TABLE 1-1
No Further Action Sites-HI Less than 1.0

Revetment 18/Building 15
Revetment 5
Revetment 28

TABLE 1-2

Summary of Site-Specific FFS Chemicals of Potential Concern

SITES	METALS																	PESTICIDES									SVOCs[a]	PCBs[b]	TPH[c]			BTEX[d]		POLYNUCLEAR AROMATIC HYDROCARBONS													
	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Zinc	alpha-Chlordane	gamma-Chlordane	DDD[e]	DDE[f]	DDT[g]	Dieldrin	Endrin	Endrin Aldehyde	Endosulfan Sulfate	Dibenzofuran	Aroclor - 1260	Gasoline[h]	Diesel[i]	JP4[j]	Ethylbenzene	Xylene	2-Methylnapthalene	Acenapthene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo (g,h,i) perylene	Chrysene	Dibenz (a,h) anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-cd) pyrene	Napthalene	Phenanthrene	Pyrene
Former Sewage Treatment Plant																																														
High Marsh			●		●		●		●			●					●																					●■				■					
Subtidal																●			■				■					■□																			
Intertidal			●				●		●	●		●			●	●		●	●■	●	●	●	●■		●	●		●■□						●			●	●				●					
Building 15/Revetment 18																																														
Building 20																																														
High Marsh																	●																														
Intertidal				●																																											
Building 26																																														
Intertidal																														●																	
Building 35/39 Area																																														
High Marsh							●										●																					●									
Subtidal																						●																									
Intertidal						●	●										●			●	●	●		●										●				●				●		●			
Building 41 Area																																														
High Marsh																																			●			●							●		
Subtidal																																													●		
Intertidal																														●				●	●								●	●		●	●	●
Building 82/87/92/94 Area																																														
High Marsh			●		●		●										●																														
Intertidal			●	●	●		●										●											■□																			
Freshwater			●	●	●		●																					■□																			
Building 84/90 Area																																														
High Marsh																	●																					●									
Intertidal															●		●											■□																			
Building 86																																														
High Marsh			●		●	●	●	●	●		●			●			●																			■	●■	■								
Subtidal											●					●																															
Intertidal			●	●		●	●		●	●	●			●			●																	●	●	●	●	●	●		●		●			●	●
Perimeter Drainage Ditch (PDD)-Unlined																																														
High Marsh									●					●			●																														
Subtidal																						●	■																								
Intertidal				●					●					●	●					●	●	●	●■																								
Freshwater				●		●			●					●	●					●	●	●	●■																●		●		●				
Perimeter Drainage Ditch Spoils Pile A																																														
High Marsh																	●																														
Intertidal				●													●				●	●																									
Freshwater				●																	●	●																									
Perimeter Drainage Ditch Spoils Pile B																																														
High Marsh									●			●					●																														
Subtidal									●							●																															
Intertidal						●			●			●				●	●			●		●			●																						
Freshwater	●					●			●			●				●						●																				●					

