TABLES

FINAL OPERABLE UNIT 2B REMEDIAL INVESTIGATION REPORT SITES 3, 4, 11, AND 21

DATED 05 AUGUST 2005

TABLE 8-1: SITE 21 SOIL AND SOIL GAS SAMPLING SUMMARY

Remedial Investigation Report for Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Sample Location	Sample Identification	Date Sampled	Sample Depth (ft bgs)	Analyses Performed															
				SVOCs	VOCs	PAHs	Pesticides	o-Pest	PCBs	Total Metals	Title 26 Metals	General Chemistry	TPH	Hexavalent Chromium	Cyanide	Herb.	O&G	Organic Metals	Organic Lead
CERCLA INVESTIGATIONS																			
Phases 2B & 3 Investigation, 1991																			
B07B-02	B07B-02-000	6/24/1991	0.5 - 1.5	X	--	--	X	--	--	X	--	X	X	--	--	--	--	--	--
	B07B-02-004	6/24/1991	3.5 - 5	X	X	--	X	--	--	X	--	X	X	--	--	--	--	--	--
	B07B-02-011	6/24/1991	11 - 12.5	X	X	--	X	--	--	X	--	X	X	--	--	--	--	--	--
	B07B-02-014	6/24/1991	14 - 14.5	X	X	--	X	--	--	X	--	X	X	--	--	--	--	--	--
B07B-03	B07B-03-000	6/21/1991	0.5 - 1	X	--	--	X	--	--	X	--	X	X	--	--	--	--	--	--
	B07B-03-002	6/21/1991	2 - 3.5	X	X	--	X	--	--	X	--	X	X	--	--	--	--	--	--
	B07B-03-011	6/21/1991	11 - 12.5	X	X	--	X	--	--	X	--	X	X	--	--	--	--	--	--
	B07B-03-016	6/21/1991	15.5 - 16.5	X	X	--	X	--	--	X	--	X	X	--	--	--	--	--	--
M07B-01	B07B-01-000	6/24/1991	1 - 1.5	X	--	--	X	--	--	X	--	X	X	--	--	--	--	--	--
	B07B-01-004	6/24/1991	3.5 - 5	X	X	--	X	--	--	X	--	X	X	--	--	--	--	--	--
	B07B-01-008	6/24/1991	8 - 9	X	X	--	X	--	--	X	--	X	X	--	--	--	--	--	--
	B07B-01-014	6/24/1991	14 - 15	X	X	--	X	--	--	X	--	X	X	--	--	--	--	--	--
Follow-on Investigation, 1994																			
03GB040	03GPS040-1.25	9/12/1994	0.8 - 1.3	--	X	--	--	--	--	--	--	X	X	--	--	--	--	--	--
	03GPS040-3.0	9/12/1994	2.5 - 3	--	X	--	--	--	--	--	--	X	X	--	--	--	--	--	--
	03GPS040-5.5	9/12/1994	5 - 5.5	--	X	--	--	--	--	--	--	X	X	--	--	--	--	--	--
B07B-04	280-S7B11-027	8/16/1994	0.5 - 1.5	X	--	--	X	--	--	X	--	X	X	--	--	--	--	--	--
	280-S7B11-028	8/16/1994	2.5 - 3.5	X	X	--	X	--	--	X	--	X	X	--	--	--	--	--	--
	280-S7B11-029	8/16/1994	5 - 5.5	X	X	--	X	--	--	X	--	X	X	--	--	--	--	--	--
B07B-05	280-S7B11-024	8/16/1994	0.5 - 1.5	X	--	--	X	--	--	X	--	X	X	--	--	--	--	--	--
	280-S7B11-025	8/16/1994	2.5 - 3.5	X	X	--	X	--	--	X	--	X	X	--	--	--	--	--	--
	280-S7B11-026	8/16/1994	5 - 6	X	X	--	X	--	--	X	--	X	X	--	--	--	--	--	--
M11-06	280-S7B11-151	8/16/1994	0.5 - 1.5	X	--	--	--	--	--	X	--	X	X	--	--	--	--	--	--
	280-S7B11-152	8/16/1994	2.5 - 3.5	X	X	--	--	--	--	X	--	X	X	--	--	--	--	--	--
	280-S7B11-153	8/16/1994	5 - 6	X	X	--	--	--	--	X	--	X	X	--	--	--	--	--	--
Supplemental Remedial Investigation Data Gap Sampling, 2001																			
S21-DGS-DP08	385-S21-021	8/1/2001	9 - 9.5	--	--	--	--	--	--	X	--	X	--	--	--	--	--	--	--
Supplemental Remedial Investigation Data Gap Sampling, Soil Gas, 2001																			
S21-DGS-SG03	385-S21-038	7/30/2001	0.5 - 1.5	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	385-S21-039	7/30/2001	4 - 4	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--
S21-DGS-SG06	385-S21-043	7/30/2001	1.5 - 1.5	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	385-S21-044	7/30/2001	3 - 3	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PAH Study, 2003																			
C3S021B001	C0592072	8/28/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592073	8/28/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592074	8/28/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592075	8/28/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
C3S021B002	C0592076	8/28/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592077	8/28/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592078	8/28/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592079	8/28/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
C3S021B003	C0592080	8/28/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592082	8/28/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592083	8/28/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592084	8/28/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--

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C3S021B004	C0592085	8/28/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592086	8/28/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592087	8/28/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592088	8/28/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
C3S021B005	C0592089	8/28/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592090	8/28/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592092	8/28/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592093	8/28/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
C3S021B006	C0592094	8/28/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592095	8/28/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592096	8/28/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592097	8/28/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
C3S021B007	C0592098	8/29/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592099	8/29/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592100	8/29/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592102	8/29/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
C3S021B008	C0592103	8/29/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592104	8/29/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592105	8/29/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592106	8/29/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
C3S021B009	C0592107	8/28/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592108	8/28/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592109	8/28/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592110	8/28/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
C3S021B010	C0592112	8/28/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592113	8/28/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592114	8/28/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592115	8/28/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
C3S021B011	C0592116	8/29/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592117	8/29/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592118	8/29/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592119	8/29/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
C3S021B012	C0592120	8/29/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592122	8/29/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592123	8/29/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592124	8/29/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
C3S021B013	C0592125	8/29/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592126	8/29/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592127	8/29/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592128	8/29/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
C3S021B014	C0592129	8/29/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592130	8/29/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592132	8/29/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592133	8/29/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
C3S021B015	C0592134	8/29/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592135	8/29/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592136	8/29/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592137	8/29/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--

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C3S021B016	C0592138	8/29/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592139	8/29/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592140	8/29/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592142	8/29/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
C3S021B017	C0592143	8/29/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592144	8/29/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592145	8/29/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592146	8/29/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
C3S021B018	C0592147	8/29/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592148	8/29/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592149	8/29/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592150	8/29/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
C3S021B019	C0592152	8/28/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592153	8/28/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592154	8/28/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592155	8/28/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
C3S021B020	C0592156	8/28/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592157	8/28/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592158	8/28/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592159	8/28/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
C3S021B021	C0592160	8/28/2003	0 - 0.5	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592162	8/28/2003	0.5 - 2	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592163	8/28/2003	2 - 4	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
	C0592164	8/28/2003	4 - 8	--	--	X	--	--	--	--	--	--	--	--	--	--	--	--	--
Environmental Baseline Survey Investigations																			
Environmental Baseline Survey Phase 2A																			
126-002-003	126-0003M	6/5/1995	0.5 - 1	--	--	--	--	--	--	--	X	--	X	--	--	--	--	--	--
127-001-001	127-0001M	6/12/1995	2 - 2.5	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--
127-001-002	127-0002M	6/22/1995	0.5 - 1	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--
	127-0011M	6/22/1995	2.5 - 3	--	X	--	--	--	--	--	--	--	X	--	--	--	--	--	--
127-001-003	127-0003M	6/22/1995	0.5 - 1	--	--	--	--	--	--	--	--	--	X	--	--	--	--	--	--
	127-0012M	6/22/1995	3 - 3.5	--	X	--	--	--	--	--	--	--	X	--	--	--	--	--	--
127-002-005	127-0005	6/7/1995	1.5 - 2	X	--	--	--	--	--	X	--	X	X	--	--	--	--	--	--
	127-0005M	6/7/1995	1.5 - 2	X	--	--	--	--	--	--	X	--	X	--	--	--	--	--	--
	127-0014	6/8/1995	3 - 3.5	X	X	--	--	--	--	X	--	X	X	--	--	--	--	--	--
	127-0014M	6/8/1995	3 - 3.5	X	X	--	--	--	--	--	X	--	X	--	--	--	--	--	--
127-002-006	127-0006M	6/7/1995	2 - 2.5	X	--	--	--	--	--	--	X	--	X	--	--	--	--	--	--
127-003-007	127-0007M	6/6/1995	0.5 - 1	--	--	--	--	--	--	--	X	--	X	--	--	--	--	--	--
127-003-008	127-0008M	6/6/1995	0.5 - 1	--	--	--	--	--	--	--	X	--	X	--	--	--	--	--	--
127-003-009	127-0009	6/6/1995	0.5 - 1	--	--	--	--	--	--	X	--	X	X	--	--	--	--	--	--
	127-0009M	6/6/1995	0.5 - 1	--	--	--	--	--	--	--	X	--	X	--	--	--	--	--	--
127-SN-003	127S-003	1/18/1995	5 - 5.5	X	--	--	X	--	--	--	--	X	--	--	--	--	--	--	--
	127S-003M	1/18/1995	5 - 5.5	--	X	--	--	--	--	X	--	--	X	--	--	--	--	--	--
135-001-001	135-0001M	6/28/1995	0.5 - 1	--	--	--	--	--	--	--	X	--	X	--	--	--	--	--	--
	135-0006M	6/28/1995	2.5 - 3	--	X	--	--	--	--	--	X	--	X	--	--	--	--	--	--
135-001-002	135-0002M	6/28/1995	1 - 1.5	--	--	--	--	--	--	--	X	--	X	--	--	--	--	--	--
	135-0007M	6/28/1995	3 - 3	--	X	--	--	--	--	--	X	--	X	--	--	--	--	--	--

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135-001-003	135-0003	6/29/1995	1 - 1.5	--	--	--	--	--	--	X	--	X	X	--	--	--	--	--	--
	135-0003M	6/29/1995	1 - 1.5	--	--	--	--	--	--	--	X	--	X	--	--	--	--	--	--
	135-0008	6/29/1995	4 - 4.5	--	X	--	--	--	--	X	--	X	X	--	--	--	--	--	--
	135-0008M	6/29/1995	4 - 4.5	--	X	--	--	--	--	--	X	--	X	--	--	--	--	--	--
135-002-004	135-0004M	6/27/1995	4 - 4.5	--	X	--	--	--	--	--	X	--	X	--	--	--	--	--	--
135-002-005	135-0005	6/27/1995	4 - 4.5	--	X	--	--	--	--	X	--	X	X	--	--	--	--	--	--
	135-0005M	6/27/1995	4 - 4.5	--	X	--	--	--	--	--	X	--	X	--	--	--	--	--	--
136-001-001	136-0001	6/23/1995	0.5 - 1	X	--	--	--	--	--	X	--	X	X	--	--	--	--	--	--
	136-0001M	6/23/1995	0.5 - 1	X	--	--	--	--	--	--	X	--	X	--	--	--	--	--	--
	136-0003	6/23/1995	3.5 - 4	X	X	--	--	--	--	X	--	X	X	--	--	--	--	--	--
	136-0003M	6/23/1995	3.5 - 4	X	X	--	--	--	--	--	X	--	X	--	--	--	--	--	--
136-002-002	136-0002	6/23/1995	0.5 - 1.5	--	X	--	--	--	--	X	--	X	--	--	--	--	--	--	--
	136-0002M	6/23/1995	0.5 - 1.5	X	--	--	--	--	--	--	X	--	--	--	--	--	--	--	--
	136-0004	6/23/1995	4 - 5	X	X	--	--	--	--	X	--	X	--	--	--	--	--	--	--
	136-0004M	6/23/1995	4 - 5	X	X	--	--	--	--	--	X	X	--	--	--	--	--	--	--
136-IW-001	136I-001	12/15/1994	4.5 - 5	X	X	--	X	X	--	X	--	--	X	--	--	X	X	X	X
	136I-001M	12/15/1994	4.5 - 5	--	X	--	--	--	--	X	--	--	--	--	--	--	--	--	--
137-IW-001	137I-001	12/14/1994	8 - 9	X	X	--	X	X	--	X	--	X	X	--	--	X	X	X	X
	137I-001M	12/14/1994	8 - 9	--	X	--	--	--	--	X	--	--	--	--	--	--	--	--	--
Environmental Baseline Survey Storm Sewer Investigations																			
127-SS-002	127M-002	6/2/1995	3 - 4.5	X	--	--	X	--	--	--	--	X	--	--	--	--	X	X	--
	127M-002M	6/2/1995	3 - 4.5	--	X	--	--	--	--	--	X	--	X	--	--	--	--	--	--
Environmental Baseline Survey Phase 2B																			
126-003-009	126-0018	10/31/1995	0.5 - 1.5	X	--	--	--	--	--	X	--	X	X	--	--	--	--	--	--
	126-0019	10/31/1995	3 - 4	X	--	--	--	--	--	X	--	X	X	--	--	--	--	--	--
TPH Investigations																			
Basewide Fuel Line Removal Action, 1998																			
030-S07-002	030-S07-002	9/16/1998	4.5	X	X	--	--	--	--	X	--	X	X	--	--	--	--	--	--
030-S07-003	030-S07-003	9/16/1998	4.5	X	X	--	--	--	--	X	--	X	X	--	--	--	--	--	--
030-S07-004	030-S07-004	9/17/1998	4.5	X	X	--	--	--	--	X	--	X	X	--	--	--	--	--	--
030-S07-045	030-S07-045	10/8/1998	6	X	X	--	--	--	--	X	--	X	X	--	--	--	--	--	--
030-S07-061	030-S07-061	10/24/1998	5.5	X	X	--	--	--	--	X	--	X	X	--	--	--	--	--	--
030-S07-062	030-S07-062	10/24/1998	6	X	X	--	--	--	--	X	--	X	X	--	--	--	--	--	--
030-S07-063	030-S07-063	10/24/1998	5.5	X	X	--	--	--	--	X	--	X	X	--	--	--	--	--	--
030-S07-064	030-S07-064	10/24/1998	5.5	X	X	--	--	--	--	X	--	X	X	--	--	--	--	--	--
030-S07-065	030-S07-065	10/24/1998	5.5	X	X	--	--	--	--	X	--	X	X	--	--	--	--	--	--
Underground Storage Tank Investigations																			
162-P1-PWC	162-P1	1/20/1995	3.5	--	X	--	--	--	--	X	--	--	X	--	--	--	--	--	--
162-P2-PWC	162-P2	1/20/1995	3.5	--	X	--	--	--	--	X	--	--	X	--	--	--	--	--	--
162-P3-PWC	162-P3	1/20/1995	3.5	--	X	--	--	--	--	X	--	--	X	--	--	--	--	--	--
162-P4-PWC	162-P4	1/20/1995	3.5	--	X	--	--	--	--	X	--	--	X	--	--	--	--	--	--
162-P5-PWC	162-P5	1/20/1995	3.5	--	X	--	--	--	--	X	--	--	X	--	--	--	--	--	--
398-10-ERM	398-S10	1/11/1995	5	--	X	--	--	--	--	--	--	--	X	--	--	--	--	--	--
398-3-MOJ	398-P3	9/4/1997	6	--	X	--	--	--	--	--	--	--	X	--	--	--	--	--	--
398-4-MOJ	398-P4	9/5/1997	6	--	X	--	--	--	--	--	--	--	X	--	--	--	--	--	--
398-5-MOJ	398-P5	9/2/1997	6	--	X	--	--	--	--	--	--	--	X	--	--	--	--	--	--
398-6-MOJ	398-P6	9/3/1997	6	--	X	--	--	--	--	--	--	--	X	--	--	--	--	--	--
398-7-MOJ	398-P7	9/3/1997	6	--	X	--	--	--	--	--	--	--	X	--	--	--	--	--	--
398-8-ERM	398-S8	1/11/1995	5	--	X	--	--	--	--	--	--	--	X	--	--	--	--	--	--

