	1,3-Dichlorobenzene		X			
SVOC	1,4-Dichlorobenzene		X			
SVOC	2,4-Dimethylphenol		X		X	
SVOC	2-Methylnaphthalene		X		X	
SVOC	2-Methylphenol		X			
SVOC	4-Methylphenol		X		X	
SVOC	Acenaphthene	X	X		X	
SVOC	Acenaphthylene	X	X			
SVOC	Anthracene	X	X			
SVOC	Benzo(a)anthracene	X	X			
SVOC	Benzo(a)pyrene	X	X			
SVOC	Benzo(b)fluoranthene	X	X			
SVOC	Benzo(g,h,i)perylene	X	X			
SVOC	Benzo(k)fluoranthene	X	X			
SVOC	Butylbenzylphthalate		X			
SVOC	Carbazole		X			
SVOC	Chrysene	X	X			
SVOC	Di-n-butylphthalate		X			
SVOC	Dibenz(a,h)anthracene	X	X			
SVOC	Dibenzofuran		X		X	
SVOC	Fluoranthene	X	X		X	
SVOC	Fluorene	X	X		X	
SVOC	Indeno(1,2,3-cd)pyrene	X	X			
SVOC	Naphthalene	X	X		X	
SVOC	Pentachlorophenol	X	X			

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TABLE N.2-1 (Continued)

LIST OF COPCs BY IR SITE
HUNTERS POINT SHIPYARD, PARCEL E REMEDIAL INVESTIGATION

Chemical Class	COPC	Current Soil[a]	Future Soil[b]	A-Aquifer[c]	B-Aquifer[d]	Bedrock Water[e]
IR-76 (Continued)						
SVOC	Phenanthrene	X	X		X	
SVOC	Phenol	X	X			
SVOC	Pyrene	X	X		X	
SVOC	bis(2-Ethylhexyl)phthalate	X	X			
SVOC	n-Nitrosodiphenylamine		X			
VOC	1,1,1-Trichloroethane	X	X			
VOC	2-Butanone	X	X			
VOC	Acetone	X	X			
VOC	Benzene		X			
VOC	Carbon disulfide		X		X	
VOC	Chlorobenzene		X			
VOC	Chloroform				X	
VOC	Ethylbenzene		X		X	
VOC	Methylene chloride	X	X			
VOC	Styrene		X			
VOC	Toluene	X	X			
VOC	Xylene (total)		X		X	

Notes:

a Current Soil - Chemical data for soil 0 to 2 feet bgs in unpaved areas

b Future Soil - Chemical data for soil 0 to 10 feet bgs in paved and unpaved areas

c A-aquifer - VOCs detected in the A-aquifer groundwater

d B-aquifer - B-aquifer groundwater

e Bedrock Water - Bedrock water-bearing zone groundwater

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PARCEL E
REMEDIAL UNIT-SPECIFIC ALTERNATIVES

IR-01/21 and IR-02NW

1. Cap IR-01/21 and IR-02NW separately
2. Cap IR-01/21 and IR-02NW together

IR-03 SOURCE AREA

1. - No action
2. - Soil consolidation at former oil ponds area
   - Single layer cap
   - DPE and off-site recycling of LNAPL
3. - Soil consolidation at former oil ponds area
   - Single layer cap
   - Sheet pile wall encompassing pond area
4. - Excavation and off-site disposal of soil in landfills
   - Skimming and off-site recycling of LNAPL
5. - Excavation and on-site placement of soil
   - Excavation and off-site disposal of grossly contaminated soil in landfill
   - Skimming and off-site recycling of LNAPL
6. - Excavation, on-site thermal desorption of SVOC- and TPH-contaminated soil, and soil replacement
   - Excavation, on-site thermal desorption and solidification/stabilization of inorganic- and organic-contaminated soil, and on-site placement
   - Excavation, solidification/stabilization of soil containing inorganics, and on-site placement
   - Skimming and off-site recycling of LNAPL
7. - Excavation, on-site solvent extraction of SVOC- and TPH-contaminated soil, and soil replacement
   - Excavation, on-site solvent extraction and solidification/stabilization of inorganic- and organic-contaminated soil, and on-site placement
   - Excavation, solidification/stabilization of soil containing inorganics, and on-site placement
   - Skimming and off-site recycling of LNAPL
8. - Excavation and off-site incineration of contaminated soil
   - Skimming and off-site incineration of LNAPL