TABLE 1-2

Summary of Site-Specific FFS Chemicals of Potential Concern

SITES	METALS																	PESTICIDES									SVOCs[a]	PCBs[b]	TPH[c]			BTEX[d]		POLYNUCLEAR AROMATIC HYDROCARBONS													
	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Zinc	alpha-Chlordane	gamma-Chlordane	DDD[e]	DDE[f]	DDT[g]	Dieldrin	Endrin	Endrin Aldehyde	Endosulfan Sulfate	Dibenzofuran	Aroclor - 1260	Gasoline[h]	Diesel[i]	JP4[j]	Ethylbenzene	Xylene	2-Methylnapthalene	Acenapthene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo (g,h,i) perylene	Chrysene	Dibenz (a,h) anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-cd) pyrene	Napthalene	Phenanthrene	Pyrene
Perimeter Drainage Ditch Spoils Pile C																																															
Intertidal																					●	●																									
Perimeter Drainage Ditch Spoils Pile D																																															
Intertidal																					●	●																									
Perimeter Drainage Ditch Spoils Pile E																																															
Intertidal																					●	●																									
Perimeter Drainage Ditch Spoils Pile F																																															
High Marsh		●■						●		●	●			●			●																	●		■	●■	■									
Subtidal		■									●											●																										
Intertidal		●■		●		●		●		●	●			●			●			●	●	●					●								●	●	●	●	●	●	●		●	●	●		●	●
Perimeter Drainage Ditch Spoils Pile G																																															
Intertidal																					●	●																									
Perimeter Drainage Ditch Spoils Pile H																																															
Intertidal																						●																●									
High Marsh																																						●									
Perimeter Drainage Ditch Spoils Pile I																																															
High Marsh																																						●									
Intertidal				●																	●	●																									
Perimeter Drainage Ditch Spoils Pile J																																															
High Marsh																																						●									
Intertidal																				●	●	●																									
Perimeter Drainage Ditch Spoils Pile K																																															
High Marsh																	●																														
Intertidal										●											●	●																									
Perimeter Drainage Ditch Spoils Pile L																																															
Intertidal			●					●		●							●				●	●																									
High Marsh								●		●							●																														
Perimeter Drainage Ditch Spoils Pile M																																															
Intertidal																					●	●																									
Freshwater																					●	●																									
Perimeter Drainage Ditch Spoils Pile N																																															
High Marsh										●																																					
Intertidal										●											●	●																									
Freshwater										●											●	●																									
East Levee Generator Pad																																															
High Marsh									●																																						
Intertidal									●																																						
Onshore Fuel Line - 54-Inch Drain Line Segment																																															
Intertidal										●																			●																		
Onshore Fuel Line - Hangar Segment																																															
High Marsh																																					■	●■	■			■			■			
Intertidal										●																			●		●	●	●		●	●	●	●			●	●	●	●		●	●	●
Onshore Fuel Line - Northern Segment																																															

TABLE 1-2

Summary of Site-Specific FFS Chemicals of Potential Concern

SITES	METALS																	PESTICIDES										SVOCs[a]	PCBs[b]	TPH[c]			BTEX[d]		POLYNUCLEAR AROMATIC HYDROCARBONS													
	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Zinc	alpha-Chlordane	gamma-Chlordane	DDD[e]	DDE[f]	DDT[g]	Dieldrin	Endrin	Endrin Aldehyde	Endosulfan Sulfate	Dibenzofuran	Aroclor - 1260	Gasoline[h]	Diesel[i]	JP4[j]	Ethylbenzene	Xylene	2-Methylnapthalene	Acenapthene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo (g,h,i) perylene	Chrysene	Dibenz (a,h) anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-cd) pyrene	Napthalene	Phenanthrene	Pyrene
High Marsh																																						●										
Intertidal																													●					●														
Northwest Runway Area																																																
Intertidal		●■		●			●		●			●		●	●		●				●	●																				●						
High Marsh		■			●		●		●					●			●																					●										
Tarmac East of A-5																																																
Intertidal																																											●				●	
Revetment 1																																																
High Marsh			●							●																											●■										
Subtidal																●																																
Intertidal			●			●				●					●																			●	●	●	●	●			●	●	●	●			●	●
Revetment 2																																																
High Marsh										●																											●■										
Intertidal						●				●					●																				●		●	●			●	●	●	●			●	●
Revetment 3																																																
High Marsh			●						●		●																																					
Subtidal			●						●		●																																					
Intertidal			●						●		●																																					
Revetment 4																																																
High Marsh										●			●																								●										
Intertidal						●				●					●																			●	●	●	●	●			●	●	●	●		●	●	●
Subtidal													●			●																																
Revetment 5																																																
Revetment 6																																																
Intertidal						●																							●					●	●									●		●		
Revetment 7																																																
Intertidal						●				●					●																			●	●	●	●	●			●	●	●	●		●	●	●
High Marsh										●																											●■										
Revetment 8																																																
High Marsh									●																																							
Intertidal									●																																							
Revetment 9																																																
High Marsh								●	●		●			●																																		
Subtidal											●																																					
Intertidal				●					●	●	●			●																																		
Revetment 10																																																
High Marsh									●																																							
Intertidal									●						●																																	
Revetment 11																																																
High Marsh									●								●																															
Intertidal				●		●			●	●																																						
Revetment 12																																																
High Marsh									●								●																															