TABLE 8-1: SITE 21 SOIL AND SOIL GAS SAMPLING SUMMARY

Remedial Investigation Report for Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Sample Location	Sample Identification	Date Sampled	Sample Depth (ft bgs)	Analyses Performed														
				SVOCs	VOCs	PAHs	Pesticides	o-Pest	PCBs	Total Metals	Title 26 Metals	General Chemistry	TPH	Hexavalent Chromium	Cyanide	Herb.	O&G	Organic Metals	Organic Lead
398-8-MOJ	398-P8	9/2/1997	6	--	X	--	--	--	--	--	--	--	X	--	--	--	--	--	--
398-9-MOJ	398-P9	9/2/1997	6	--	X	--	--	--	--	--	--	--	X	--	--	--	--	--	--
398-E	398-E	4/27/1995	7	--	X	--	--	--	--	X	--	--	X	--	--	--	--	--	--
398-MW1	398-MW1	1/25/1995	3.5	--	X	--	--	--	--	--	--	--	X	--	--	--	--	--	--
398-MW2	398-MW2	1/25/1995	3.5	--	X	--	--	--	--	--	--	--	X	--	--	--	--	--	--
398-N	398-N	4/27/1995	7	--	X	--	--	--	--	X	--	--	X	--	--	--	--	--	--
398-S	398-S	4/27/1995	7	--	X	--	--	--	--	X	--	--	X	--	--	--	--	--	--
398-W	398-W	4/27/1995	7	--	X	--	--	--	--	X	--	--	X	--	--	--	--	--	--

Notes:

--	Not analyzed
bgs	Below ground surface
ft	Foot
General chemistry	Any combination of the following: percent moisture, pH, reactivity and/or TOC.
o-Pest	Organic pesticide
O & G	Oil and Grease

PAH	Polynuclear aromatic hydrocarbon
PCB	Polychlorinated hydrocarbon
SVOC	Semivolatile organic compound
TPH	Total petroleum hydrocarbon
VOC	Volatile organic compound
CMPL	Complete

TABLE 8-2: SITE 21 GROUNDWATER SAMPLING SUMMARY

Remedial Investigation Report for Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Sample Location	Sample Identification	Date Sampled	Sample Depth (ft bgs)	Analyses Performed								
				SVOCs	VOCs	Pesticides/PCBs	Total Metals	Dissolved Metals	PAHs	General Chemistry	TPH	Dissolved Gases
CERCLA INVESTIGATIONS												
Phases 2B & 3 Investigation, 1991												
M07B-01	M07B-01	8/21/1991	4 - 11	X	X	X	--	X	--	X	X	--
WA-8	WA-8	9/4/1991	5 - 15	X	X	X	--	X	--	X	X	--
Follow-on Investigation, 1994												
03GB032	03GPW032	9/12/1994	10 - 12	--	X	--	--	--	--	--	X	--
DHP-S07B-01	280-S7B11-083	8/4/1994	28.5	--	X	--	--	X	--	X	X	--
DHP-S07B-02	280-S7B11-084	8/4/1994	26.3	--	X	--	--	X	--	X	X	--
M07B-01	280-S7B11-051	11/1/1994	4 - 11	X	X	X	--	X	--	X	X	--
	280-S7B11-053	6/16/1995	4 - 11	X	X	X	--	X	--	X	X	--
	280-S7B11-054	8/23/1995	4 - 11	X	X	X	--	X	--	X	X	--
M11-06	280-S7B11-117	11/29/1994	4 - 14	X	X	X	--	X	--	X	X	--
	280-S7B11-154	2/16/1995	4 - 14	X	X	X	--	X	--	X	X	--
	280-S7B11-155	6/19/1995	4 - 14	X	X	X	--	X	--	X	X	--
	280-S7B11-156	8/29/1995	4 - 14	X	X	X	--	X	--	X	X	--
Follow-on Investigation, 1998												
M07B-01	108-S21-001	11/5/1997	4 - 11	--	X	--	--	X	--	X	--	--
	108-S21-002	2/13/1998	4 - 11	--	X	--	--	X	--	X	--	--
	108-S21-003	5/13/1998	4 - 11	--	X	--	--	X	--	X	--	--
	108-S21-004	8/7/1998	4 - 11	--	X	--	--	X	--	X	--	--
M11-06	108-S11-002	11/5/1997	4 - 14	--	X	--	--	X	--	X	--	--
	108-S11-010	2/6/1998	4 - 14	--	X	--	--	X	--	X	--	--
	108-S11-014	5/12/1998	4 - 14	--	X	--	--	X	--	X	--	--
	108-S11-019	8/7/1998	4 - 14	--	X	--	--	X	--	X	--	--
S04-5-6	122-S04-209	3/11/1998	11.5 - 13.5	--	X	--	--	--	--	--	--	--
	122-S04-210	3/11/1998	15.5 - 20	--	X	--	--	--	--	--	--	--
S04-6-10	122-S04-228	3/26/1998	15.5 - 20	--	X	--	--	--	--	--	--	--
	122-S04-236	3/27/1998	9.5 - 11.5	--	X	--	--	--	--	--	--	--
	122-S04-237	3/27/1998	11.5 - 13.5	--	X	--	--	--	--	--	--	--
	122-S04-238	3/27/1998	13.5 - 15.5	--	X	--	--	--	--	--	--	--
	122-S04-245	4/1/1998	25 - 30	--	X	--	--	--	--	--	--	--
	122-S04-250	4/2/1998	40 - 45	--	X	--	--	--	--	--	--	--
S04-6-10A	122-S04-251	4/3/1998	11.5 - 13.5	--	X	--	--	--	--	--	--	--
	122-S04-251	4/3/1998	11.5 - 13.5	--	X	--	--	--	--	--	--	--
	122-S04-253	4/3/1998	15.5 - 20	--	X	--	--	--	--	--	--	--
	122-S04-254	4/3/1998	25 - 30	--	X	--	--	--	--	--	--	--
	122-S04-255	4/6/1998	40 - 45	--	X	--	--	--	--	--	--	--
S04-6-6	122-S04-217	3/23/1998	15.5 - 20	--	X	--	--	--	--	--	--	--
S04-6-8	122-S04-231	3/26/1998	11.5 - 13.5	--	X	--	--	--	--	--	--	--
	122-S04-232	3/26/1998	15.5 - 20	--	X	--	--	--	--	--	--	--
S04-6-9	122-S04-220	3/23/1998	15.5 - 20	--	X	--	--	--	--	--	--	--
	122-S04-220	3/23/1998	15.5 - 20	--	X	--	--	--	--	--	--	--
	122-S04-226	3/26/1998	25 - 30	--	X	--	--	--	--	--	--	--
	122-S04-227	3/26/1998	11.5 - 13.5	--	X	--	--	--	--	--	--	--
	122-S04-239	3/27/1998	9.5 - 11.5	--	X	--	--	--	--	--	--	--
	122-S04-241	3/27/1998	13.5 - 15.5	--	X	--	--	--	--	--	--	--
	122-S04-243	4/1/1998	30 - 35	--	X	--	--	--	--	--	--	--
	122-S04-243	4/1/1998	30 - 35	--	X	--	--	--	--	--	--	--

TABLE 8-2: SITE 21 GROUNDWATER SAMPLING SUMMARY

Remedial Investigation Report for Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Sample Location	Sample Identification	Date Sampled	Sample Depth (ft bgs)	Analyses Performed								
				SVOCs	VOCs	Pesticides/PCBs	Total Metals	Dissolved Metals	PAHs	General Chemistry	TPH	Dissolved Gases
S04-7-7	122-S04-223	3/23/1998	15.5 - 20	--	X	--	--	--	--	--	--	--
S04-7-8	122-S04-221	3/23/1998	15.5 - 20	--	X	--	--	--	--	--	--	--
S04-7-9	122-S04-229	3/26/1998	15.5 - 20	--	X	--	--	--	--	--	--	--
	122-S04-229	3/26/1998	15.5 - 20	--	X	--	--	--	--	--	--	--
	122-S04-233	3/27/1998	9.5 - 11.5	--	X	--	--	--	--	--	--	--
	122-S04-234	3/27/1998	11.5 - 13.5	--	X	--	--	--	--	--	--	--
	122-S04-235	3/27/1998	13.5 - 15.5	--	X	--	--	--	--	--	--	--
	122-S04-248	4/2/1998	25 - 30	--	X	--	--	--	--	--	--	--
Supplemental Data Gap Sampling, 2001												
398-MW1	385-S21-024	6/26/2001	2.41 - 12.41	X	X	--	--	--	X	--	X	--
398-MW2	385-S21-025	6/26/2001	2.55 - 12.55	X	X	--	--	--	X	--	X	--
M07B-01	385-S21-023	6/26/2001	4 - 11	X	X	--	--	--	X	--	X	--
M11-06	385-S11-011	7/3/2001	4 - 14	X	X	--	--	--	X	--	X	--
S04-DGS-DP46	385-S04-271	10/5/2001	20 - 22	--	X	--	--	--	--	--	--	--
	385-S04-272	10/5/2001	35 - 37	--	X	--	--	--	--	--	--	--
	385-S04-273	10/5/2001	48 - 50	--	X	--	--	--	--	--	--	--
	385-S04-274	10/5/2001	60 - 62	--	X	--	--	--	--	--	--	--
	385-S04-291	10/17/2001	12 - 14	--	X	--	--	--	--	--	--	--
S04-DGS-DP49	385-S04-286	10/16/2001	12 - 14	--	X	--	--	--	--	--	--	--
	385-S04-287	10/16/2001	20 - 22	--	X	--	--	--	--	--	--	--
	385-S04-288	10/16/2001	35 - 37	--	X	--	--	--	--	--	--	--
	385-S04-289	10/16/2001	48 - 50	--	X	--	--	--	--	--	--	--
	385-S04-290	10/16/2001	60 - 62	--	X	--	--	--	--	--	--	--
S04-DGS-DP51	385-S04-292	11/5/2001	12 - 14	--	X	--	--	--	--	--	--	--
	385-S04-293	11/5/2001	20 - 22	--	X	--	--	--	--	--	--	--
	385-S04-294	11/5/2001	30 - 32	--	X	--	--	--	--	--	--	--
S11-DGS-DP101	385-S11-135	9/19/2001	10 - 12	X	X	--	--	--	--	X	--	X
	385-S11-139	9/19/2001	25 - 27	X	X	--	--	--	--	X	--	X
	385-S11-142	9/19/2001	50 - 52	X	X	--	--	--	--	X	--	X
S11-DGS-DP104	385-S11-113	8/28/2001	10 - 12	X	X	--	--	--	--	X	--	X
	385-S11-113A	8/28/2001	10 - 12	--	X	--	--	--	--	--	--	--
	385-S11-114	8/28/2001	25 - 27	X	--	--	--	--	--	X	--	X
	385-S11-114A	8/28/2001	25 - 27	--	X	--	--	--	--	--	--	--
	385-S11-115	8/28/2001	50 - 52	X	--	--	--	--	--	X	--	X
	385-S11-115A	8/28/2001	50 - 52	--	X	--	--	--	--	--	--	--
S21-DGS-DP01	385-S21-002	6/29/2001	15	--	X	--	--	--	--	--	--	--
S21-DGS-DP02	385-S21-003	7/18/2001	15 - 17	--	X	--	--	--	--	--	--	--
	385-S21-003A	7/18/2001	15 - 17	--	X	--	--	--	--	--	--	--
	385-S21-004	7/18/2001	20 - 22	--	X	--	--	--	--	--	--	--
	385-S21-005	7/18/2001	30 - 32	--	X	--	--	--	--	--	--	--
	385-S21-006	7/18/2001	40 - 42	--	X	--	--	--	--	--	--	--
	385-S21-007	7/18/2001	50 - 52	--	X	--	--	--	--	--	--	--
S21-DGS-DP03	385-S21-008	7/31/2001	15 - 17	--	X	--	--	--	--	--	--	--
	385-S21-009	7/31/2001	20 - 22	--	X	--	--	--	--	--	--	--
	385-S21-010	7/31/2001	30 - 32	--	X	--	--	--	--	--	--	--
	385-S21-011	8/1/2001	40 - 42	--	X	--	--	--	--	--	--	--
	385-S21-077	9/12/2001	8 - 10	--	X	--	--	--	--	--	X	--
	385-S21-078	9/12/2001	15 - 17	--	X	--	--	--	--	--	X	--

TABLE 8-2: SITE 21 GROUNDWATER SAMPLING SUMMARY

Remedial Investigation Report for Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Sample Location	Sample Identification	Date Sampled	Sample Depth (ft bgs)	Analyses Performed								
				SVOCs	VOCs	Pesticides/PCBs	Total Metals	Dissolved Metals	PAHs	General Chemistry	TPH	Dissolved Gases
S21-DGS-DP04	385-S21-012	7/20/2001	15	--	X	--	--	--	--	--	--	--
	385-S21-012A	7/20/2001	15	--	X	--	--	--	--	--	--	--
	385-S21-013	7/20/2001	20	--	X	--	--	--	--	--	--	--
	385-S21-014	7/20/2001	30	--	X	--	--	--	--	--	--	--
	385-S21-015	7/20/2001	45	--	X	--	--	--	--	--	--	--
S21-DGS-DP05	385-S21-016	7/31/2001	7 - 9	--	X	--	--	--	--	--	--	--
	385-S21-017	7/31/2001	12 - 14	--	X	--	--	--	--	--	--	--
	385-S21-017A	7/31/2001	12 - 14	--	X	--	--	--	--	--	--	--
S21-DGS-DP06	385-S21-018	7/31/2001	5 - 7	--	X	--	--	--	--	--	--	--
	385-S21-019	7/31/2001	10 - 12	--	X	--	--	--	--	--	--	--
	385-S21-046A	8/9/2001	15	--	X	--	--	--	--	--	--	--
	385-S21-047	8/9/2001	20	--	X	--	--	--	--	--	--	--
S21-DGS-DP07	385-S21-020	7/31/2001	5 - 7	--	X	--	--	--	--	--	X	--
S21-DGS-DP11	385-S21-056	8/16/2001	15	--	X	--	--	--	--	--	X	--
	385-S21-057	8/16/2001	20	--	X	--	--	--	--	--	X	--
	385-S21-058	8/16/2001	30	--	X	--	--	--	--	--	X	--
	385-S21-059	8/16/2001	40	--	X	--	--	--	--	--	X	--
	385-S21-060	8/16/2001	50	--	X	--	--	--	--	--	X	--
S21-DGS-DP12	385-S21-048	8/9/2001	9	--	X	--	--	--	--	--	--	--
	385-S21-049	8/9/2001	15	--	X	--	--	--	--	--	--	--
	385-S21-050	8/9/2001	25	--	X	--	--	--	--	--	--	--
S21-DGS-DP13	385-S21-051	8/17/2001	9 - 11	--	X	--	--	--	--	--	--	--
	385-S21-052	8/17/2001	16 - 18	--	X	--	--	--	--	--	--	--
S21-DGS-DP14	385-S21-053	8/20/2001	9 - 11	--	X	--	--	--	--	--	--	--
	385-S21-054	8/20/2001	17 - 19	--	X	--	--	--	--	--	--	--
	385-S21-054A	8/20/2001	17 - 19	--	X	--	--	--	--	--	--	--
	385-S21-055	8/20/2001	25 - 27	--	X	--	--	--	--	--	--	--
S21-DGS-DP15	385-S21-063	8/22/2001	15	--	X	--	--	--	--	--	X	--
S21-DGS-DP16	385-S21-064	8/24/2001	8 - 10	--	X	--	--	--	--	--	X	--
	385-S21-065	8/24/2001	15 - 17	--	X	--	--	--	--	--	X	--
	385-S21-066	8/24/2001	20 - 22	--	X	--	--	--	--	--	X	--
S21-DGS-DP17	385-S21-067	9/4/2001	9 - 11	--	X	--	--	--	--	--	--	--
	385-S21-068	9/4/2001	14 - 16	--	X	--	--	--	--	--	--	--
S21-DGS-DP18	385-S21-074	9/12/2001	8 - 10	--	X	--	--	--	--	--	X	--
	385-S21-075	9/12/2001	15 - 17	--	X	--	--	--	--	--	X	--
	385-S21-076	9/12/2001	20 - 22	--	X	--	--	--	--	--	X	--
S21-DGS-DP19	385-S21-073	9/12/2001	14 - 16	--	X	--	--	--	--	--	--	--
	385-S21-081	11/5/2001	20 - 22	--	X	--	--	--	--	--	--	--
	385-S21-082	11/5/2001	30 - 32	--	X	--	--	--	--	--	--	--
S21-DGS-DP101	385-S21-101	8/29/2001	10 - 12	X	X	--	--	--	--	X	--	X
	385-S21-101A	8/29/2001	10 - 12	--	X	--	--	--	--	--	--	--
	385-S21-102	8/29/2001	25 - 27	X	--	--	--	--	--	X	--	X
	385-S21-102A	8/29/2001	25 - 27	--	X	--	--	--	--	--	--	--
	385-S21-103	8/29/2001	50 - 52	X	--	--	--	--	--	X	--	X
	385-S21-103A	8/29/2001	50 - 52	--	X	--	--	--	--	--	--	--