MISCELLANEOUS SOILS

1. Excavation and disposal of soil in off-site landfills
2. Excavation, on-site placement of soils w/o treatment at IR-01/21 and IR-02NW (create CAMU)
3. Excavation, on-site placement of soils w/o treatment at IR-01/21 and IR-02NW; excavation and disposal of grossly contaminated soil in off-site landfills
4. Excavation, on-site placement of soils w/o treatment at IR-01/21 and IR-02NW; excavation, on-site treatment of grossly contaminated soil, on-site placement of treated soil at IR-01/21 and IR-02NW
5. Excavation, on-site placement of soils w/o treatment at IR-01/21 and IR-02NW; *in situ* treatment of grossly contaminated soil
6. Excavation and disposal of soil in off-site landfills; *in situ* treatment of grossly contaminated soil

GROUNDWATER

1.
   - No action
2.
   - Deed restrictions
   - Removal and off-site disposal of contaminated saturated zone soils and collection of groundwater
   - On-site pretreatment of extracted groundwater
   - Discharge of pretreated groundwater to the POTW
   - Groundwater monitoring
3.
   - Deed restrictions
   - Sheet piling wall with interceptor trench along the shoreline; discharge collected groundwater to bay or wetlan
   - Removal and disposal of contaminated saturated zone soils and collection of groundwater
   - On-site pretreatment of extracted groundwater
   - Discharge of groundwater to the POTW
   - Groundwater monitoring
4.
   - Deed restrictions
   - Sheet piling wall with interceptor trench along the shoreline
   - Encapsulation of AOCs
   - On-site pretreatment of groundwater
   - Discharge of groundwater to the POTW
   - Groundwater monitoring
5.
   - Deed restrictions
   - Sheet piling wall with interceptor trench along the shoreline; discharge collected groundwater to bay or wetlan
   - Encapsulation of AOCs
   - Groundwater monitoring

ATTACHMENT 3

PARCEL F

- LIST OF COPCs
- PROPOSED REMEDIAL ALTERNATIVES

(7 Sheets)

Enclosure (3)

TABLE 6-1

CHEMICALS OF POTENTIAL CONCERN RISK DRIVERS IN SURFACE SEDIMENTS OF INDIA BASIN AREAS (TRANSECTS A THROUGH F)

COPCs	Frequency of Detection	Maximum HQ Value	Fraction of HQ Values ≥ 1.0	Risk Driver Value	Fraction of Total Risk Driver Value	Risk Driver
Metals						
Antimony	1.00	0.49	0.06	0.03	0.002	No
Arsenic	1.00	1.32	0.82	1.08	0.076	Yes
Cadmium	1.00	0.04	0.00	0.00	0.00	No
Chromium	1.00	1.22	0.55	0.67	0.05	Yes
Copper	1.00	6.14	0.88	5.40	0.38	Yes
Lead	1.00	1.07	0.18	0.19	0.01	Yes
Mercury	1.00	2.73	0.58	1.58	0.11	Yes
Nickel	1.00	5.17	1.00	5.17	0.36	Yes
Silver	1.00	0.24	0.00	0.00	0.00	No
Zinc	1.00	0.85	0.12	0.10	0.007	No
			Total Metals	**14.22**	**1.00**	--
Polynuclear Aromatic Hydrocarbons						
LMW PAHs	0.85	26.46	0.85	19.12	0.58	Yes
HMW PAHs	0.79	24.93	0.70	13.77	0.42	Yes
			Total PAHs	**32.89**	**1.00**	--

TABLE 6-1

CHEMICALS OF POTENTIAL CONCERN RISK DRIVERS IN SURFACE SEDIMENTS OF INDIA BASIN
(TRANSECTS A THROUGH F)
(Continued)