TABLE 1-2

Summary of Site-Specific FFS Chemicals of Potential Concern

SITES	METALS																	PESTICIDES									SVOCs[a]	PCBs[b]	TPH[c]			BTEX[d]		POLYNUCLEAR AROMATIC HYDROCARBONS												
	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Zinc	alpha-Chlordane	gamma-Chlordane	DDD[e]	DDE[f]	DDT[g]	Dieldrin	Endrin	Endrin Aldehyde	Endosulfan Sulfate	Dibenzofuran	Aroclor - 1260	Gasoline[h]	Diesel[i]	JP4[j]	Ethylbenzene	Xylene	2-Methylnapthalene	Acenapthene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo (g,h,i) perylene	Chrysene	Dibenz (a,h) anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-cd) pyrene	Napthalene	Phenanthrene	Pyrene
Intertidal									●																																							
Revetment 13																																																
High Marsh										●																												●■										
Subtidal										●																																						
Intertidal						●				●																									●	●	●	●			●	●	●	●			●	●
Revetment 14																																																
High Marsh									●				●																																			
Subtidal													●																																			
Intertidal									●				●																	●																		
Revetment 15																																																
High Marsh																																						●										
Intertidal						●				●																																						
Revetment 16																																																
High Marsh			●						●																																							
Subtidal			●																																													
Intertidal			●						●																																							
Revetment 17																																																
High Marsh									●																																							
Intertidal									●																																							
Revetment 19																																																
High Marsh			●						●																													●■										
Subtidal			●																										●																			
Intertidal			●			●			●	●																			●	●				●	●	●	●	●			●	●	●	●			●	●
Revetment 20																																																
Intertidal						●				●																											●				●		●				●	●
Revetment 21																																																
High Marsh									●																																							
Intertidal									●																				●	●				●										●				
Revetment 22																																																
Intertidal																													●	●				●	●									●				
Revetment 23																																																
High Marsh									●								●																															
Intertidal									●	●																																						
Revetment 24																																																
High Marsh																																						●										
Intertidal																																					●					●	●				●	●
Revetment 25																																																
High Marsh			●																																													
Intertidal			●																											●																		
Revetment 26																																																
High Marsh			●		●				●		●																																					
Subtidal			●		●						●																																					
Intertidal			●						●		●																		●	●																		

TABLE 1-2

Summary of Site-Specific FFS Chemicals of Potential Concern

SITES	METALS																	PESTICIDES									SVOCs[a]	PCBs[b]	TPH[c]			BTEX[d]		POLYNUCLEAR AROMATIC HYDROCARBONS														
	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Zinc	alpha-Chlordane	gamma-Chlordane	DDD[e]	DDE[f]	DDT[g]	Dieldrin	Endrin	Endrin Aldehyde	Endosulfan Sulfate	Dibenzofuran	Aroclor - 1260	Gasoline[h]	Diesel[i]	JP4[j]	Ethylbenzene	Xylene	2-Methylnapthalene	Acenapthene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo (g,h,i) perylene	Chrysene	Dibenz (a,h) anthracene	Fluoranthene	Fluorene	Indeno (1,2,3-cd) pyrene	Napthalene	Phenanthrene	Pyrene
Revetment 27																																															
Intertidal										●																																	●				●	●
Revetment 28																																															

[a] Semivolatile organic compounds.
[b] Polychlorinated biphenyls.
[c] Total petroleum hydrocarbons.
[d] Benzene, toluene, ethylbenzene and xylenes.
[e] 4,4'-dichlorodiphenyldichloroethane.
[f] 4,4'-dichlorodiphenyldichloroethene.
[g] 4,4'-dichlorodiphenyltrichloroethane.
[h] Analytes within the gasoline range of total petroleum hydrocarbons.
[i] Analytes within the diesel range of total petroleum hydrocarbons.
[j] Analytes within the JP4 range of total petroleum hydrocarbons.

● Denotes site and constituent with ecological receptor(s) having one or more Hazard Quotient > 1.0.
■ Denotes site and constituent with human health carcinogenic risk > 1.0 E -06.
□ Denotes site and constituent with human health noncarcinogenic Hazard Quotient > 1.0.