TABLE 8-2: SITE 21 GROUNDWATER SAMPLING SUMMARY

Remedial Investigation Report for Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Sample Location	Sample Identification	Date Sampled	Sample Depth (ft bgs)	Analyses Performed								
				SVOCs	VOCs	Pesticides/PCBs	Total Metals	Dissolved Metals	PAHs	General Chemistry	TPH	Dissolved Gases
S21-DGS-DP102	385-S21-104	8/29/2001	10 - 12	X	X	--	--	--	--	X	--	X
	385-S21-104A	8/29/2001	10 - 12	--	X	--	--	--	--	--	--	--
	385-S21-105	8/29/2001	25 - 27	X	--	--	--	--	--	X	--	X
	385-S21-105A	8/29/2001	25 - 27	--	X	--	--	--	--	--	--	--
	385-S21-106	8/29/2001	50 - 52	X	--	--	--	--	--	X	--	X
	385-S21-106A	8/29/2001	50 - 52	--	X	--	--	--	--	--	--	--
S21-DGS-DP103	385-S21-107	8/27/2001	10 - 12	X	--	--	--	--	--	X	--	X
	385-S21-107A	8/27/2001	10	--	X	--	--	--	--	--	--	--
	385-S21-108	8/27/2001	25 - 27	X	--	--	--	--	--	X	--	X
	385-S21-108A	8/27/2001	25	--	X	--	--	--	--	--	--	--
	385-S21-109	8/27/2001	50 - 52	X	--	--	--	--	--	X	--	X
	385-S21-109A	8/27/2001	50	--	X	--	--	--	--	--	--	--
S21-DGS-DP104	385-S21-111	9/19/2001	10 - 12	X	X	--	--	--	--	X	--	X
	385-S21-115	9/19/2001	25 - 27	X	X	--	--	--	--	X	--	X
	385-S21-118	9/19/2001	50 - 52	X	X	--	--	--	--	X	--	X
S21-DGS-DP105	385-S21-119	8/28/2001	10 - 12	X	--	--	--	--	--	X	--	X
	385-S21-119A	8/28/2001	10 - 12	--	X	--	--	--	--	--	--	--
	385-S21-120	8/28/2001	25 - 27	X	--	--	--	--	--	X	--	X
	385-S21-120A	8/28/2001	25 - 27	--	X	--	--	--	--	--	--	--
	385-S21-121	8/28/2001	50 - 52	X	--	--	--	--	--	X	--	X
	385-S21-121A	8/28/2001	50 - 52	--	X	--	--	--	--	--	--	--
S21-DGS-DP106	385-S21-122	8/30/2001	10	X	--	--	--	--	--	X	--	X
	385-S21-122A	8/30/2001	10	--	X	--	--	--	--	--	--	--
	385-S21-123	8/30/2001	25	X	--	--	--	--	--	X	--	X
	385-S21-123A	8/30/2001	25	--	X	--	--	--	--	--	--	--
	385-S21-124	8/30/2001	50	X	--	--	--	--	--	X	--	X
	385-S21-124A	8/30/2001	50	--	X	--	--	--	--	--	--	--
S21-DGS-VE01	385-S21-030	8/7/2001	8 - 9	--	X	--	--	--	--	--	X	--
	385-S21-030A	8/7/2001	8 - 9	--	X	--	--	--	--	--	X	--
S21-DGS-VE02	385-S21-033	8/7/2001	8.5 - 9.2	--	X	--	--	--	--	--	X	--
S21-DGS-VE03	385-S21-062	8/21/2001	6.5	--	X	--	--	--	--	--	X	--
WA-8	385-S21-022	7/9/2001		X	X	--	--	--	X	--	X	--
Basewide Groundwater Monitoring, 2002												
M07B-01	M07B-01-A1093	6/20/2002		--	X	--	--	X	--	X	X	--
	M07B-01-A1307	9/6/2002		--	X	--	--	--	--	--	X	--
	M07B-01-A1594	12/9/2002		--	X	--	--	X	--	X	X	--
M11-06	M11-06-A1097	6/20/2002		--	X	--	--	X	--	X	X	--
	M11-06-A1311	9/9/2002		--	X	--	--	--	--	--	X	--
	M11-06-A1598	12/9/2002		--	X	--	--	X	--	X	X	--
WA-8	WA-8-A1104	6/20/2002		--	X	--	--	X	--	X	X	X
	WA-8-A1318	9/6/2002		--	X	--	--	--	--	--	X	--
	WA-8-A1605	12/9/2002		--	X	--	--	X	--	X	X	X
Environmental Baseline Surveys												
Environmental Baseline Survey Phase 2B, 1995												
126-003-009	126-0020	10/31/1995	8 - 9	X	--	--	--	--	--	--	X	--

TABLE 8-2: SITE 21 GROUNDWATER SAMPLING SUMMARY

Remedial Investigation Report for Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Sample Location	Sample Identification	Date Sampled	Sample Depth (ft bgs)	Analyses Performed								
				SVOCs	VOCs	Pesticides/PCBs	Total Metals	Dissolved Metals	PAHs	General Chemistry	TPH	Dissolved Gases
TPH Investigations												
Fuel Line and Underground Storage Tank Investigations												
162-001	030-USTF-069	9/2/1999	10	--	X	--	--	--	--	--	--	--
398-1-ERM	398-W1	1/11/1995		--	X	--	--	--	--	--	X	--
398-2-ERM	398-W2	1/11/1995		--	X	--	--	--	--	--	X	--
398-3-ERM	398-W3	1/11/1995		--	X	--	--	--	--	--	X	--
398-3-MOJ	398-P3W	9/4/1997		--	--	--	--	--	--	--	X	--
398-4-ERM	398-W4	1/11/1995		--	X	--	--	--	--	--	X	--
398-5-ERM	398-W5	1/11/1995		--	X	--	--	--	--	--	X	--
398-5-MOJ	398-P5W	9/2/1997		--	X	--	--	--	--	--	X	--
398-6-ERM	398-W6	1/11/1995		--	X	--	--	--	--	--	X	--
398-6-MOJ	398-P6W	9/5/1997		--	X	--	--	--	--	--	X	--
398-7-ERM	398-W7	1/11/1995		--	X	--	--	--	--	--	X	--
398-7-MOJ	398-P7W	9/5/1997		--	X	--	--	--	--	--	X	--
398-8-ERM	398-W8	1/11/1995		--	X	--	--	--	--	--	X	--
398-8-MOJ	398-P8W	9/2/1997		--	X	--	--	--	--	--	X	--
398-9-ERM	398-W9	1/11/1995		--	X	--	--	--	--	--	X	--
398-9-MOJ	398-P9W	9/2/1997		--	X	--	--	--	--	--	X	--
398-10-ERM	398-W10	1/11/1995		--	X	--	--	--	--	--	X	--
398-12-ERM	398-W12	1/16/1995		--	X	--	--	--	--	--	X	--
398-A19	030-CAP-035	5/1/2000		--	X	--	--	--	--	--	--	--
398-L	398-L	4/27/1995	7	--	X	--	X	--	--	--	X	--
398-MW1	030-CAP-031	5/1/2000		--	X	--	--	--	--	--	--	--
	398-MW1	2/9/1995	2.4 - 12.4	--	X	--	--	--	--	--	X	--
	398-MW1	12/17/1997	2.4 - 12.4	--	X	--	--	--	--	--	X	--
	398-MW1	3/17/1998	2.4 - 12.4	--	X	--	--	--	--	--	X	--
	398-MW1	9/30/1998	2.4 - 12.4	--	X	--	--	--	--	--	X	--
	398-MW1	4/6/1999	2.4 - 12.4	--	X	--	--	--	--	--	X	--
398-MW2	030-CAP-032	5/1/2000		--	X	--	--	--	--	--	--	--
	398-MW2	2/9/1995	2.6 - 12.6	--	X	--	--	--	--	--	X	--
	398-MW2	12/17/1997	2.6 - 12.6	--	X	--	--	--	--	--	X	--
	398-MW2	3/17/1998	2.6 - 12.6	--	X	--	--	--	--	--	X	--
	398-MW2	9/28/1998	2.6 - 12.6	--	X	--	--	--	--	--	X	--
	398-MW2	4/6/1999	2.6 - 12.6	--	X	--	--	--	--	--	X	--
CA03-01	030-CAP-006	4/27/2000	10	--	X	--	--	X	--	X	X	X
CA11-20	030-CAP-166	4/28/2000	3 - 8	--	X	--	--	X	--	--	X	--

Notes:

--	Mot analyzed
bgs	Below ground surface
ft	Foot
General chemistry	Any combination of the following: percent moisture, pH, reactivity and/or TOC.
o-Pest	Organic pesticide
O & G	Oil and Grease
PAH	Polynuclear aromatic hydrocarbon
PCB	Polychlorinated hydrocarbon
SVOC	Semivolatile organic compound
TPH	Total petroleum hydrocarbon
VOC	Volatile organic compound
CMPL	Complete

TABLE 8-3: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES

Phases 2B and 3 Investigation, 1991

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Volatile Organic Compounds (µg/kg)											
1,1,1-TRICHLOROETHANE	9	0	0	--	--	--	5.2	7.9	0	0	1,200,000
1,1,2,2-TETRACHLOROETHANE	9	0	0	--	--	--	5.2	7.9	0	0	410
1,1,2-TRICHLOROETHANE	9	0	0	--	--	--	5.2	7.9	0	0	730
1,1-DICHLOROETHANE	9	0	0	--	--	--	5.2	7.9	0	0	2,800
1,1-DICHLOROETHENE	9	0	0	--	--	--	5.2	7.9	0	0	120,000
1,2-DICHLOROETHANE	9	0	0	--	--	--	5.2	7.9	0	0	280
1,2-DICHLOROPROPANE	9	0	0	--	--	--	5.2	7.9	0	0	340
2-BUTANONE	9	0	0	--	--	--	10	16	--	--	NA
2-HEXANONE	9	0	0	--	--	--	10	16	--	--	NA
4-METHYL-2-PENTANONE	9	0	0	--	--	--	10	16	--	--	NA
ACETONE	9	0	0	--	--	--	12	120	0	0	1,600,000
BENZENE	9	0	0	--	--	--	5.2	7.9	0	0	600
BROMODICHLOROMETHANE	9	0	0	--	--	--	5.2	7.9	0	0	820
BROMOFORM	9	0	0	--	--	--	5.2	7.9	0	0	62,000
BROMOMETHANE	9	0	0	--	--	--	5.2	7.9	0	0	3,900
CARBON DISULFIDE	9	0	0	--	--	--	5.2	69	0	0	360,000
CARBON TETRACHLORIDE	9	0	0	--	--	--	5.2	7.9	0	0	250
CHLOROBENZENE	9	0	0	--	--	--	5.2	7.9	0	0	150,000
CHLOROETHANE	9	0	0	--	--	--	5.2	7.9	0	0	3,000
CHLOROFORM	9	0	0	--	--	--	5.2	7.9	0	0	940
CHLOROMETHANE	9	0	0	--	--	--	5.2	7.9	0	0	1,200
CIS-1,3-DICHLOROPROPENE	9	0	0	--	--	--	5.2	7.9	0	0	780
DIBROMOCHLOROMETHANE	9	0	0	--	--	--	5.2	7.9	0	0	1,100
ETHYLBENZENE	9	0	0	--	--	--	5.2	7.9	0	0	8,900
ETHYLENE DIBROMIDE	9	0	0	--	--	--	0.313	0.472	--	--	NA
METHYLENE CHLORIDE	9	0	0	--	--	--	5.2	8.3	0	0	9,100
STYRENE	9	0	0	--	--	--	5.2	7.9	0	0	1,700,000
TETRACHLOROETHENE	9	0	0	--	--	--	5.2	7.9	0	0	1,500
TOLUENE	9	0	0	--	--	--	5.2	7.9	0	0	520,000
TRANS-1,2-DICHLOROETHENE	9	1	11	10	9.7	9.7	5.2	7	0	0	69,000
TRANS-1,3-DICHLOROPROPENE	9	0	0	--	--	--	5.2	7.9	0	0	780

TABLE 8-3: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

Phases 2B and 3 Investigation, 1991

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Volatile Organic Compounds (µg/kg)											
TRICHLOROETHENE	9	0	0	--	--	--	5.2	7.9	0	0	53
VINYL ACETATE	9	0	0	--	--	--	5.2	7.9	0	0	430,000
VINYL CHLORIDE	9	0	0	--	--	--	5.2	7.9	0	0	79
XYLENE (TOTAL)	9	1	11	10	9.6	9.6	5.2	7	0	0	270,000
Semivolatile Organic Compounds (µg/kg)											
1,2,4-TRICHLOROBENZENE	12	0	0	--	--	--	100	160	0	0	650,000
1,2-DICHLOROBENZENE	12	0	0	--	--	--	75	130	0	0	370,000
1,3-DICHLOROBENZENE	12	0	0	--	--	--	75	130	0	0	16,000
1,4-DICHLOROBENZENE	12	0	0	--	--	--	75	130	0	0	3,400
2,2'-OXYBIS(1-CHLOROPROPANE)	12	0	0	--	--	--	75	130	--	--	NA
2,4,5-TRICHLOROPHENOL	12	0	0	--	--	--	310	470	0	0	6,100,000
2,4,6-TRICHLOROPHENOL	12	0	0	--	--	--	310	470	0	0	6,900
2,4-DICHLOROPHENOL	12	0	0	--	--	--	150	220	0	0	180,000
2,4-DIMETHYLPHENOL	12	0	0	--	--	--	520	790	0	0	1,200,000
2,4-DINITROPHENOL	12	0	0	--	--	--	1,400	2,200	0	0	120,000
2,4-DINITROTOLUENE	12	0	0	--	--	--	150	220	0	0	120,000
2,6-DINITROTOLUENE	12	0	0	--	--	--	150	220	0	0	61,000
2-CHLORONAPHTHALENE	12	0	0	--	--	--	75	130	--	--	NA
2-CHLOROPHENOL	12	0	0	--	--	--	150	220	0	0	63,000
2-METHYLPHENOL	12	0	0	--	--	--	150	320	--	--	NA
2-NITROANILINE	12	0	0	--	--	--	160	250	0	0	1,700
2-NITROPHENOL	12	0	0	--	--	--	150	220	--	--	NA
3,3'-DICHLOROBENZIDINE	12	0	0	--	--	--	520	790	0	0	1,100
3-NITROANILINE	12	0	0	--	--	--	310	470	--	--	NA
4,6-DINITRO-2-METHYLPHENOL	12	0	0	--	--	--	1,000	1,600	--	--	NA
4-BROMOPHENYL-PHENYLETHER	12	0	0	--	--	--	150	220	--	--	NA
4-CHLORO-3-METHYLPHENOL	12	0	0	--	--	--	150	220	--	--	NA
4-CHLOROANILINE	12	0	0	--	--	--	310	470	0	0	240,000
4-CHLOROPHENYL-PHENYLETHER	12	0	0	--	--	--	100	160	--	--	NA
4-METHYLPHENOL	12	0	0	--	--	--	150	320	0	0	310,000