COPCs	Frequency of Detection	Maximum HQ Value	Fraction of HQ Values ≥ 1.0	Risk Driver Value	Fraction of Total Risk Driver Value	Risk Driver
Organochlorine Pesticides						
DDD	1.00	--	--	--	--	--
DDE	1.00	--	--	--	--	--
DDT	1.00	--	--	--	--	--
DDD+DDE+DDT	1.00	2.17	1.00	2.17	0.003	No
Chlordane	1.00	6.36	1.00	6.36	0.01	Yes
Dieldrin	1.00	156.00	1.00	156.00	0.25	Yes
Total Endosulfan	1.00	3.41	0.97	3.31	0.005	No
Endrin	1.00	468.50	1.00	468.50	0.74	Yes
Lindane	1.00	0.43	0.03	0.01	< 0.001	No
Methoxychlor	1.00	0.84	0.06	0.05	< 0.001	No
			Total Organochlorine Pesticides	**636.40**	**1.01**	--
Polychlorinated Biphenyls						
Total PCBs	1.00	4.81	1.00	4.81	--	Yes
Organotins						
Tributyltin	0.00	7.71	0.00	0.00	--	No

Notes:

COPC = Chemical of potential concern
LMW PAHs = Low molecular weight polynuclear aromatic hydrocarbons
HMW PAHs = High molecular weight polynuclear aromatic hydrocarbons
PCBs = Polychlorinated biphenyls
PAHs = Polynuclear aromatic hydrocarbons
= Greater than or equal to

HQ = Hazard Quotient
DDD = Dichlorodiphenyldichloroethane
DDE = Dichlorodiphenyldichloroethene
DDT = Dichlorodiphenyltrichloroethane
-- = Not calculated
< = Less than

TABLE 6-2

CHEMICALS OF POTENTIAL CONCERN RISK DRIVERS IN SURFACE SEDIMENTS OF BERTHING SLIP AREAS (TRANSECTS G THROUGH T)

COPCs	Frequency of Detection	Maximum HQ Value	Fraction of HQ Values ≥ 1.0	Risk Driver Value	Fraction of Total Risk Driver Value	Risk Driver
Metals						
Antimony	1.00	0.42	0.00	0.00	0.00	No
Arsenic	1.00	1.42	0.98	1.39	0.16	Yes
Cadmium	1.00	0.05	0.00	0.00	0.00	No
Chromium	1.00	1.02	0.35	0.36	0.04	Yes
Copper	1.00	1.81	0.98	1.77	0.20	Yes
Lead	1.00	0.68	0.02	0.01	< 0.01	No
Mercury	1.00	1.73	0.63	1.09	0.12	Yes
Nickel	1.00	3.97	1.00	3.97	0.45	Yes
Silver	1.00	0.26	0.00	0.00	0.00	No
Zinc	1.00	0.96	0.26	0.25	0.03	Yes
			Total Metals	**8.84**	**1.00**	–
Polynuclear Aromatic Hydrocarbons						
LMW PAHs	0.96	9.06	0.96	8.35	0.69	Yes
HMW PAHs	0.89	4.69	0.89	3.71	0.31	Yes
			Total PAHs	**12.06**	**1.00**	–

TABLE 6-2

CHEMICALS OF POTENTIAL CONCERN RISK DRIVERS IN SURFACE SEDIMENTS OF BERTHING SLIP AREAS
(TRANSECTS G THROUGH T)
(Continued)

COPCs	Frequency of Detection	Maximum HQ Value	Fraction of HQ Values ≥ 1.0	Risk Driver Value	Fraction of Total Risk Driver Value	Risk Driver
Organochlorine Pesticides						
DDD	1.00	--	--	--	--	--
DDE	1.00	--	--	--	--	--
DDT	1.00	--	--	--	--	--
DDD+DDE+DDT	1.00	1.26	1.00	1.26	0.003	No
Chlordane	1.00	3.96	1.00	3.96	0.01	Yes
Dieldrin	1.00	98.00	1.00	98.00	24.54	Yes
Total Endosulfan	1.00	2.13	1.00	2.13	0.005	No
Endrin	1.00	294.00	1.00	294.00	73.62	Yes
Lindane	1.00	0.27	0.00	0.00	0.00	No
Methoxychlor	1.00	0.52	0.00	0.00	0.00	No
			Total Organochlorine Pesticides	**399.35**	**98.18**	--
Polychlorinated Biphenyls						
Total PCBs	1.00	2.84	1.00	2.84	--	Yes
Organotins						
Tributyltin	0.00	0.23	0.00	0.00	--	No

Notes:

COPC = Chemical of potential concern
LMW PAHs = Low molecular weight polynuclear aromatic hydrocarbons
HMW PAHs = High molecular weight polynuclear aromatic hydrocarbons
PCBs = Polychlorinated biphenyls
PAHs = Polynuclear aromatic hydrocarbons
= Greater than or equal to