TABLE 1-3

Selected Comparator Values

Focused Feasibility Study Evaluation

Contaminant	BRAC[a] Soil (mg/kg)[b]	Upland Soil (mg/kg)	Bay Sediment (mg/kg)	ERL[c] (mg/kg)	RWQCB[d] Wetland Surface Sediment Guidelines[e] (mg/kg)	RART[f] Values (mg/kg)	Selected Comparator		
							Inboard Sites (mg/kg)	Upland Sites (mg/kg)	Target Concentrations (mg/kg)
Metals									
Antimony	0.37	1.2					0.37	1.2	
Arsenic	16.7	4.7	15.7	8.2	15.3		16.7	15.3	
Barium	190	217	188 (i)				190	217	
Beryllium	1.0	0.72	1.68 (i)				1	0.72	
Boron	36.9	3.6	71.6 (i)				36.9	3.6	
Cadmium	0.64	(g)	0.33	1.2	0.33	1.2	1.2		
Chromium	107	40.2	129 (j)	81	112	112	112	112	
Cobalt	27.6	14.4	26.7 (i)				27.6	14.4	
Copper	48.8	12.4	67.45	34	68.1	68.1	68.1	68.1	
Lead	30.7	8.3	38.7	46.7	43.2	43.2	43.2	43.2	
Manganese	943	943 (h)	838				943	943	
Total Mercury	0.42	0.24	0.43	0.15	0.43	0.43	0.43	0.43	
Molybdenum	(g)	(g)							4.8
Nickel	113	37.2	116 (i)	20.9	112		113	112	
Selenium	(g)	(g),(h)	0.66 (i)		0.64		0.64		
Silver	0.21	(g)	0.42	1	0.58		1	1	
Zinc	92.0	47	160 (i)	150	158		158	158	
Polynuclear Aromatic Hydrocarbons (PAH)									
PAHs, total				4.022	3.39		4.022	4.022	
2-Methylnaphthalene					0.0194		0.0194	0.0194	
Acenaphthene				0.016	0.026		0.026	0.026	
Anthracene				0.0853	0.088		0.088	0.088	
Benz(a)anthracene				0.261	0.412		0.412	0.412	
Benzo(a)pyrene				0.43	0.371		0.43	0.43	
Benzo(b)fluoranthene					0.371		0.371	0.371	
Benzo(g,h,i)perylene					0.310		0.31	0.31	
Chrysene				0.384	0.289		0.384	0.384	
Dibenz(a,h)anthracene				0.0634	0.0327		0.0634	0.0634	
Fluoranthene				0.6	0.514		0.6	0.6	
Fluorene				0.019	0.0253		0.0253	0.0253	
Indeno(1,2,3-c,d)pyrene					0.382		0.382	0.382	
Naphthalene				0.16	0.0558		0.16	0.16	
Phenanthrene				0.24	0.237		0.24	0.24	
Pyrene				0.665	0.665		0.665	0.665	

TABLE 1-3

Selected Comparator Values

Focused Feasibility Study Evaluation

Contaminant	BRAC[a] Soil (mg/kg)[b]	Upland Soil (mg/kg)	Bay Sediment (mg/kg)	ERL[c] (mg/kg)	RWQCB[d] Wetland Surface Sediment Guidelines[e] (mg/kg)	RART[f] Values (mg/kg)	Selected Comparator		
							Inboard Sites (mg/kg)	Upland Sites (mg/kg)	Target Concentrations (mg/kg)
Petroleum Hydrocarbons									
Diesel/Motor Oil						144[k]	144	144	
Gasoline/JP-4						12[k]	12	12	
Pesticides/Polychlorinated Biphenyls (PCB)									
DDTs[l], sum				0.00158	0.007	0.086	0.007	0.007	
Chlordanes, sum				0.0005	0.0023 (TEL)[m]	0.0023	0.0023	0.0023	
Dieldrin				0.00002	0.00072 (TEL)		0.00072	0.00072	
PCBs, sum				0.0227	0.0227 (ER-L)[n]	0.36	0.36	0.36	0.36
Endrin									0.0215
Endrin Aldehyde									0.0215
Endosulfan Sulfate									0.00286
Volatile Organic Compounds									
Ethylbenzene									0.004
Xylenes (total)									0.04
Semivolatile Organic Compounds									
Dibenzofuran									0.11

[a] Base Realignment and Closure.

[b] Milligrams per kilogram.

[c] Long, E.R., D.D. MacDonald, S.L. Smith, and F.D. Calder, 1995, "Incidence of Adverse Biological Effects within Ranges of Chemical Concentrations in Marine and Estuarine Sediments," *Environmental Management*, 19:81-97.