TABLE 8-3: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

Phases 2B and 3 Investigation, 1991

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Semivolatile Organic Compounds (µg/kg)											
4-NITROANILINE	12	0	0	--	--	--	160	250	--	--	NA
4-NITROPHENOL	12	0	0	--	--	--	520	790	--	--	NA
BENZOIC ACID	12	0	0	--	--	--	320	1,300	0	0	100,000,000
BENZYL ALCOHOL	12	0	0	--	--	--	150	320	0	0	18,000,000
BIS(2-CHLOROETHOXY)METHANE	12	0	0	--	--	--	75	130	--	--	NA
BIS(2-CHLOROETHYL)ETHER	12	0	0	--	--	--	75	130	0	0	210
BIS(2-ETHYLHEXYL)PHTHALATE	12	0	0	--	--	--	100	290	0	0	35,000
BUTYLBENZYLPHTHALATE	12	0	0	--	--	--	100	160	0	0	12,000,000
DI-N-BUTYLPHTHALATE	12	0	0	--	--	--	75	130	--	--	NA
DI-N-OCTYLPHTHALATE	12	0	0	--	--	--	150	220	--	--	NA
DIBENZOFURAN	12	0	0	--	--	--	130	190	0	0	290,000
DIETHYLPHTHALATE	12	0	0	--	--	--	75	130	0	0	49,000,000
DIMETHYLPHTHALATE	12	0	0	--	--	--	75	130	0	0	100,000,000
HEXACHLOROBENZENE	12	0	0	--	--	--	100	160	0	0	300
HEXACHLOROBUTADIENE	12	0	0	--	--	--	150	220	0	0	6,200
HEXACHLOROCYCLOPENTADIENE	12	0	0	--	--	--	1,000	1,600	0	0	370,000
HEXACHLOROETHANE	12	0	0	--	--	--	100	160	0	0	35,000
ISOPHORONE	12	0	0	--	--	--	75	130	0	0	510,000
N-NITROSO-DI-N-PROPYLAMINE	12	0	0	--	--	--	**100**	**160**	0	12	69
N-NITROSODIPHENYLAMINE	12	0	0	--	--	--	75	130	0	0	99,000
NITROBENZENE	12	0	0	--	--	--	75	130	0	0	20,000
PENTACHLOROPHENOL	12	0	0	--	--	--	520	790	0	0	3,000
PHENOL	12	0	0	--	--	--	150	220	0	0	37,000,000
PCBs/Pesticides (µg/kg)											
4,4'-DDD	12	0	0	--	--	--	6.95	10.5	0	0	2,400
4,4'-DDE	12	0	0	--	--	--	3.48	5.24	0	0	1,700
4,4'-DDT	12	0	0	--	--	--	6.95	10.5	0	0	1,700
ALDRIN	12	0	0	--	--	--	3.48	5.24	0	0	29
ALPHA-BHC	12	0	0	--	--	--	1.74	2.62	--	--	NA
ALPHA-CHLORDANE	12	0	0	--	--	--	3.48	5.24	0	0	1,600

TABLE 8-3: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

Phases 2B and 3 Investigation, 1991

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
PCBs/Pesticides (µg/kg)											
AROCLOR-1016	12	0	0	--	--	--	34.8	52.4	0	0	3,900
AROCLOR-1221	12	0	0	--	--	--	35	52	0	0	220
AROCLOR-1232	12	0	0	--	--	--	35	52	0	0	220
AROCLOR-1242	12	0	0	--	--	--	35	52	0	0	220
AROCLOR-1248	12	0	0	--	--	--	35	52	0	0	220
AROCLOR-1254	12	0	0	--	--	--	35	52	0	0	220
AROCLOR-1260	12	0	0	--	--	--	35	52	0	0	220
BETA-BHC	12	0	0	--	--	--	3.48	5.24	--	--	NA
DELTA-BHC	12	0	0	--	--	--	3.48	5.24	--	--	NA
DIELDRIN	12	0	0	--	--	--	3.48	5.24	0	0	30
ENDOSULFAN I	12	0	0	--	--	--	3.48	5.24	0	0	370,000
ENDOSULFAN II	12	0	0	--	--	--	6.95	10.5	0	0	370,000
ENDOSULFAN SULFATE	12	0	0	--	--	--	6.95	10.5	--	--	NA
ENDRIN	12	0	0	--	--	--	3.48	5.24	0	0	18,000
ENDRIN KETONE	12	0	0	--	--	--	6.95	10.5	--	--	NA
GAMMA-BHC (LINDANE)	12	0	0	--	--	--	1.74	2.62	--	--	NA
GAMMA-CHLORDANE	12	0	0	--	--	--	3.48	5.24	0	0	1,600
HEPTACHLOR	12	0	0	--	--	--	3.48	5.24	0	0	110
HEPTACHLOR EPOXIDE	12	0	0	--	--	--	3.48	5.24	0	0	53
METHOXYCHLOR	12	0	0	--	--	--	34.8	52.4	0	0	310,000
TOXAPHENE	12	0	0	--	--	--	69.5	105	0	0	440
Metals (mg/kg)											
ALUMINUM	12	12	100	10,500	5,300 J	21,600 J	0	0	0	0	76,000
ANTIMONY	12	6	50	3.8	2.9	5.4	2.4	3.4	0	0	31.0
ARSENIC	12	12	100	**3.8**	**2.2 J**	**6.93 J**	0	0	12	0	0.39
BARIUM	12	12	100	62.3	35.7	107	0	0	0	0	5,400
BERYLLIUM	12	12	100	1.2	0.68	2.2	0	0	0	0	150
CADMIUM	12	3	25	1.8	0.679	3.19	0.292	0.444	0	0	37.0
CALCIUM	12	12	100	12,200	1,600 J	43,700 J	0	0	--	--	NA
CHROMIUM	12	12	100	37.6	16 J	74.3 J	0	0	0	0	210

TABLE 8-3: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

Phases 2B and 3 Investigation, 1991

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Metals (mg/kg)											
COBALT	12	12	100	10.6	5.63	21.1	0	0	0	0	900
COPPER	12	12	100	17.5	6.33	49.1	0	0	0	0	3,100
IRON	12	12	100	16,300	9,730 J	**30,600 J**	0	0	2	0	23,000
LEAD	12	12	100	18.1	2.86 J	70.7	0	0	0	0	150
MAGNESIUM	12	12	100	5,330	2,580 J	11,700 J	0	0	--	--	NA
MANGANESE	12	12	100	234	82.6 J	408 J	0	0	0	0	1,800
MERCURY	12	1	8	0.48	0.481 J	0.481 J	0.244	0.379	0	0	23.0
NICKEL	12	12	100	43.2	19.7	98.1	0	0	0	0	1,600
POTASSIUM	12	12	100	1,150	461	2,900	0	0	--	--	NA
SELENIUM	12	0	0	--	--	--	0.209	0.323	0	0	390
SILVER	12	5	42	1.7	0.587	5.64	0.477	0.669	0	0	390
SODIUM	12	12	100	1,270	261	2,950	0	0	--	--	NA
THALLIUM	12	0	0	--	--	--	0.269	0.415	0	0	5.2
VANADIUM	12	12	100	35.4	24.9 J	60.2 J	0	0	0	0	550
ZINC	12	12	100	39.9	17.8	77.8	0	0	0	0	23,000

TABLE 8-3: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES

Phases 2B and 3 Investigation, 1991

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

NOTES:

Bold denotes values exceeding the PRG

--	Not detected
BHC	Benzene Hexachloride
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethene
DDT	Dichlorodiphenyltrichloroethane
J	Estimated value
mg/kg	Milligrams per kilogram
NA	No PRG available
PCB	Polychlorinated biphenyl
PRG	Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or Cal-modified (2002)
µg/kg	Micrograms per kilogram

TABLE 8-4: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Phases 2B and 3 Investigation, 1991

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (µg/L)												
1,1,1-TRICHLOROETHANE	2	0	0	--	--	--	1	1	0	0	3,200	200
1,1,2,2-TETRACHLOROETHANE	2	0	0	--	--	--	1	1	0	2	0.06	1
1,1,2-TRICHLOROETHANE	2	0	0	--	--	--	1	1	0	2	0.2	5
1,1-DICHLOROETHANE	2	0	0	--	--	--	1	1	0	0	2	5
1,1-DICHLOROETHENE	2	0	0	--	--	--	1	1	0	0	340	6
1,2-DICHLOROETHANE	2	0	0	--	--	--	1	1	0	2	0.1	0.5
1,2-DICHLOROETHENE (TOTAL)	2	1	50	8	8.3	8.3	1	1	0	0	61	NA
1,2-DICHLOROPROPANE	2	0	0	--	--	--	1	1	0	2	0.2	5
2-BUTANONE	2	0	0	--	--	--	2	2	--	--	NA	NA
2-HEXANONE	2	0	0	--	--	--	2	2	--	--	NA	NA
4-METHYL-2-PENTANONE	2	0	0	--	--	--	2	2	--	--	NA	NA
ACETONE	2	0	0	--	--	--	2.7	3.4	0	0	610	NA
BENZENE	2	1	50	2	1.5	1.5	1	1	1	1	0.3	1
BROMODICHLOROMETHANE	2	0	0	--	--	--	1	1	0	2	0.2	80
BROMOFORM	2	0	0	--	--	--	1	1	0	0	9	80
BROMOMETHANE	2	0	0	--	--	--	1	1	0	0	9	NA
CARBON DISULFIDE	2	0	0	--	--	--	1	1	0	0	1,000	NA
CARBON TETRACHLORIDE	2	0	0	--	--	--	1	1	0	2	0.2	0.5
CHLOROBENZENE	2	0	0	--	--	--	1	1	0	0	110	70
CHLOROETHANE	2	0	0	--	--	--	1	1	0	0	5	NA
CHLOROFORM	2	0	0	--	--	--	1	1	0	2	0.5	80
CHLOROMETHANE	2	0	0	--	--	--	1	1	0	0	2	NA
CIS-1,3-DICHLOROPROPENE	2	0	0	--	--	--	1	1	0	2	0.4	0.5
DIBROMOCHLOROMETHANE	2	0	0	--	--	--	1	1	0	2	0.1	80
ETHYLBENZENE	2	0	0	--	--	--	1	1	0	0	3	300
ETHYLENE DIBROMIDE	2	0	0	--	--	--	0.02	0.02	--	--	NA	0.05
METHYLENE CHLORIDE	2	0	0	--	--	--	1	1	0	0	4	NA
STYRENE	2	0	0	--	--	--	1	1	0	0	1,600	100
TETRACHLOROETHENE	2	0	0	--	--	--	1	1	0	2	0.7	5
TOLUENE	2	0	0	--	--	--	1	1	0	0	720	150
TRANS-1,3-DICHLOROPROPENE	2	0	0	--	--	--	1	1	0	2	0.4	0.5

TABLE 8-4: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Phases 2B and 3 Investigation, 1991

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (µg/L)												
TRICHLOROETHENE	2	0	0	--	--	--	**1**	**1**	0	2	0.03	5
VINYL ACETATE	2	0	0	--	--	--	1	1	0	0	410	NA
VINYL CHLORIDE	2	1	50	**2**	**1.8**	**1.8**	**1**	**1**	1	1	0.02	0.5
XYLENE (TOTAL)	2	0	0	--	--	--	1	1	0	0	210	1,800
Semivolatile Organic Compounds (µg/L)												
1,2,4-TRICHLOROBENZENE	2	0	0	--	--	--	1	1	0	0	190	5
1,2-DICHLOROBENZENE	2	0	0	--	--	--	1	1	0	0	370	600
1,3-DICHLOROBENZENE	2	0	0	--	--	--	1	1	0	0	6	NA
1,4-DICHLOROBENZENE	2	0	0	--	--	--	**1**	**1**	0	2	0.5	5
2,2'-OXYBIS(1-CHLOROPROPANE)	2	0	0	--	--	--	1	1	--	--	NA	NA
2,4,5-TRICHLOROPHENOL	2	0	0	--	--	--	3	3	0	0	3,600	50
2,4,6-TRICHLOROPHENOL	2	0	0	--	--	--	**4.5**	**4.5**	0	2	1	NA
2,4-DICHLOROPHENOL	2	0	0	--	--	--	2	2	0	0	110	NA
2,4-DIMETHYLPHENOL	2	0	0	--	--	--	2	2	0	0	730	NA
2,4-DINITROPHENOL	2	0	0	--	--	--	30	30	0	0	73	NA
2,4-DINITROTOLUENE	2	0	0	--	--	--	2	2	0	0	73	NA
2,6-DINITROTOLUENE	2	0	0	--	--	--	2	2	0	0	36	NA
2-CHLORONAPHTHALENE	2	0	0	--	--	--	1	1	--	--	NA	NA
2-CHLOROPHENOL	2	0	0	--	--	--	2	2	0	0	30	NA
2-METHYLNAPHTHALENE	2	0	0	--	--	--	1	1	--	--	NA	NA
2-METHYLPHENOL	2	0	0	--	--	--	2	2	0	0	1,800	NA
2-NITROANILINE	2	0	0	--	--	--	**2**	**2**	0	2	1	NA
2-NITROPHENOL	2	0	0	--	--	--	2	2	--	--	NA	NA
3,3'-DICHLOROBENZIDINE	2	0	0	--	--	--	**5**	**5**	0	2	0.2	NA
3-NITROANILINE	2	0	0	--	--	--	1	1	--	--	NA	NA
4,6-DINITRO-2-METHYLPHENOL	2	0	0	--	--	--	20	20	--	--	NA	NA
4-BROMOPHENYL-PHENYLETHER	2	0	0	--	--	--	1	1	--	--	NA	NA
4-CHLORO-3-METHYLPHENOL	2	0	0	--	--	--	1.5	1.5	--	--	NA	NA
4-CHLOROANILINE	2	0	0	--	--	--	2	2	0	0	150	NA
4-CHLOROPHENYL-PHENYLETHER	2	0	0	--	--	--	1	1	--	--	NA	NA

TABLE 8-4: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Phases 2B and 3 Investigation, 1991

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Semivolatile Organic Compounds (µg/L)												
4-METHYLPHENOL	2	0	0	--	--	--	2	2	0	0	180	NA
4-NITROANILINE	2	0	0	--	--	--	2	2	--	--	NA	NA
4-NITROPHENOL	2	0	0	--	--	--	10	10	--	--	NA	NA
ACENAPHTHENE	2	0	0	--	--	--	1	1	0	0	370	NA
ACENAPHTHYLENE	2	0	0	--	--	--	1	1	--	--	NA	NA
ANTHRACENE	2	0	0	--	--	--	1	1	0	0	1,800	NA
BENZO(A)ANTHRACENE	2	0	0	--	--	--	**1**	**1**	0	2	0.09	0.1
BENZO(A)PYRENE	2	0	0	--	--	--	**2**	**2**	0	2	0.009	0.2
BENZO(B)FLUORANTHENE	2	0	0	--	--	--	**1.5**	**1.5**	0	2	0.09	NA
BENZO(G,H,I)PERYLENE	2	0	0	--	--	--	2.5	2.5	--	--	NA	NA
BENZO(K)FLUORANTHENE	2	0	0	--	--	--	**1.5**	**1.5**	0	2	0.06	NA
BENZOIC ACID	2	0	0	--	--	--	2.5	2.5	0	0	150,000	NA
BENZYL ALCOHOL	2	0	0	--	--	--	2	2	0	0	11,000	NA
BIS(2-CHLOROETHOXY)METHANE	2	0	0	--	--	--	1	1	--	--	NA	NA
BIS(2-CHLOROETHYL)ETHER	2	0	0	--	--	--	**1.5**	**1.5**	0	2	0.01	NA
BIS(2-ETHYLHEXYL)PHTHALATE	2	0	0	--	--	--	2	**8.6**	0	1	5	NA
BUTYLBENZYLPHTHALATE	2	0	0	--	--	--	1.5	1.5	0	0	7,300	NA
CHRYSENE	2	0	0	--	--	--	**2.5**	**2.5**	0	2	0.6	NA
DI-N-BUTYLPHTHALATE	2	0	0	--	--	--	1	1	--	--	NA	NA
DI-N-OCTYLPHTHALATE	2	0	0	--	--	--	2.4	2.4	--	--	NA	NA
DIBENZO(A,H)ANTHRACENE	2	0	0	--	--	--	**2.5**	**2.5**	0	2	0.009	NA
DIBENZOFURAN	2	0	0	--	--	--	1	1	0	0	24	NA
DIETHYLPHTHALATE	2	0	0	--	--	--	1	1	0	0	29,000	NA
DIMETHYLPHTHALATE	2	0	0	--	--	--	2	2	0	0	360,000	NA
FLUORANTHENE	2	0	0	--	--	--	1	1	0	0	1,500	NA
FLUORENE	2	0	0	--	--	--	1	1	0	0	240	NA
HEXACHLOROBENZENE	2	0	0	--	--	--	**2**	**2**	0	2	0.04	1
HEXACHLOROBUTADIENE	2	0	0	--	--	--	**2**	**2**	0	2	0.9	NA
HEXACHLOROCYCLOPENTADIENE	2	0	0	--	--	--	2	2	0	0	220	NA
HEXACHLOROETHANE	2	0	0	--	--	--	1.5	1.5	0	0	5	NA
INDENO(1,2,3-CD)PYRENE	2	0	0	--	--	--	**2.5**	**2.5**	0	2	0.09	NA

TABLE 8-4: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Phases 2B and 3 Investigation, 1991