HQ = Hazard Quotient
DDD = Dichlorodiphenyldichloroethane
DDE = Dichlorodiphenyldichloroethene
DDT = Dichlorodiphenyltrichloroethane
-- = Not calculated
< = Less than

TABLE 6-3

CHEMICALS OF POTENTIAL CONCERN RISK DRIVERS IN SURFACE SEDIMENTS OF SOUTH BASIN AREAS (TRANSECTS U THROUGH BB)

COPCs	Frequency of Detection	Maximum HQ Value	Fraction of HQ Values ≥ 1.0	Risk Driver Value	Fraction of Total Risk Driver Value	Risk Driver
Metals						
Antimony	1.00	1.53	0.08	0.12	0.009	No
Arsenic	1.00	1.21	0.67	0.81	0.06	Yes
Cadmium	1.00	0.11	0.02	0.002	<0.001	No
Chromium	1.00	1.22	0.63	0.77	0.055	Yes
Copper	1.00	2.51	0.88	2.21	0.16	Yes
Lead	1.00	1.81	0.96	1.74	0.12	Yes
Mercury	1.00	4.13	0.80	3.30	0.24	Yes
Nickel	1.00	4.03	1.00	4.03	0.29	Yes
Silver	1.00	0.39	0.00	0.00	0.00	No
Zinc	1.00	1.19	0.88	1.05	0.07	Yes
			Total Metals	**14.03**	**1.00**	--
Polynuclear Aromatic Hydrocarbons						
LMW PAHs	0.98	3.58	0.98	3.43	0.74	Yes
HMW PAHs	1.00	1.40	0.84	1.18	0.26	Yes
			Total PAHs	**4.61**	**1.00**	--

TABLE 6-3

CHEMICALS OF POTENTIAL CONCERN RISK DRIVERS IN SURFACE SEDIMENTS OF SOUTH BASIN AREAS (TRANSECTS U THROUGH BB)
(Continued)

COPCs	Frequency of Detection	Maximum HQ Value	Fraction of HQ Values ≥ 1.0	Risk Driver Value	Fraction of Total Risk Driver Value	Risk Driver
Organochlorine Pesticides						
DDD	1.00	--	--	--	--	--
DDE	1.00	--	--	--	--	--
DDT	--	--	--	--	--	--
DDD+DDE+DDT	1.00	2.79	1.00	2.79	0.006	No
Chlordane	0.98	8.10	0.98	7.78	0.02	Yes
Dieldrin	1.00	118.00	1.00	118.00	0.24	Yes
Total Endosulfan	1.00	2.57	0.96	2.47	0.005	No
Endrin	1.00	354.00	1.00	354.00	0.73	Yes
Lindane	1.00	0.32	0.02	0.006	< 0.001	No
Methoxychlor	1.00	0.63	0.08	0.05	< 0.001	No
			Total Organochlorine Pesticides	**485.10**	**1.00**	--
Polychlorinated Biphenyls						
Total PCBs	0.98	14.43	0.98	14.86	--	Yes
Organotins						
Tributyltin	0.00	0.46	0.00	0.00	0.00	No

Notes:

COPC = Chemical of potential concern
LMW PAHs = Low molecular weight polynuclear aromatic hydrocarbons
HMW PAHs = High molecular weight polynuclear aromatic hydrocarbons
PCBs = Polychlorinated biphenyls
PAHs = Polynuclear aromatic hydrocarbons
≥ = Greater than or equal to
HQ = Hazard Quotient
DDD = Dichlorodiphenyldichloroethane
DDE = Dichlorodiphenyldichloroethene
DDT = Dichlorodiphenyltrichloroethane
-- = Not calculated
< = Less than

TABLE 6-4

CHEMICALS OF POTENTIAL CONCERN RISK DRIVERS IN SEDIMENT PORE WATER IN INDIA BASIN AREAS (TRANSECTS A THROUGH F)