[d] Regional Water Quality Control Board.

[e] Ambient values unless noted otherwise.

[f] Regulatory Agencies and Resource Trustees.

[g] Less than 10% of ambient samples had detectable concentrations of metal; therefore, the 95th quantile was not estimated and no ambient comparator was established. This metal is assumed to be above ambient levels if detected in more than 5% of samples at a site associated with this ambient dataset.

[h] No data available for metal from General Services Administration (upland) ambient dataset; soil ambient level from inboard BRAC sites used instead.

[i] No data available for metal from bay ambient dataset; high marsh sediment ambient values provided for risk management comparison.

[j] Values not used for this comparison; values maintained for subsequent risk management comparison.

[k] Based on cleanup values for sediment for the Saltwater Ecological Protection Zone at the Presidio of San Francisco.

[l] Dichlorodiphenyltrichloroethane.

[m] Threshold Effects Level.

[n] Effects range-low.

TABLE 1-4

Reference for Comparators in the FFS

	BRAC[a] Ambient Soil	Hamilton Ambient Upland Soil[b]	San Pablo Bay Sediment[c]	Effects Range-Low[d]	RWQCB[e] Wetland Surface Sediment Guidelines	RART[f] Values	Non-Wildlife Target Concentrations[b]
Metals							
Antimony	I	U					
Arsenic	I				U		
Barium	I	U					
Beryllium	I	U					
Boron	I	U					
Cadmium				I U		I	
Chromium						IU	
Cobalt	I	U					
Copper					IU	IU	
Lead					IU	IU	
Manganese	I U						
Mercury			IU			IU	
Molybdenum							I U
Nickel	I				U		
Selenium					I U[g]		
Silver				I U			
Zinc					IU		
Pesticides							
Chlordanes, sum					I U	I U	
DDTs[h], sum					I U		
Dieldrin					I U		
Endrin							I U
Endrin Aldehyde							I U
Endosulfan Sulfate							I U
PCBs[i], sum					I U		
Volatile Organic Compounds							
Ethylbenzene							I U
Xylenes (total)							I U
Semivolatile Organic Compounds (including PAHs[c,j])							
PAHs, total				I U			
2-Methylnaphthalene				I U			
Acenaphthene					I U		
Anthracene					I U		
Benz(a)anthracene					I U		
Benzo(a)pyrene				I U			
Benzo(b)fluoranthene					I U		
Benzo(g,h,i)perylene					I U		
Chrysene				I U			
Dibenz(a,h)anthracene				I U			
Dibenzofuran							I U

TABLE 1-4

Reference for Comparators in the FFS

	BRAC[a] Ambient Soil	Hamilton Ambient Upland Soil[b]	San Pablo Bay Sediment[c]	Effects Range-Low[d]	RWQCB[e] Wetland Surface Sediment Guidelines	RART[f] Values	Non-Wildlife Target Concentrations[b]
Fluoranthene				I U			
Fluorene					I U		
Indeno(1,2,3-cd)pyrene					I U		
Naphthalene				I U			
Phenanthrene				I U			
Pyrene				I U	I U		
Total Petroleum Hydrocarbons							
TPH[k] - gasoline range						I U	
TPH - diesel range						I U	
TPH - aviation fuel (JP4)						I U	

I = Used as inboard comparator

U = Used as upland comparator (Northwest Runway only)

[a] Base Realignment and Closure.

[b] IT Corporation (IT), 2001, *Human Health and Ecological Risk Assessment, BRAC Property, Hamilton Army Airfield, Novato, California,* Concord, California.

[c] San Francisco Estuary Institute

[d] Effects Range-Low; Long, E.R., D.D. MacDonald, S.L. Smith, and F.D. Calder, 1995, "Incidence of Adverse Biological Effects within Ranges of Chemical Concentrations in Marine and Estuarine Sediments," *Environmental Management*, 19:81-97.

[e] Regional Water Quality Control Board.

[f] Regulatory Agency and Resource Trustees.

[g] No upland comparator provided by RART, inboard comparator used.

[h] Dichlorodiphenyltrichloroethane.

[i] Polychlorinated biphenyls.

[j] Polynuclear aromatic hydrocarbons.

[k] Total petroleum hydrocarbons.