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Semivolatile Organic Compounds (µg/L)												
ISOPHORONE	2	0	0	--	--	--	1	1	0	0	71	NA
N-NITROSO-DI-N-PROPYLAMINE	2	0	0	--	--	--	**1**	**1**	0	2	0.01	NA
N-NITROSODIPHENYLAMINE	2	0	0	--	--	--	1	1	0	0	14	NA
NAPHTHALENE	2	0	0	--	--	--	1	1	0	0	6	NA
NITROBENZENE	2	0	0	--	--	--	1	1	0	0	3	NA
PENTACHLOROPHENOL	2	0	0	--	--	--	**10**	**10**	0	2	0.6	1
PHENANTHRENE	2	0	0	--	--	--	1	1	--	--	NA	NA
PHENOL	2	0	0	--	--	--	2	2	0	0	22,000	NA
PYRENE	2	1	50	1	1.1	1.1	1	1	0	0	180	NA
PCBs/Pesticides (µg/L)												
4,4'-DDD	2	0	0	--	--	--	0.1	0.1	0	0	0.3	NA
4,4'-DDE	2	0	0	--	--	--	0.05	0.05	0	0	0.2	NA
4,4'-DDT	2	0	0	--	--	--	0.1	0.1	0	0	0.2	NA
ALDRIN	2	0	0	--	--	--	**0.05**	**0.05**	0	2	0.004	NA
ALPHA-BHC	2	0	0	--	--	--	0.025	0.025	--	--	NA	NA
ALPHA-CHLORDANE	2	0	0	--	--	--	0.05	0.05	0	0	0.2	NA
AROCLOR-1016	2	0	0	--	--	--	0.5	0.5	0	0	1	NA
AROCLOR-1221	2	0	0	--	--	--	**0.5**	**0.5**	0	2	0.03	NA
AROCLOR-1232	2	0	0	--	--	--	**0.5**	**0.5**	0	2	0.03	NA
AROCLOR-1242	2	0	0	--	--	--	**0.5**	**0.5**	0	2	0.03	NA
AROCLOR-1248	2	0	0	--	--	--	**0.5**	**0.5**	0	2	0.03	NA
AROCLOR-1254	2	0	0	--	--	--	**0.5**	**0.5**	0	2	0.03	NA
AROCLOR-1260	2	0	0	--	--	--	**0.5**	**0.5**	0	2	0.03	NA
BETA-BHC	2	0	0	--	--	--	0.05	0.05	--	--	NA	NA
DELTA-BHC	2	0	0	--	--	--	0.05	0.05	--	--	NA	NA
DIELDRIN	2	0	0	--	--	--	**0.05**	**0.05**	0	2	0.004	NA
ENDOSULFAN I	2	0	0	--	--	--	0.05	0.05	0	0	220	NA
ENDOSULFAN II	2	0	0	--	--	--	0.1	0.1	--	--	NA	NA
ENDOSULFAN SULFATE	2	0	0	--	--	--	0.1	0.1	--	--	NA	NA
ENDRIN	2	0	0	--	--	--	0.05	0.05	0	0	11	2

TABLE 8-4: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Phases 2B and 3 Investigation, 1991

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Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
PCBs/Pesticides (µg/L)												
ENDRIN KETONE	2	0	0	--	--	--	0.1	0.1	--	--	NA	NA
GAMMA-BHC (LINDANE)	2	0	0	--	--	--	0.025	0.025	--	--	NA	NA
GAMMA-CHLORDANE	2	0	0	--	--	--	0.05	0.05	0	0	0.2	NA
HEPTACHLOR	2	0	0	--	--	--	**0.05**	**0.05**	0	2	0.02	0.01
HEPTACHLOR EPOXIDE	2	0	0	--	--	--	**0.05**	**0.05**	0	2	0.007	0.01
METHOXYCHLOR	2	0	0	--	--	--	0.5	0.5	0	0	180	30
TOXAPHENE	2	0	0	--	--	--	**1**	**1**	0	2	0.06	3
Metals (µg/L)												
Filtered												
ALUMINUM	1	0	0	--	--	--	31	31	0	0	36,000	NA
ANTIMONY	2	0	0	--	--	--	**25.1**	**25.1**	0	2	15.0	6.0
ARSENIC	2	2	100	**9.4**	**9.4**	**9.4**	0	0	2	0	0.045	10.0
BARIUM	1	1	100	47.1	47.1	47.1	0	0	0	0	2,600	1,000
BERYLLIUM	1	0	0	--	--	--	1.3	1.3	0	0	73.0	4.0
CADMIUM	1	0	0	--	--	--	3	3	0	0	18.0	5.0
CALCIUM	2	2	100	35,600	16,400	54,800 J	0	0	--	--	NA	NA
CHROMIUM	1	0	0	--	--	--	5.7	5.7	0	0	55,000	50.0
COBALT	1	0	0	--	--	--	6.1	6.1	0	0	730	NA
COPPER	1	1	100	40.1	40.1	40.1	0	0	0	0	1,500	1,300
IRON	2	2	100	90.8	12.6	169	0	0	0	0	11,000	NA
LEAD	2	0	0	--	--	--	2	2	--	--	NA	15.0
MAGNESIUM	2	2	100	40,400	13,200	67,500	0	0	--	--	NA	NA
MANGANESE	2	2	100	515	98.2	**932**	0	0	1	0	880	NA
MERCURY	2	0	0	--	--	--	0.2	0.2	0	0	11.0	2.0
NICKEL	2	0	0	--	--	--	13.2	13.2	0	0	730	100
POTASSIUM	2	2	100	41,700	23,800	59,500	0	0	--	--	NA	NA
SELENIUM	2	0	0	--	--	--	2.1	2.1	0	0	180	50.0
SILVER	1	0	0	--	--	--	4.9	4.9	0	0	180	NA
SODIUM	2	2	100	766,000	232,000	1,300,000 J	0	0	--	--	NA	NA
THALLIUM	2	0	0	--	--	--	**2.7**	**2.7**	0	2	2.4	2.0
VANADIUM	2	2	100	9.5	5.1	13.8	0	0	0	0	260	NA

TABLE 8-4: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Phases 2B and 3 Investigation, 1991

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Metals (µg/L)												
Filtered												
ZINC	2	2	100	6.0	5.7	6.3	0	0	0	0	11,000	NA

TABLE 8-4: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Phases 2B and 3 Investigation, 1991

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

NOTES:

Bold denotes values exceeding the PRG

--	Not detected
BHC	Benzene Hexachloride
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethene
DDT	Dichlorodiphenyltrichloroethane
J	Estimated value
MCL	Maximum Contaminant Level
NA	No criteria available
PCB	Polychlorinated biphenyl
PRG	Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or CAL-modified (2002)
µg/L	Micrograms per liter

TABLE 8-5: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES

Follow-on Investigation, 1994

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Volatile Organic Compounds (µg/kg)											
1,1,1-TRICHLOROETHANE	9	0	0	--	--	--	10	12	0	0	1,200,000
1,1,2,2-TETRACHLOROETHANE	9	0	0	--	--	--	10	12	0	0	410
1,1,2-TRICHLOROETHANE	9	0	0	--	--	--	10	12	0	0	730
1,1-DICHLOROETHANE	9	0	0	--	--	--	10	12	0	0	2,800
1,1-DICHLOROETHENE	9	0	0	--	--	--	10	12	0	0	120,000
1,2-DICHLOROETHANE	9	0	0	--	--	--	10	12	0	0	280
1,2-DICHLOROETHENE (TOTAL)	9	0	0	--	--	--	10	12	0	0	43,000
1,2-DICHLOROPROPANE	9	0	0	--	--	--	10	12	0	0	340
2-BUTANONE	9	0	0	--	--	--	10	12	--	--	NA
2-HEXANONE	9	0	0	--	--	--	10	12	--	--	NA
4-METHYL-2-PENTANONE	9	0	0	--	--	--	10	12	--	--	NA
ACETONE	9	0	0	--	--	--	10	13	0	0	1,600,000
BENZENE	9	0	0	--	--	--	10	12	0	0	600
BROMODICHLOROMETHANE	9	0	0	--	--	--	10	12	0	0	820
BROMOFORM	9	0	0	--	--	--	10	12	0	0	62,000
BROMOMETHANE	9	0	0	--	--	--	10	12	0	0	3,900
CARBON DISULFIDE	9	0	0	--	--	--	10	12	0	0	360,000
CARBON TETRACHLORIDE	9	0	0	--	--	--	10	12	0	0	250
CHLOROBENZENE	9	0	0	--	--	--	10	12	0	0	150,000
CHLOROETHANE	9	0	0	--	--	--	10	12	0	0	3,000
CHLOROFORM	9	0	0	--	--	--	10	12	0	0	940
CHLOROMETHANE	9	0	0	--	--	--	10	12	0	0	1,200
CIS-1,3-DICHLOROPROPENE	9	0	0	--	--	--	10	12	0	0	780
DIBROMOCHLOROMETHANE	9	0	0	--	--	--	10	12	0	0	1,100
ETHYLBENZENE	9	0	0	--	--	--	10	12	0	0	8,900
METHYLENE CHLORIDE	9	0	0	--	--	--	10	13	0	0	9,100
STYRENE	9	0	0	--	--	--	10	12	0	0	1,700,000
TETRACHLOROETHENE	9	0	0	--	--	--	10	12	0	0	1,500
TOLUENE	9	0	0	--	--	--	10	12	0	0	520,000
TRANS-1,3-DICHLOROPROPENE	9	0	0	--	--	--	10	12	0	0	780
TRICHLOROETHENE	9	0	0	--	--	--	10	12	0	0	53

TABLE 8-5: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

Follow-on Investigation, 1994

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Volatile Organic Compounds (µg/kg)											
VINYL CHLORIDE	9	0	0	--	--	--	10	12	0	0	79
XYLENE (TOTAL)	9	0	0	--	--	--	10	12	0	0	270,000
Semivolatile Organic Compounds (µg/kg)											
1,2,4-TRICHLOROBENZENE	9	0	0	--	--	--	330	1,100	0	0	650,000
1,2-DICHLOROBENZENE	9	0	0	--	--	--	330	1,100	0	0	370,000
1,3-DICHLOROBENZENE	9	0	0	--	--	--	330	1,100	0	0	16,000
1,4-DICHLOROBENZENE	9	0	0	--	--	--	330	1,100	0	0	3,400
2,2'-OXYBIS(1-CHLOROPROPANE)	9	0	0	--	--	--	330	1,100	--	--	NA
2,4,5-TRICHLOROPHENOL	9	0	0	--	--	--	810	2,600	0	0	6,100,000
2,4,6-TRICHLOROPHENOL	9	0	0	--	--	--	330	1,100	0	0	6,900
2,4-DICHLOROPHENOL	9	0	0	--	--	--	330	1,100	0	0	180,000
2,4-DIMETHYLPHENOL	9	0	0	--	--	--	330	1,100	0	0	1,200,000
2,4-DINITROPHENOL	9	0	0	--	--	--	810	2,600	0	0	120,000
2,4-DINITROTOLUENE	9	0	0	--	--	--	330	1,100	0	0	120,000
2,6-DINITROTOLUENE	9	0	0	--	--	--	330	1,100	0	0	61,000
2-CHLORONAPHTHALENE	9	0	0	--	--	--	330	1,100	--	--	NA
2-CHLOROPHENOL	9	0	0	--	--	--	330	1,100	0	0	63,000
2-METHYLPHENOL	9	0	0	--	--	--	330	1,100	--	--	NA
2-NITROANILINE	9	0	0	--	--	--	810	**2,600**	0	1	1,700
2-NITROPHENOL	9	0	0	--	--	--	330	1,100	--	--	NA
3,3'-DICHLOROBENZIDINE	9	0	0	--	--	--	330	1,100	0	0	1,100
3-NITROANILINE	9	0	0	--	--	--	810	2,600	--	--	NA
4,6-DINITRO-2-METHYLPHENOL	9	0	0	--	--	--	810	2,600	--	--	NA
4-BROMOPHENYL-PHENYLETHER	9	0	0	--	--	--	330	1,100	--	--	NA
4-CHLORO-3-METHYLPHENOL	9	0	0	--	--	--	330	1,100	--	--	NA
4-CHLOROANILINE	9	0	0	--	--	--	330	1,100	0	0	240,000
4-CHLOROPHENYL-PHENYLETHER	9	0	0	--	--	--	330	1,100	--	--	NA
4-METHYLPHENOL	9	0	0	--	--	--	330	1,100	0	0	310,000
4-NITROANILINE	9	0	0	--	--	--	810	2,600	--	--	NA
4-NITROPHENOL	9	0	0	--	--	--	810	2,600	--	--	NA

TABLE 8-5: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

Follow-on Investigation, 1994

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Semivolatile Organic Compounds (µg/kg)											
BIS(2-CHLOROETHOXY)METHANE	9	0	0	--	--	--	330	1,100	--	--	NA
BIS(2-CHLOROETHYL)ETHER	9	0	0	--	--	--	**330**	**1,100**	0	9	210
BIS(2-ETHYLHEXYL)PHTHALATE	9	0	0	--	--	--	330	1,100	0	0	35,000
BUTYLBENZYLPHTHALATE	9	0	0	--	--	--	330	1,100	0	0	12,000,000
CARBAZOLE	9	0	0	--	--	--	330	1,100	0	0	24,000
DI-N-BUTYLPHTHALATE	9	0	0	--	--	--	330	1,100	--	--	NA
DI-N-OCTYLPHTHALATE	9	0	0	--	--	--	330	1,100	--	--	NA
DIBENZOFURAN	9	0	0	--	--	--	330	1,100	0	0	290,000
DIETHYLPHTHALATE	9	0	0	--	--	--	330	1,100	0	0	49,000,000
DIMETHYLPHTHALATE	9	0	0	--	--	--	330	1,100	0	0	100,000,000
HEXACHLOROBENZENE	9	0	0	--	--	--	**330**	**1,100**	0	9	300
HEXACHLOROBUTADIENE	9	0	0	--	--	--	330	1,100	0	0	6,200
HEXACHLOROCYCLOPENTADIENE	9	0	0	--	--	--	330	1,100	0	0	370,000
HEXACHLOROETHANE	9	0	0	--	--	--	330	1,100	0	0	35,000
ISOPHORONE	9	0	0	--	--	--	330	1,100	0	0	510,000
N-NITROSO-DI-N-PROPYLAMINE	9	0	0	--	--	--	**330**	**1,100**	0	9	69
N-NITROSODIPHENYLAMINE	9	0	0	--	--	--	330	1,100	0	0	99,000
NITROBENZENE	9	0	0	--	--	--	330	1,100	0	0	20,000
PENTACHLOROPHENOL	9	0	0	--	--	--	810	2,600	0	0	3,000
PHENOL	9	0	0	--	--	--	330	1,100	0	0	37,000,000
PCBs/Pesticides (µg/kg)											
4,4'-DDD	6	1	17	12	12 J	12 J	3.3	3.9	0	0	2,400
4,4'-DDE	6	0	0	--	--	--	3.3	18	0	0	1,700
4,4'-DDT	6	1	17	58	58 J	58 J	3.3	3.9	0	0	1,700
ALDRIN	6	0	0	--	--	--	1.7	9	0	0	29
ALPHA-BHC	6	0	0	--	--	--	1.7	9	--	--	NA
ALPHA-CHLORDANE	6	0	0	--	--	--	1.7	9	0	0	1,600
AROCLOR-1016	6	0	0	--	--	--	33	180	0	0	3,900
AROCLOR-1221	6	0	0	--	--	--	68	**360**	0	1	220
AROCLOR-1232	6	0	0	--	--	--	33	180	0	0	220