COPCs	Frequency of Detection	Maximum HQ Value	Fraction of HQ Values ≥ 1.0	Risk Driver Value	Fraction of Total Risk Driver Value	Risk Driver
Metals						
Arsenic	0.97	0.32	0.00	0.00	0.00	No
Cadmium	1.00	0.02	0.00	0.00	0.00	No
Chromium	0.97	0.01	0.00	0.00	0.00	No
Copper	1.00	1.06	0.28	0.30	0.004	No
Lead	1.00	0.11	0.00	0.00	0.00	No
Manganese	0.97	73.20	0.97	68.87	0.96	Yes
Mercury	1.00	2.80	1.00	2.80	0.04	Yes
Molybdenum	0.97	0.04	0.00	0.00	0.00	No
Nickel	0.97	0.36	0.00	0.00	0.00	No
Silver	1.00	0.40	0.03	0.012	<0.001	No
Vanadium	0.97	0.06	0.00	0.00	0.00	No
Zinc	1.00	0.31	0.00	0.00	0.00	No
			Total Metals	**71.98**	**1.00**	--
Polynuclear Aromatic Hydrocarbons						
Total PAHs	1.00	0.14	0.00	0.00	--	No

COPCs	Frequency of Detection	Maximum HQ Value	Fraction of HQ Values ≥ 1.0	Risk Driver Value	Fraction of Total Risk Driver Value	Risk Driver
Organochlorine Pesticides						
Aldrin	0.97	0.004	0.00	0.00	0.00	No
Chlordane	0.97	2.50	0.97	2.35	0.28	Yes
DDD	0.97	0.003	0.00	0.00	0.00	No
DDT	0.97	0.83	0.07	0.06	0.007	No
Dieldrin	0.97	0.09	0.00	0.00	0.00	No
Total Endosulfan	0.97	0.59	1.00	0.59	0.07	Yes
Endrin	0.97	3.00	0.97	2.91	0.34	Yes
Total Heptachlor	0.97	2.50	0.97	2.43	0.29	Yes
Lindane	0.97	0.03	0.00	0.00	0.00	No
Methoxychlor	0.97	2.63	0.00	0.00	0.00	No
			Total Organochlorine Pesticides	**8.34**	**0.99**	--
Polychlorinated Biphenyls						
Total PCBs	0.93	1.63	0.93	1.41	--	Yes
Organotins						
Tributyltin	1.00	12.00	1.00	12.00	--	Yes

Notes:

COPC	=	Chemical of potential concern	HQ	=	Hazard Quotient
LMW PAHs	=	Low molecular weight polynuclear aromatic hydrocarbons	DDD	=	Dichlorodiphenyldichloroethane
HMW PAHs	=	High molecular weight polynuclear aromatic hydrocarbons	DDE	=	Dichlorodiphenyldichloroethene
PCBs	=	Polychlorinated biphenyls	DDT	=	Dichlorodiphenyltrichloroethane
PAHs	=	Polynuclear aromatic hydrocarbons	--	=	Not calculated
≥	=	Greater than or equal to	<	=	Less than

TABLE 6-5

CHEMICALS OF POTENTIAL CONCERN RISK DRIVERS IN SEDIMENT PORE WATER IN BERTHING SLIP AREAS (TRANSECTS G THROUGH T)

COPCs	Frequency of Detection	Maximum HQ Value	Fraction of HQ Values ≥ 1.0	Risk Driver Value	Fraction of Total Risk Driver Value	Risk Driver
Metals						
Arsenic	1.00	0.66	0.07	0.05	<0.001	No
Cadmium	1.00	0.02	0.00	0.00	0.00	No
Chromium	0.98	0.01	0.00	0.00	0.00	No
Copper	1.00	0.71	0.10	0.07	<0.001	No
Lead	1.00	0.10	0.00	0.00	0.00	No
Manganese	1.00	119.93	1.00	119.93	0.98	Yes
Mercury	1.00	2.80	1.00	2.80	0.02	Yes
Molybdenum	0.98	0.02	0.00	0.00	0.00	No
Nickel	1.00	0.63	0.05	0.03	<0.001	No
Silver	0.98	0.05	0.00	0.00	0.00	No
Vanadium	0.98	0.21	0.00	0.00	0.00	No
Zinc	1.00	0.26	0.00	0.00	0.00	No
			Total Metals	**122.88**	**1.00**	–
Polynuclear Aromatic Hydrocarbons						
Total PAHs	0.98	0.15	0.00	0.00	--	No

TABLE 6-5

CHEMICALS OF POTENTIAL CONCERN RISK DRIVERS IN SEDIMENT PORE WATER IN BERTHING SLIP AREAS
(TRANSECTS G THROUGH T)
(Continued)