TABLE 8-5: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

Follow-on Investigation, 1994

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
PCBs/Pesticides (µg/kg)											
AROCLOR-1242	6	0	0	--	--	--	33	180	0	0	220
AROCLOR-1248	6	0	0	--	--	--	33	180	0	0	220
AROCLOR-1254	6	0	0	--	--	--	33	180	0	0	220
AROCLOR-1260	6	1	17	140	140 J	140 J	33	39	0	0	220
BETA-BHC	6	0	0	--	--	--	1.7	9	--	--	NA
DELTA-BHC	6	0	0	--	--	--	1.7	9	--	--	NA
DIELDRIN	6	0	0	--	--	--	3.3	18	0	0	30
ENDOSULFAN I	6	0	0	--	--	--	1.7	9	0	0	370,000
ENDOSULFAN II	6	0	0	--	--	--	3.3	18	0	0	370,000
ENDOSULFAN SULFATE	6	0	0	--	--	--	3.3	18	--	--	NA
ENDRIN	6	0	0	--	--	--	3.3	18	0	0	18,000
ENDRIN ALDEHYDE	6	0	0	--	--	--	3.3	18	--	--	NA
ENDRIN KETONE	6	0	0	--	--	--	3.3	18	--	--	NA
GAMMA-BHC (LINDANE)	6	0	0	--	--	--	1.7	9	--	--	NA
GAMMA-CHLORDANE	6	0	0	--	--	--	1.7	9	0	0	1,600
HEPTACHLOR	6	0	0	--	--	--	1.7	9	0	0	110
HEPTACHLOR EPOXIDE	6	0	0	--	--	--	1.7	9	0	0	53
METHOXYCHLOR	6	0	0	--	--	--	17	90	0	0	310,000
TOXAPHENE	6	0	0	--	--	--	170	**900**	0	1	440
Total Petroleum Hydrocarbons (mg/kg)											
DIESEL RANGE ORGANICS	12	0	0	--	--	--	10	12	--	--	NA
GASOLINE RANGE ORGANICS	12	1	8	16	16 J	16 J	0.51	0.6	--	--	NA
JP5 RANGE ORGANICS	12	0	0	--	--	--	10	12	--	--	NA
MOTOR OIL RANGE ORGANICS	12	4	33	66	22 J	170 J	20	26	--	--	NA
Metals (mg/kg)											
ALUMINUM	9	9	100	9,590	3,940	19,000	0	0	0	0	76,000
ANTIMONY	9	0	0	--	--	--	0.47	1.1	0	0	31.0
ARSENIC	9	7	78	**4.2**	**1.8 J**	**8.8**	**1.8**	**2.3**	7	2	0.39
BARIUM	9	9	100	78.9	28.5 J	144 J	0	0	0	0	5,400

TABLE 8-5: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

Follow-on Investigation, 1994

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Metals (mg/kg)											
BERYLLIUM	9	6	67	1.7	1.3	2.5	0.23	1.3	0	0	150
CADMIUM	9	1	11	9.5	9.5	9.5	0.08	0.23	0	0	37.0
CALCIUM	9	9	100	6,860	3,310	14,000	0	0	--	--	NA
CHROMIUM	9	9	100	39.2	26.9 J	67	0	0	0	0	210
COBALT	9	9	100	7.7	2.9 J	15.2	0	0	0	0	900
COPPER	9	9	100	20.1	5.4	71.4	0	0	0	0	3,100
IRON	9	9	100	16,300	7,280	**34,100**	0	0	2	0	23,000
LEAD	9	7	78	68.3	3.6	**416**	2.3	2.4	1	0	150
MAGNESIUM	9	9	100	4,380	1,930	11,300	0	0	--	--	NA
MANGANESE	9	9	100	221	88.2	510	0	0	0	0	1,800
MERCURY	9	2	22	1.4	0.16	2.6	0.15	0.18	0	0	23.0
MOLYBDENUM	9	0	0	--	--	--	2.8	3.3	0	0	390
NICKEL	9	9	100	45.4	20.9	150	0	0	0	0	1,600
POTASSIUM	9	7	78	1,130	486 J	2,060	795	886	--	--	NA
SELENIUM	9	0	0	--	--	--	0.53	0.63	0	0	390
SILVER	9	0	0	--	--	--	0.19	1.7	0	0	390
SODIUM	9	9	100	174	88.2 J	514 J	0	0	--	--	NA
THALLIUM	9	0	0	--	--	--	0.4	0.81	0	0	5.2
VANADIUM	9	9	100	37.4	17.1	86.7	0	0	0	0	550
ZINC	9	9	100	59.9	16.1	267	0	0	0	0	23,000

TABLE 8-5: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES

Follow-on Investigation, 1994

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

NOTES:

Bold denotes values exceeding the PRG

--	Not detected
BHC	Benzene Hexachloride
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethene
DDT	Dichlorodiphenyltrichloroethane
J	Estimated value
mg/kg	Milligrams per kilogram
NA	No PRG available
PCB	Polychlorinated biphenyl
PRG	Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or Cal-modified (2002)
µg/kg	Micrograms per kilogram

TABLE 8-6: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Follow-on Investigation, 1994

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (µg/L)												
1,1,1-TRICHLOROETHANE	10	2	20	4	1	6	1	1	0	0	3,200	200
1,1,2,2-TETRACHLOROETHANE	10	0	0	--	--	--	1	1	0	10	0.06	1
1,1,2-TRICHLOROETHANE	10	0	0	--	--	--	1	1	0	10	0.2	5
1,1-DICHLOROETHANE	10	6	60	3	0.8J	8	1	1	2	0	2	5
1,1-DICHLOROETHENE	10	1	10	1	1	1	1	1	0	0	340	6
1,2-DICHLOROETHANE	10	0	0	--	--	--	0.5	2	0	10	0.1	0.5
1,2-DICHLOROETHENE (TOTAL)	10	7	70	7	3	20	1	1	0	0	61	NA
1,2-DICHLOROPROPANE	10	0	0	--	--	--	1	1	0	10	0.2	5
2-BUTANONE	2	0	0	--	--	--	10	24	--	--	NA	NA
2-HEXANONE	10	0	0	--	--	--	2	2	--	--	NA	NA
4-METHYL-2-PENTANONE	10	0	0	--	--	--	2	2	--	--	NA	NA
ACETONE	2	0	0	--	--	--	6	7	0	0	610	NA
BENZENE	10	1	10	0.6	0.6	0.6	0.5	1	1	9	0.3	1
BROMODICHLOROMETHANE	10	0	0	--	--	--	1	1	0	10	0.2	80
BROMOFORM	10	0	0	--	--	--	1	1	0	0	9	80
BROMOMETHANE	10	0	0	--	--	--	1	2	0	0	9	NA
CARBON DISULFIDE	10	0	0	--	--	--	1	1	0	0	1,000	NA
CARBON TETRACHLORIDE	10	0	0	--	--	--	0.5	0.5	0	10	0.2	0.5
CHLOROBENZENE	10	0	0	--	--	--	1	1	0	0	110	70
CHLOROETHANE	10	0	0	--	--	--	2	2	0	0	5	NA
CHLOROFORM	10	0	0	--	--	--	1	1	0	10	0.5	80
CHLOROMETHANE	10	0	0	--	--	--	2	2	0	10	2	NA
CIS-1,3-DICHLOROPROPENE	10	0	0	--	--	--	0.5	0.5	0	10	0.4	0.5
DIBROMOCHLOROMETHANE	10	0	0	--	--	--	1	1	0	10	0.1	80
ETHYLBENZENE	10	0	0	--	--	--	1	1	0	0	3	300
METHYLENE CHLORIDE	10	0	0	--	--	--	1	1	0	0	4	NA
STYRENE	10	0	0	--	--	--	1	1	0	0	1,600	100
TETRACHLOROETHENE	10	0	0	--	--	--	1	1	0	10	0.7	5
TOLUENE	10	0	0	--	--	--	1	1	0	0	720	150
TRANS-1,3-DICHLOROPROPENE	10	0	0	--	--	--	0.5	0.5	0	10	0.4	0.5
TRICHLOROETHENE	10	4	40	9	1	23	1	1	4	6	0.03	5

TABLE 8-6: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Follow-on Investigation, 1994

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (µg/L)												
VINYL CHLORIDE	10	6	60	**3**	**0.7**	**6**	**0.5**	**0.5**	6	4	0.02	0.5
XYLENE (TOTAL)	10	0	0	--	--	--	1	1	0	0	210	1,800
Semivolatile Organic Compounds (µg/L)												
1,2,4-TRICHLOROBENZENE	7	0	0	--	--	--	10	10	0	0	190	5
1,2-DICHLOROBENZENE	7	0	0	--	--	--	5	5	0	0	370	600
1,3-DICHLOROBENZENE	7	0	0	--	--	--	5	5	0	0	6	NA
1,4-DICHLOROBENZENE	7	0	0	--	--	--	**5**	**5**	0	7	0.5	5
2,2'-OXYBIS(1-CHLOROPROPANE)	7	0	0	--	--	--	10	10	--	--	NA	NA
2,4,5-TRICHLOROPHENOL	7	0	0	--	--	--	25	25	0	0	3,600	50
2,4,6-TRICHLOROPHENOL	7	0	0	--	--	--	**10**	**10**	0	7	1	NA
2,4-DICHLOROPHENOL	7	0	0	--	--	--	10	10	0	0	110	NA
2,4-DIMETHYLPHENOL	7	0	0	--	--	--	10	10	0	0	730	NA
2,4-DINITROPHENOL	7	0	0	--	--	--	25	25	0	0	73	NA
2,4-DINITROTOLUENE	7	0	0	--	--	--	10	10	0	0	73	NA
2,6-DINITROTOLUENE	7	0	0	--	--	--	10	10	0	0	36	NA
2-CHLORONAPHTHALENE	7	0	0	--	--	--	10	10	--	--	NA	NA
2-CHLOROPHENOL	7	0	0	--	--	--	10	10	0	0	30	NA
2-METHYLNAPHTHALENE	7	0	0	--	--	--	10	10	--	--	NA	NA
2-METHYLPHENOL	7	0	0	--	--	--	10	10	0	0	1,800	NA
2-NITROANILINE	7	0	0	--	--	--	**25**	**25**	0	7	1	NA
2-NITROPHENOL	7	0	0	--	--	--	10	10	--	--	NA	NA
3,3'-DICHLOROBENZIDINE	7	0	0	--	--	--	**10**	**10**	0	7	0.2	NA
3-NITROANILINE	7	0	0	--	--	--	25	25	--	--	NA	NA
4,6-DINITRO-2-METHYLPHENOL	7	0	0	--	--	--	25	25	--	--	NA	NA
4-BROMOPHENYL-PHENYLETHER	7	0	0	--	--	--	10	10	--	--	NA	NA
4-CHLORO-3-METHYLPHENOL	7	0	0	--	--	--	10	10	--	--	NA	NA
4-CHLOROANILINE	7	0	0	--	--	--	10	10	0	0	150	NA
4-CHLOROPHENYL-PHENYLETHER	7	0	0	--	--	--	10	10	--	--	NA	NA
4-METHYLPHENOL	7	0	0	--	--	--	10	10	0	0	180	NA
4-NITROANILINE	7	0	0	--	--	--	25	25	--	--	NA	NA

TABLE 8-6: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

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Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Semivolatile Organic Compounds (µg/L)												
4-NITROPHENOL	7	0	0	--	--	--	25	25	--	--	NA	NA
ACENAPHTHENE	7	0	0	--	--	--	10	10	0	0	370	NA
ACENAPHTHYLENE	7	0	0	--	--	--	10	10	--	--	NA	NA
ANTHRACENE	7	0	0	--	--	--	10	10	0	0	1,800	NA
BENZO(A)ANTHRACENE	7	0	0	--	--	--	**10**	**10**	0	7	0.09	0.1
BENZO(A)PYRENE	7	0	0	--	--	--	**10**	**10**	0	7	0.009	0.2
BENZO(B)FLUORANTHENE	7	0	0	--	--	--	**10**	**10**	0	7	0.09	NA
BENZO(G,H,I)PERYLENE	7	0	0	--	--	--	10	10	--	--	NA	NA
BENZO(K)FLUORANTHENE	7	0	0	--	--	--	**10**	**10**	0	7	0.06	NA
BIS(2-CHLOROETHOXY)METHANE	7	0	0	--	--	--	10	10	--	--	NA	NA
BIS(2-CHLOROETHYL)ETHER	7	0	0	--	--	--	**10**	**10**	0	7	0.01	NA
BIS(2-ETHYLHEXYL)PHTHALATE	7	0	0	--	--	--	4	4	0	0	5	NA
BUTYLBENZYLPHTHALATE	7	0	0	--	--	--	10	10	0	0	7,300	NA
CARBAZOLE	7	0	0	--	--	--	**10**	**10**	0	7	3	NA
CHRYSENE	7	0	0	--	--	--	**10**	**10**	0	7	0.6	NA
DI-N-BUTYLPHTHALATE	7	0	0	--	--	--	10	10	--	--	NA	NA
DI-N-OCTYLPHTHALATE	7	0	0	--	--	--	10	10	--	--	NA	NA
DIBENZO(A,H)ANTHRACENE	7	0	0	--	--	--	**10**	**10**	0	7	0.009	NA
DIBENZOFURAN	7	0	0	--	--	--	10	10	0	0	24	NA
DIETHYLPHTHALATE	7	0	0	--	--	--	10	10	0	0	29,000	NA
DIMETHYLPHTHALATE	7	0	0	--	--	--	10	10	0	0	360,000	NA
FLUORANTHENE	7	0	0	--	--	--	10	10	0	0	1,500	NA
FLUORENE	7	0	0	--	--	--	10	10	0	0	240	NA
HEXACHLOROBENZENE	7	0	0	--	--	--	**10**	**10**	0	7	0.04	1
HEXACHLOROBUTADIENE	7	0	0	--	--	--	**10**	**10**	0	7	0.9	NA
HEXACHLOROCYCLOPENTADIENE	7	0	0	--	--	--	10	10	0	0	220	NA
HEXACHLOROETHANE	7	0	0	--	--	--	**10**	**10**	0	7	5	NA
INDENO(1,2,3-CD)PYRENE	7	0	0	--	--	--	**10**	**10**	0	7	0.09	NA
ISOPHORONE	7	0	0	--	--	--	10	10	0	0	71	NA
N-NITROSO-DI-N-PROPYLAMINE	7	0	0	--	--	--	**10**	**10**	0	7	0.01	NA
N-NITROSODIPHENYLAMINE	7	0	0	--	--	--	10	10	0	0	14	NA

TABLE 8-6: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

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Semivolatile Organic Compounds (µg/L)												
NAPHTHALENE	7	0	0	--	--	--	**10**	**10**	0	7	6	NA
NITROBENZENE	7	0	0	--	--	--	**10**	**10**	0	7	3	NA
PENTACHLOROPHENOL	7	0	0	--	--	--	**25**	**25**	0	7	0.6	1
PHENANTHRENE	7	0	0	--	--	--	10	10	--	--	NA	NA
PHENOL	7	0	0	--	--	--	10	10	0	0	22,000	NA
PYRENE	7	1	14	0.5	0.5J	0.5J	10	10	0	0	180	NA
PCBs/Pesticides (µg/L)												
4,4'-DDD	7	0	0	--	--	--	0.1	0.1	0	0	0.3	NA
4,4'-DDE	7	0	0	--	--	--	0.1	0.1	0	0	0.2	NA
4,4'-DDT	7	0	0	--	--	--	0.1	0.1	0	0	0.2	NA
ALDRIN	7	0	0	--	--	--	**0.05**	**0.05**	0	7	0.004	NA
ALPHA-BHC	7	0	0	--	--	--	0.05	0.05	--	--	NA	NA
ALPHA-CHLORDANE	7	0	0	--	--	--	0.05	0.05	0	0	0.2	NA
AROCLOR-1016	7	0	0	--	--	--	0.5	0.5	0	0	1	NA
AROCLOR-1221	7	0	0	--	--	--	**0.5**	**0.5**	0	7	0.03	NA
AROCLOR-1232	7	0	0	--	--	--	**0.5**	**0.5**	0	7	0.03	NA
AROCLOR-1242	7	0	0	--	--	--	**0.5**	**0.5**	0	7	0.03	NA
AROCLOR-1248	7	0	0	--	--	--	**0.5**	**0.5**	0	7	0.03	NA
AROCLOR-1254	7	0	0	--	--	--	**0.5**	**0.5**	0	7	0.03	NA
AROCLOR-1260	7	0	0	--	--	--	**0.5**	**0.5**	0	7	0.03	NA
BETA-BHC	7	0	0	--	--	--	0.05	0.05	--	--	NA	NA
DELTA-BHC	7	0	0	--	--	--	0.05	0.05	--	--	NA	NA
DIELDRIN	7	0	0	--	--	--	**0.1**	**0.1**	0	7	0.004	NA
ENDOSULFAN I	7	0	0	--	--	--	0.05	0.05	0	0	220	NA
ENDOSULFAN II	7	0	0	--	--	--	0.1	0.1	--	--	NA	NA
ENDOSULFAN SULFATE	7	0	0	--	--	--	0.1	0.1	--	--	NA	NA
ENDRIN	7	0	0	--	--	--	0.1	0.1	0	0	11	2
ENDRIN ALDEHYDE	7	0	0	--	--	--	0.1	0.1	--	--	NA	NA
ENDRIN KETONE	7	0	0	--	--	--	0.1	0.1	--	--	NA	NA
GAMMA-BHC (LINDANE)	7	0	0	--	--	--	0.05	0.05	--	--	NA	NA