COPCs	Frequency of Detection	Maximum HQ Value	Fraction of HQ Values ≥ 1.0	Risk Driver Value	Fraction of Total Risk Driver Value	Risk Driver
Organochlorine Pesticides						
Aldrin	0.95	0.005	0.00	0.00	0.00	No
Chlordane	0.95	2.50	0.95	2.26	0.38	Yes
DDD	0.95	0.003	0.00	0.00	0.00	No
DDT	0.95	0.83	0.02	0.02	0.003	No
Dieldrin	0.95	0.09	0.00	0.00	0.00	No
Total Endosulfan	0.95	0.59	1.00	0.56	0.09	Yes
Endrin	0.95	3.00	0.95	2.71	0.45	Yes
Total Heptachlor	0.95	0.50	0.95	0.45	0.08	Yes
Lindane	0.95	0.03	0.00	0.00	0.00	No
Methoxychlor	0.95	2.63	0.00	0.00	0.00	No
			Total Organochlorine Pesticides	**6.00**	**1.00**	--
Polychlorinated Biphenyls						
Total PCBs	0.95	1.63	0.95	1.47	--	Yes
Organotins						
Tributyltin	1.00	196.00	1.00	196.00	--	Yes

Notes:

COPC = Chemical of potential concern
LMW PAHs = Low molecular weight polynuclear aromatic hydrocarbons
HMW PAHs = High molecular weight polynuclear aromatic hydrocarbons
PCBs = Polychlorinated biphenyls
PAHs = Polynuclear aromatic hydrocarbons
≥ = Greater than or equal to
HQ = Hazard Quotient
DDD = Dichlorodiphenyldichloroethane
DDE = Dichlorodiphenyldichloroethene
DDT = Dichlorodiphenyltrichloroethane
-- = Not calculated
< = Less than

TABLE 6-6

CHEMICALS OF POTENTIAL CONCERN RISK DRIVERS IN SEDIMENT PORE WATER IN SOUTH BASIN AREAS (TRANSECTS U THROUGH BB)

COPCs	Frequency of Detection	Maximum HQ Value	Fraction of HQ Values ≥ 1.0	Risk Driver Value	Fraction of Total Risk Driver Value	Risk Driver
Metals						
Arsenic	1.00	0.29	0.00	0.00	0.00	No
Cadmium	1.00	0.02	0.00	0.00	0.00	No
Chromium	1.00	0.01	0.00	0.00	0.00	No
Copper	1.00	0.42	0.03	0.01	<0.001	No
Lead	1.00	0.12	0.00	0.00	0.00	No
Manganese	1.00	119.93	1.00	119.93	0.98	Yes
Mercury	1.00	2.8	0.88	2.46	0.02	Yes
Molybdenum	1.00	0.67	0.00	0.00	0.00	No
Nickel	1.00	0.31	0.00	0.00	0.00	No
Silver	1.00	0.27	0.00	0.00	0.00	No
Vanadium	1.00	0.06	0.00	0.00	0.00	No
Zinc	1.00	0.44	0.03	0.00	0.00	No
			Total Metals	**122.4**	**1.00**	--
Polynuclear Aromatic Hydrocarbons						
Total PAHs	1.00	0.15	0.00	0.00	--	No

TABLE 6-6

CHEMICALS OF POTENTIAL CONCERN RISK DRIVERS IN SEDIMENT PORE WATER IN SOUTH BASIN AREAS
(TRANSECTS U THROUGH BB)
(Continued)

COPCs	Frequency of Detection	Maximum HQ Value	Fraction of HQ Values ≥ 1.0	Risk Driver Value	Fraction of Total Risk Driver Value	Risk Driver
Organochlorine Pesticides						
Aldrin	0.97	0.00	0.00	0.00	0.00	No
Chlordane	0.97	2.25	0.97	2.12	0.28	Yes
DDD	0.97	0.00	0.00	0.00	0.00	No
DDT	0.97	0.75	0.00	0.00	0.00	No
Dieldrin	0.97	0.08	0.00	0.00	0.00	No
Total Endosulfan	0.97	0.39	1.00	0.38	0.05	Yes
Endrin	0.97	3.00	0.97	2.82	0.38	Yes
Total Heptachlor	0.97	2.50	0.88	2.13	0.29	Yes
Lindane	0.97	0.03	0.00	0.00	0.00	No
Methoxychlor	0.97	2.63	0.00	0.00	0.00	No
			Total Organochlorine Pesticides	**7.45**	**1.00**	--
Polychlorinated Biphenyls						
Total PCBs	0.97	14.21	0.65	8.96	--	Yes
Organotins						
Tributyltin	1.00	3.00	1.00	3.00	--	Yes