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Follow-on Investigation, 1994

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PCBs/Pesticides (µg/L)												
GAMMA-CHLORDANE	7	0	0	--	--	--	0.05	0.05	0	0	0.2	NA
HEPTACHLOR	7	0	0	--	--	--	**0.05**	**0.05**	0	7	0.02	0.01
HEPTACHLOR EPOXIDE	7	0	0	--	--	--	**0.01**	**0.01**	0	7	0.007	0.01
METHOXYCHLOR	7	0	0	--	--	--	0.5	0.5	0	0	180	30
TOXAPHENE	7	0	0	--	--	--	**3**	**3**	0	7	0.06	3
Total Petroleum Hydrocarbons (mg/L)												
DIESEL RANGE ORGANICS	10	0	0	--	--	--	0.1	0.1	--	--	NA	NA
GASOLINE RANGE ORGANICS	10	0	0	--	--	--	0.05	0.05	--	--	NA	NA
JP5 RANGE ORGANICS	10	0	0	--	--	--	0.1	0.1	--	--	NA	NA
MOTOR OIL RANGE ORGANICS	10	6	60	0.5	0.27J	1J	0.5	0.5	--	--	NA	NA
Metals (µg/L)												
Filtered												
ALUMINUM	9	0	0	--	--	--	15.7	84.8	0	0	36,000	NA
ANTIMONY	9	1	11	12.7	12.7J	12.7J	2.2	6.6	0	0	15.0	6.0
ARSENIC	9	3	33	**8.2**	**6.4J**	**10.3**	**2.8**	**13**	3	6	0.045	10.0
BARIUM	9	8	89	85.5	14.6J	224	29.7	29.7	0	0	2,600	1,000
BERYLLIUM	9	3	33	2.7	1.1J	3.6J	0.1	1	0	0	73.0	4.0
CADMIUM	9	1	11	4.1	4.1J	4.1J	0.3	0.8	0	0	18.0	5.0
CALCIUM	9	9	100	107,000	15,100	464,000	0	0	--	--	NA	NA
CHROMIUM	9	0	0	--	--	--	0.6	2.8	0	0	55,000	50.0
COBALT	9	2	22	80.3	46.5J	114	3.8	7.7	0	0	730	NA
COPPER	9	1	11	10.1	10.1J	10.1J	5.2	52.6	0	0	1,500	1,300
IRON	9	3	33	4,870	15.6J	8,490	6.7	52.3	0	0	11,000	NA
LEAD	9	0	0	--	--	--	1	6	--	--	NA	15.0
MAGNESIUM	9	9	100	290,000	11,900J	1,510,000	0	0	--	--	NA	NA
MANGANESE	9	9	100	1,420	107	**7,240**	0	0	2	0	880	NA
MERCURY	9	0	0	--	--	--	0.2	0.2	0	0	11.0	2.0
MOLYBDENUM	9	0	0	--	--	--	7.9	28	0	0	180	NA
NICKEL	9	2	22	196	119J	273J	7.5	11.3	0	0	730	100
POTASSIUM	9	9	100	160,000	16,100	729,000J	0	0	--	--	NA	NA

TABLE 8-6: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Follow-on Investigation, 1994

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Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Metals (µg/L)												
Filtered												
SELENIUM	9	0	0	--	--	--	2.4	13.5	0	0	180	50.0
SILVER	9	0	0	--	--	--	0.9	4.5	0	0	180	NA
SODIUM	9	9	100	2,920,000	124,000 J	13,900,000	0	0	--	--	NA	NA
THALLIUM	9	0	0	--	--	--	2.3	**10**	0	7	2.4	2.0
VANADIUM	9	1	11	9.5	9.5 J	9.5 J	3.7	13.6	0	0	260	NA
ZINC	9	3	33	839	18 J	1,460 J	5.3	25.4	0	0	11,000	NA

TABLE 8-6: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

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NOTES:

Bold denotes values exceeding the PRG

--	Not detected
BHC	Benzene Hexachloride
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethene
DDT	Dichlorodiphenyltrichloroethane
J	Estimated value
MCL	Maximum Contaminant Level
mg/L	Milligrams per liter
NA	No criteria available
PCB	Polychlorinated biphenyl
PRG	Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or CAL-modified (2002)
µg/L	Micrograms per liter

TABLE 8-7: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Follow-on Investigation, 1998

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Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (µg/L)												
1,1,1-TRICHLOROETHANE	40	0	0	--	--	--	0.5	200	0	0	3,200	200
1,1,2,2-TETRACHLOROETHANE	12	0	0	--	--	--	**1**	**200**	0	12	0.06	1
1,1,2-TRICHLOROETHANE	12	0	0	--	--	--	**1**	**200**	0	12	0.2	5
1,1-DICHLOROETHANE	12	1	8	1	1	1	1	**200**	0	2	2	5
1,1-DICHLOROETHENE	40	3	8	1	1	1.2	0.5	200	0	0	340	6
1,2,4-TRICHLOROBENZENE	8	0	0	--	--	--	1	1	0	0	190	5
1,2-DIBROMO-3-CHLOROPROPANE	8	0	0	--	--	--	**1**	**1**	0	8	0.002	0.2
1,2-DICHLOROBENZENE	8	0	0	--	--	--	1	1	0	0	370	600
1,2-DICHLOROETHANE	40	1	3	**1**	**1.4**	**1.4**	**0.5**	**50**	1	39	0.1	0.5
1,2-DICHLOROETHENE (TOTAL)	4	2	50	30	19	40 J	2	10	0	0	61	NA
1,2-DICHLOROPROPANE	12	0	0	--	--	--	**1**	**200**	0	12	0.2	5
1,3-DICHLOROBENZENE	8	0	0	--	--	--	1	1	0	0	6	NA
1,4-DICHLOROBENZENE	8	0	0	--	--	--	**1**	**1**	0	8	0.5	5
2-BUTANONE	6	0	0	--	--	--	2	200	--	--	NA	NA
2-HEXANONE	10	0	0	--	--	--	2	200	--	--	NA	NA
4-METHYL-2-PENTANONE	12	0	0	--	--	--	2	200	--	--	NA	NA
ACETONE	6	0	0	--	--	--	2	480	0	0	610	NA
BENZENE	40	5	13	**2**	**0.8**	**5.5**	**0.5**	**50**	5	35	0.3	1
BROMOCHLOROMETHANE	8	0	0	--	--	--	1	1	--	--	NA	NA
BROMODICHLOROMETHANE	12	0	0	--	--	--	**1**	**200**	0	12	0.2	80
BROMOFORM	12	0	0	--	--	--	1	**200**	0	2	9	80
BROMOMETHANE	12	0	0	--	--	--	1	**200**	0	2	9	NA
CARBON DISULFIDE	12	0	0	--	--	--	1	200	0	0	1,000	NA
CARBON TETRACHLORIDE	12	0	0	--	--	--	**0.5**	**50**	0	12	0.2	0.5
CHLOROBENZENE	12	0	0	--	--	--	1	**200**	0	1	110	70
CHLOROETHANE	40	0	0	--	--	--	0.5	**200**	0	2	5	NA
CHLOROFORM	12	0	0	--	--	--	**1**	**200**	0	12	0.5	80
CHLOROMETHANE	12	1	8	**2**	**2J**	**2J**	1	**200**	1	3	2	NA
CIS-1,2-DICHLOROETHENE	36	16	44	18	1	53	0.5	6	0	0	61	6
CIS-1,3-DICHLOROPROPENE	12	0	0	--	--	--	**0.5**	**50**	0	12	0.4	0.5
DIBROMOCHLOROMETHANE	12	0	0	--	--	--	**1**	**200**	0	12	0.1	80

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Volatile Organic Compounds (µg/L)												
ETHYLBENZENE	40	2	5	0.5	0.3J	0.6	0.5	**200**	0	2	3	300
ETHYLENE DIBROMIDE	8	0	0	--	--	--	1	1	--	--	NA	0.05
METHYLENE CHLORIDE	12	0	0	--	--	--	2	**200**	0	2	4	NA
STYRENE	12	0	0	--	--	--	1	200	0	0	1,600	100
TETRACHLOROETHENE	40	3	8	**1**	**0.7**	**2J**	0.5	**200**	3	11	0.7	5
TOLUENE	40	16	40	1	0.5	3.4	0.5	200	0	0	720	150
TRANS-1,2-DICHLOROETHENE	36	5	14	1	0.7	1.9	0.5	1	0	0	120	10
TRANS-1,3-DICHLOROPROPENE	12	0	0	--	--	--	**0.5**	**50**	0	12	0.4	0.5
TRICHLOROETHENE	40	18	45	**630**	**0.9**	**2,600**	**0.5**	**10**	18	22	0.03	5
VINYL CHLORIDE	40	10	25	**8**	**0.7**	**37**	**0.5**	**50**	10	30	0.02	0.5
XYLENE (TOTAL)	40	3	8	2	2J	2.3	0.5	200	0	0	210	1,800
Metals (µg/L)												
Filtered												
ALUMINUM	8	2	25	323	308	337	7.4	50.4	0	0	36,000	NA
ANTIMONY	8	1	13	1.0	1J	1J	0.7	2.7	0	0	15.0	6.0
ARSENIC	8	5	63	**7.1**	**1.1J**	**15.1**	**4**	**6.1**	5	3	0.045	10.0
BARIUM	8	8	100	136	30.7J	300	0	0	0	0	2,600	1,000
BERYLLIUM	8	0	0	--	--	--	0.1	0.2	0	0	73.0	4.0
CADMIUM	8	1	13	0.36	0.36J	0.36J	0.15	0.4	0	0	18.0	5.0
CALCIUM	8	8	100	26,500	11,900	45,300	0	0	--	--	NA	NA
CHROMIUM	8	6	75	1.7	0.55J	3.4J	0.8	0.92	0	0	55,000	50.0
COBALT	8	1	13	4.1	4.1J	4.1J	0.25	2.5	0	0	730	NA
COPPER	8	1	13	1.2	1.2J	1.2J	0.35	4.3	0	0	1,500	1,300
IRON	8	3	38	179	52.9	247	5.6	23.7	0	0	11,000	NA
LEAD	8	0	0	--	--	--	0.5	6.9	--	--	NA	15.0
MAGNESIUM	8	8	100	15,600	6,620	33,400	0	0	--	--	NA	NA
MANGANESE	8	7	88	91.6	9.9	263	1.5	1.5	0	0	880	NA
MERCURY	8	0	0	--	--	--	0.1	0.1	0	0	11.0	2.0
MOLYBDENUM	8	6	75	3.3	2.1J	5.4	2.2	2.2	0	0	180	NA
NICKEL	8	4	50	1.9	1.5J	2.4J	1.1	1.5	0	0	730	100
POTASSIUM	8	8	100	18,100	4,920J	46,100J	0	0	--	--	NA	NA

TABLE 8-7: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Follow-on Investigation, 1998

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Metals (µg/L)												
Filtered												
SELENIUM	7	1	14	1.4	1.4J	1.4J	0.8	2.2	0	0	180	50.0
SILVER	8	0	0	--	--	--	0.15	0.7	0	0	180	NA
SODIUM	8	8	100	128,000	25,400	346,000J	0	0	--	--	NA	NA
THALLIUM	8	0	0	--	--	--	1.1	1.4	0	0	2.4	2.0
VANADIUM	8	5	63	7.3	4.2J	12.8J	3.3	5.9	0	0	260	NA
ZINC	8	3	38	63.1	7.8J	93.4	1.9	9.7	0	0	11,000	NA

TABLE 8-7: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Follow-on Investigation, 1998

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

NOTES:

Bold denotes values exceeding the PRG

--	Not detected
J	Estimated value
MCL	Maximum Contaminant Level
NA	No criteria available
PRG	Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or CAL-modified (2002)
µg/L	Micrograms per liter

TABLE 8-8: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES

Supplemental Remedial Investigation Data Gap Sampling, 2001

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Metals (mg/kg)											
CHROMIUM	1	1	100	73.6	73.6	73.6	0	0	0	0	210
LEAD	1	1	100	42.0	42	42	0	0	0	0	150

TABLE 8-8: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES

Supplemental Remedial Investigation Data Gap Sampling, 2001
Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

NOTES:

Bold denotes values exceeding the PRG
mg/kg Milligrams per kilogram
NA No PRG available
PRG Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or Cal-modified (2002)

TABLE 8-9: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Supplemental Remedial Investigation Data Gap Sampling, 2001

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (µg/L)												
1,1,1,2-TETRACHLOROETHANE	70	0	0	--	--	--	**0.5**	**10**	0	70	0.4	NA
1,1,1-TRICHLOROETHANE	102	2	2	61	2	120	0.5	40	0	0	3,200	200
1,1,2,2-TETRACHLOROETHANE	102	0	0	--	--	--	**0.5**	**20**	0	102	0.06	1
1,1,2-TRICHLOROETHANE	102	5	5	**2**	**0.4J**	**4.8**	**0.5**	**40**	5	97	0.2	5
1,1-DICHLOROETHANE	102	11	11	**23**	0.4J	**130**	0.5	**10**	5	12	2	5
1,1-DICHLOROETHENE	102	13	13	2	0.4J	5.2	0.5	40	0	0	340	6
1,1-DICHLOROPROPENE	10	0	0	--	--	--	0.5	5	--	--	NA	NA
1,2,3-TRICHLOROBENZENE	10	0	0	--	--	--	0.5	5	--	--	NA	NA
1,2,3-TRICHLOROPROPANE	10	0	0	--	--	--	**0.5**	**5**	0	10	0.006	NA
1,2,4-TRICHLOROBENZENE	10	0	0	--	--	--	0.5	5	0	0	190	5
1,2,4-TRIMETHYLBENZENE	10	0	0	--	--	--	0.5	5	0	0	12	NA
1,2-DIBROMO-3-CHLOROPROPANE	10	0	0	--	--	--	**0.5**	**5**	0	10	0.002	0.2
1,2-DICHLOROBENZENE	102	5	5	25	0.4J	120	1	40	0	0	370	600
1,2-DICHLOROETHANE	102	4	4	**4**	**0.4J**	**11**	**0.5**	**10**	4	98	0.1	0.5
1,2-DICHLOROETHENE (TOTAL)	32	17	53	**66**	0.3J	**710**	2	2	3	0	61	NA
1,2-DICHLOROPROPANE	42	0	0	--	--	--	**0.5**	**40**	0	42	0.2	5
1,3,5-TRIMETHYLBENZENE	10	0	0	--	--	--	0.5	5	0	0	12	NA
1,3-DICHLOROBENZENE	102	1	1	1	1J	1J	0.5	**40**	0	5	6	NA
1,3-DICHLOROPROPANE	10	0	0	--	--	--	0.5	5	--	--	NA	NA
1,4-DICHLOROBENZENE	102	1	1	**3**	**3.2**	**3.2**	0.5	**40**	1	99	0.5	5
2,2-DICHLOROPROPANE	10	0	0	--	--	--	0.5	5	--	--	NA	NA
2-BUTANONE	42	0	0	--	--	--	2	100	--	--	NA	NA
2-CHLOROTOLUENE	10	0	0	--	--	--	0.5	5	--	--	NA	NA
2-HEXANONE	42	0	0	--	--	--	2	100	--	--	NA	NA
4-CHLOROTOLUENE	10	0	0	--	--	--	0.5	5	--	--	NA	NA
4-METHYL-2-PENTANONE	42	0	0	--	--	--	2	100	--	--	NA	NA
ACETONE	42	1	2	22	22	22	3	100	0	0	610	NA
BENZENE	102	12	12	**2**	**0.4J**	**4.3**	**0.5**	**10**	12	90	0.3	1
BROMOBENZENE	10	0	0	--	--	--	0.5	5	0	0	20	NA
BROMOCHLOROMETHANE	10	0	0	--	--	--	0.5	10	--	--	NA	NA
BROMODICHLOROMETHANE	42	1	2	**6**	**6**	**6**	**0.5**	**40**	1	41	0.2	80

TABLE 8-9: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Supplemental Remedial Investigation Data Gap Sampling, 2001