Notes:

COPC = Chemical of potential concern
LMW PAHs = Low molecular weight polynuclear aromatic hydrocarbons
HMW PAHs = High molecular weight polynuclear aromatic hydrocarbons
PCBs = Polychlorinated biphenyls
PAHs = Polynuclear aromatic hydrocarbons
≥ = Greater than or equal to
HQ = Hazard Quotient
DDD = Dichlorodiphenyldichloroethane
DDE = Dichlorodiphenyldichloroethene
DDT = Dichlorodiphenyltrichloroethane
-- = Not calculated
< = Less than

TABLE 3-5
PROCESS OPTIONS RETAINED FOR REMEDIAL ALTERNATIVE DEVELOPMENT
PARCEL F FEASIBILITY STUDY
HUNTERS POINT SHIPYARD - SAN FRANCISCO, CALIFORNIA

General Response Action	Process Option Retained
Institutional Actions/Mitigative Measures/Monitoring	Deed Restrictions Sediment/Pore Water Monitoring IR-1/21 Landfill Contaminant Measures IR-03 Waste Containment Measures Storm Drain Mitigative Measures Natural Recovery
Containment	Confined Aquatic Disposal Capping In-Place Confined Disposal Facility
Removal	Specialty Dredging Hydraulic Dredging Mechanical Dredging
Disposal	On-Site Landfill, Class III (IR 1/21) Class II Landfill (off site) Class III Landfill (off site) Upland Disposal Wetland Creation Cover Wetland Creation Non-cover Levee Construction (off site)
Rehandling/Dewatering	On-site Rehandling/Dewatering Facility Off-site Rehandling/Dewatering Facility
Ex Situ Treatment	Stabilization Soil Washing

Cal EPA

Department of Toxic Substances Control

700 Heinz Avenue
Suite 200
Berkeley, CA
94710-2737

November 6, 1997

Pete Wilson
Governor

James M. Strock
Secretary for Environmental Protection

Commanding Officer
Engineering Field Activity, West
Attention: Code 18, Mr. Richard Powell (1832)
Naval Facilities Engineering Command
900 Commodore Drive
San Bruno, California 94066-5006

Re: **Deadlines for Parcel B Remedial Design and Remedial Action Work plan, Hunters Point Shipyard, San Francisco, California**

Dear Mr. Powell:

Pursuant to Section 8.2 of the Federal Facility Agreement (FFA), The Navy is required to propose deadlines, within twenty-one (21) days of issuance of the Record of Decision, for the completion of the following draft primary documents: (a) Remedial Designs (2) Remedial Action Work Plans (to include schedules for RA. and operation and maintenance plans). To this date, we have not received such proposed deadlines. At the mean time, a package submitted by the Navy entitled: Parcel B Draft Remedial Action Documents, was received by this office. My conversation with Mr. Bill McAvoy of the Navy indicated that this package was intended to be part of the Remedial Design submittal. The remaining portion of the Remedial Design will be submitted at a later date. Mr. McAvoy also indicated that the date the Navy would like to receive comments on these documents should have been December 14, 1997, instead of November 14, 1997.

After a quick review of the Parcel B Draft Remedial Action Documents, We concluded that most critical portions of the design information are not in this package and decided not to provide you with any comments until the entire Remedial Design submittal is completed.

We are still eagerly waiting for your proposed deadlines for Remedial Design and Remedial Action Work Plan and looking forward to continuing working with you for the design and remediation of this parcel.

If you have any questions, Please contact me at (510) 540-3822.

RECEIVED

Printed on Recycled Paper

Sincerely,

Chein Ping Kao, P.E.
Senior Hazardous Substance Engineer
Office of Military Facilities

cc: Ms. Claire Trombadore
US EPA Region IX
75 Hawthorne Street
San Francisco, California 94105-3901

Mr. Dennis Mishek
California Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612