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (µg/L)												
BROMOFORM	42	0	0	--	--	--	1	**40**	0	3	9	80
BROMOMETHANE	42	0	0	--	--	--	1	**40**	0	9	9	NA
CARBON DISULFIDE	42	10	24	1	0.4J	3	0.5	40	0	0	1,000	NA
CARBON TETRACHLORIDE	42	0	0	--	--	--	**0.5**	**10**	0	42	0.2	0.5
CHLOROBENZENE	102	1	1	1	1.2	1.2	0.5	40	0	0	110	70
CHLOROETHANE	102	5	5	4	0.9J	**8.7**	1	**40**	2	12	5	NA
CHLOROFORM	42	0	0	--	--	--	0.5	**40**	0	40	0.5	80
CHLOROMETHANE	102	0	0	--	--	--	1	**40**	0	43	2	NA
CIS-1,2-DICHLOROETHENE	70	25	36	**120**	1	**750**	1	10	5	0	61	6
CIS-1,3-DICHLOROPROPENE	42	0	0	--	--	--	**0.5**	**10**	0	42	0.4	0.5
DIBROMOCHLOROMETHANE	42	0	0	--	--	--	**0.5**	**40**	0	42	0.1	80
DIBROMOMETHANE	10	0	0	--	--	--	0.5	5	--	--	NA	NA
DICHLORODIFLUOROMETHANE	10	0	0	--	--	--	1	10	0	0	390	NA
ETHYLBENZENE	102	4	4	1	0.4J	2.3	0.5	**40**	0	12	3	300
ETHYLENE DIBROMIDE	10	0	0	--	--	--	0.5	5	--	--	NA	0.05
HEXACHLOROBUTADIENE	10	0	0	--	--	--	0.5	**5**	0	8	0.9	NA
ISOPROPYLBENZENE	10	0	0	--	--	--	0.5	5	--	--	NA	NA
M,P-XYLENE	70	11	16	2	1.2	5.8	0.5	10	0	0	210	NA
METHYL-T-BUTYL ETHER	102	6	6	0.4	0.3J	0.6J	0.5	**100**	0	5	6	13
METHYLENE CHLORIDE	102	0	0	--	--	--	1	**100**	0	16	4	NA
N-BUTYLBENZENE	10	0	0	--	--	--	0.5	5	--	--	NA	NA
N-PROPYLBENZENE	10	0	0	--	--	--	0.5	5	0	0	240	NA
NAPHTHALENE	70	0	0	--	--	--	0.5	**10**	0	3	6	NA
O-XYLENE	70	2	3	2	1.2	2.5	0.5	10	0	0	210	NA
P-ISOPROPYLTOLUENE	10	0	0	--	--	--	0.5	5	--	--	NA	NA
SEC-BUTYLBENZENE	10	0	0	--	--	--	0.5	5	0	0	240	NA
STYRENE	42	0	0	--	--	--	0.5	40	0	0	1,600	100
TERT-BUTYLBENZENE	10	0	0	--	--	--	0.5	5	0	0	240	NA
TETRACHLOROETHENE	102	7	7	**4**	0.3J	**14**	0.5	**40**	5	93	0.7	5
TOLUENE	102	26	25	3	0.3J	16	0.5	40	0	0	720	150
TRANS-1,2-DICHLOROETHENE	70	14	20	5	1.2	18	0.5	10	0	0	120	10

TABLE 8-9: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Supplemental Remedial Investigation Data Gap Sampling, 2001

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Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (µg/L)												
TRANS-1,3-DICHLOROPROPENE	42	0	0	--	--	--	**0.5**	**10**	0	42	0.4	0.5
TRICHLOROETHENE	102	44	43	**1,200**	**0.3J**	**15,000**	**1**	**10**	44	58	0.03	5
TRICHLOROFLUOROMETHANE	10	0	0	--	--	--	0.5	5	--	--	NA	NA
TRICHLOROTRIFLUOROETHANE	10	0	0	--	--	--	5	50	--	--	NA	NA
VINYL ACETATE	10	0	0	--	--	--	10	100	0	0	410	NA
VINYL CHLORIDE	102	30	29	**10**	**0.3J**	**82**	**0.5**	**10**	30	72	0.02	0.5
XYLENE (TOTAL)	32	7	22	3	0.3J	14	2	40	0	0	210	1,800
Semivolatile Organic Compounds (µg/L)												
1,2,4-TRICHLOROBENZENE	29	0	0	--	--	--	10	10	0	0	190	5
1,2-DICHLOROBENZENE	29	0	0	--	--	--	5	5	0	0	370	600
1,3-DICHLOROBENZENE	29	0	0	--	--	--	5	5	0	0	6	NA
1,4-DICHLOROBENZENE	29	0	0	--	--	--	**5**	**5**	0	29	0.5	5
2,2'-OXYBIS(1-CHLOROPROPANE)	29	0	0	--	--	--	10	10	--	--	NA	NA
2,4,5-TRICHLOROPHENOL	29	0	0	--	--	--	25	25	0	0	3,600	50
2,4,6-TRICHLOROPHENOL	29	0	0	--	--	--	**10**	**10**	0	29	1	NA
2,4-DICHLOROPHENOL	29	0	0	--	--	--	10	10	0	0	110	NA
2,4-DIMETHYLPHENOL	29	0	0	--	--	--	10	10	0	0	730	NA
2,4-DINITROPHENOL	29	0	0	--	--	--	25	50	0	0	73	NA
2,4-DINITROTOLUENE	29	0	0	--	--	--	10	10	0	0	73	NA
2,6-DINITROTOLUENE	29	0	0	--	--	--	10	10	0	0	36	NA
2-CHLORONAPHTHALENE	29	0	0	--	--	--	10	10	--	--	NA	NA
2-CHLOROPHENOL	29	0	0	--	--	--	10	10	0	0	30	NA
2-METHYLNAPHTHALENE	29	0	0	--	--	--	10	10	--	--	NA	NA
2-METHYLPHENOL	29	0	0	--	--	--	10	10	0	0	1,800	NA
2-NITROANILINE	29	0	0	--	--	--	**25**	**25**	0	29	1	NA
2-NITROPHENOL	29	0	0	--	--	--	10	10	--	--	NA	NA
3,3'-DICHLOROBENZIDINE	29	0	0	--	--	--	**12**	**14**	0	29	0.2	NA
3-NITROANILINE	29	0	0	--	--	--	25	25	--	--	NA	NA
4,6-DINITRO-2-METHYLPHENOL	29	0	0	--	--	--	25	25	--	--	NA	NA
4-BROMOPHENYL-PHENYLETHER	29	0	0	--	--	--	10	10	--	--	NA	NA

TABLE 8-9: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

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Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Semivolatile Organic Compounds (µg/L)												
4-CHLORO-3-METHYLPHENOL	29	0	0	--	--	--	10	10	--	--	NA	NA
4-CHLOROANILINE	29	0	0	--	--	--	15	19	0	0	150	NA
4-CHLOROPHENYL-PHENYLETHER	29	0	0	--	--	--	10	10	--	--	NA	NA
4-METHYLPHENOL	29	0	0	--	--	--	10	10	0	0	180	NA
4-NITROANILINE	29	0	0	--	--	--	25	25	--	--	NA	NA
4-NITROPHENOL	29	0	0	--	--	--	25	25	--	--	NA	NA
ACENAPHTHENE	29	0	0	--	--	--	10	10	0	0	370	NA
ACENAPHTHYLENE	29	0	0	--	--	--	10	10	--	--	NA	NA
ANTHRACENE	29	0	0	--	--	--	10	10	0	0	1,800	NA
BENZO(A)ANTHRACENE	29	0	0	--	--	--	**10**	**10**	0	29	0.09	0.1
BENZO(A)PYRENE	29	0	0	--	--	--	**0.99**	**2.7**	0	29	0.009	0.2
BENZO(B)FLUORANTHENE	29	0	0	--	--	--	**10**	**10**	0	29	0.09	NA
BENZO(G,H,I)PERYLENE	29	0	0	--	--	--	10	10	--	--	NA	NA
BENZO(K)FLUORANTHENE	29	0	0	--	--	--	**10**	**10**	0	29	0.06	NA
BIS(2-CHLOROETHOXY)METHANE	29	0	0	--	--	--	10	10	--	--	NA	NA
BIS(2-CHLOROETHYL)ETHER	29	0	0	--	--	--	**10**	**10**	0	29	0.01	NA
BIS(2-ETHYLHEXYL)PHTHALATE	29	0	0	--	--	--	4	4	0	0	5	NA
BUTYLBENZYLPHTHALATE	29	0	0	--	--	--	10	10	0	0	7,300	NA
CARBAZOLE	29	0	0	--	--	--	**10**	**14**	0	29	3	NA
CHRYSENE	29	0	0	--	--	--	**10**	**10**	0	29	0.6	NA
DI-N-BUTYLPHTHALATE	29	0	0	--	--	--	10	10	--	--	NA	NA
DI-N-OCTYLPHTHALATE	29	0	0	--	--	--	10	10	--	--	NA	NA
DIBENZO(A,H)ANTHRACENE	29	0	0	--	--	--	**20**	**20**	0	29	0.009	NA
DIBENZOFURAN	29	0	0	--	--	--	10	10	0	0	24	NA
DIETHYLPHTHALATE	29	0	0	--	--	--	10	10	0	0	29,000	NA
DIMETHYLPHTHALATE	29	0	0	--	--	--	10	10	0	0	360,000	NA
FLUORANTHENE	29	0	0	--	--	--	10	10	0	0	1,500	NA
FLUORENE	29	0	0	--	--	--	10	10	0	0	240	NA
HEXACHLOROBENZENE	29	0	0	--	--	--	**10**	**10**	0	29	0.04	1
HEXACHLOROBUTADIENE	29	0	0	--	--	--	**10**	**10**	0	29	0.9	NA
HEXACHLOROCYCLOPENTADIENE	29	0	0	--	--	--	11	16	0	0	220	NA

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Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Semivolatile Organic Compounds (µg/L)												
HEXACHLOROETHANE	29	0	0	--	--	--	**10**	**10**	0	29	5	NA
INDENO(1,2,3-CD)PYRENE	29	0	0	--	--	--	**10**	**10**	0	29	0.09	NA
ISOPHORONE	29	0	0	--	--	--	10	10	0	0	71	NA
N-NITROSO-DI-N-PROPYLAMINE	29	0	0	--	--	--	**10**	**10**	0	29	0.01	NA
N-NITROSODIPHENYLAMINE	29	0	0	--	--	--	10	**18**	0	9	14	NA
NAPHTHALENE	29	0	0	--	--	--	**10**	**10**	0	29	6	NA
NITROBENZENE	29	0	0	--	--	--	**10**	**10**	0	29	3	NA
PENTACHLOROPHENOL	29	0	0	--	--	--	**25**	**25**	0	29	0.6	1
PHENANTHRENE	29	0	0	--	--	--	10	10	--	--	NA	NA
PHENOL	29	0	0	--	--	--	10	10	0	0	22,000	NA
PYRENE	29	0	0	--	--	--	10	10	0	0	180	NA
Polynuclear Aromatic Hydrocarbons (µg/L)												
ACENAPHTHENE	5	0	0	--	--	--	5	5	0	0	370	NA
ACENAPHTHYLENE	5	0	0	--	--	--	2	2	--	--	NA	NA
ANTHRACENE	5	0	0	--	--	--	0.2	0.2	0	0	1,800	NA
BENZO(A)ANTHRACENE	5	0	0	--	--	--	**0.2**	**0.2**	0	5	0.09	0.1
BENZO(A)PYRENE	5	0	0	--	--	--	**0.2**	**0.2**	0	5	0.009	0.2
BENZO(B)FLUORANTHENE	5	0	0	--	--	--	**0.2**	**0.2**	0	5	0.09	NA
BENZO(G,H,I)PERYLENE	5	0	0	--	--	--	0.2	0.2	--	--	NA	NA
BENZO(K)FLUORANTHENE	5	0	0	--	--	--	**0.2**	**0.2**	0	5	0.06	NA
CHRYSENE	5	0	0	--	--	--	0.2	0.2	0	0	0.6	NA
DIBENZO(A,H)ANTHRACENE	5	0	0	--	--	--	**0.5**	**0.5**	0	5	0.009	NA
FLUORANTHENE	5	0	0	--	--	--	0.2	0.2	0	0	1,500	NA
FLUORENE	5	0	0	--	--	--	1	1	0	0	240	NA
INDENO(1,2,3-CD)PYRENE	5	0	0	--	--	--	**0.2**	**0.2**	0	5	0.09	NA
NAPHTHALENE	5	0	0	--	--	--	5	5	0	0	6	NA
PHENANTHRENE	5	0	0	--	--	--	1	1	--	--	NA	NA
PYRENE	5	2	40	0.4	0.4	0.4	0.2	0.2	0	0	180	NA

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Total Petroleum Hydrocarbons (mg/L)												
DIESEL RANGE ORGANICS	11	5	45	9	0.22	42	0.1	0.2	--	--	NA	NA
GASOLINE RANGE ORGANICS	24	13	54	14	0.03J	120J	0.05	0.05	--	--	NA	NA
JP5 RANGE ORGANICS	7	0	0	--	--	--	0.1	5	--	--	NA	NA
MOTOR OIL RANGE ORGANICS	11	2	18	34	0.4	68	0.1	0.2	--	--	NA	NA

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NOTES:

Bold denotes values exceeding the PRG

--	Not detected
J	Estimated value
MCL	Maximum Contaminant Level
mg/L	Milligrams per liter
NA	No criteria available
PRG	Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or Cal-modified (2002)
µg/L	Micrograms per liter

TABLE 8-10: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Basewide Groundwater Monitoring, 2002 and 2003

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (µg/L)												
1,1,1,2-TETRACHLOROETHANE	9	0	0	--	--	--	**0.5**	**0.5**	0	9	0.4	NA
1,1,1-TRICHLOROETHANE	9	0	0	--	--	--	0.5	0.5	0	0	3,200	200
1,1,2,2-TETRACHLOROETHANE	9	0	0	--	--	--	**0.5**	**0.5**	0	9	0.06	1
1,1,2-TRICHLOROETHANE	9	0	0	--	--	--	**0.5**	**0.5**	0	9	0.2	5
1,1-DICHLOROETHANE	9	6	67	0.3	0.2J	0.5J	0.5	0.5	0	0	2	5
1,1-DICHLOROETHENE	9	0	0	--	--	--	0.5	0.5	0	0	340	6
1,1-DICHLOROPROPENE	9	0	0	--	--	--	0.5	0.5	--	--	NA	NA
1,2,3-TRICHLOROBENZENE	9	0	0	--	--	--	0.5	0.5	--	--	NA	NA
1,2,3-TRICHLOROPROPANE	9	0	0	--	--	--	**0.5**	**0.5**	0	9	0.006	NA
1,2,4-TRICHLOROBENZENE	9	0	0	--	--	--	0.5	0.5	0	0	190	5
1,2,4-TRIMETHYLBENZENE	9	0	0	--	--	--	0.5	0.5	0	0	12	NA
1,2-DIBROMO-3-CHLOROPROPANE	9	0	0	--	--	--	**0.5**	**0.5**	0	9	0.002	0.2
1,2-DICHLOROBENZENE	9	0	0	--	--	--	0.5	0.5	0	0	370	600
1,2-DICHLOROETHANE	9	3	33	**0.2**	**0.2J**	**0.2J**	**0.5**	**0.5**	3	6	0.1	0.5
1,2-DICHLOROPROPANE	9	0	0	--	--	--	**0.5**	**0.5**	0	9	0.2	5
1,3,5-TRIMETHYLBENZENE	9	0	0	--	--	--	0.4	0.5	0	0	12	NA
1,3-DICHLOROBENZENE	9	0	0	--	--	--	0.5	0.5	0	0	6	NA
1,3-DICHLOROPROPANE	9	0	0	--	--	--	0.5	0.5	--	--	NA	NA
1,4-DICHLOROBENZENE	9	0	0	--	--	--	0.5	0.5	0	0	0.5	5
2,2-DICHLOROPROPANE	9	0	0	--	--	--	0.5	0.5	--	--	NA	NA
2-BUTANONE	9	0	0	--	--	--	10	10	--	--	NA	NA
2-CHLOROTOLUENE	9	0	0	--	--	--	0.5	0.5	--	--	NA	NA
2-HEXANONE	9	0	0	--	--	--	10	10	--	--	NA	NA
4-CHLOROTOLUENE	9	0	0	--	--	--	0.5	0.5	--	--	NA	NA
4-METHYL-2-PENTANONE	9	0	0	--	--	--	10	10	--	--	NA	NA
ACETONE	9	2	22	1	0.7J	1.2J	0.5	10	0	0	610	NA
BENZENE	9	1	11	0.2	0.2J	0.2J	**0.5**	**0.5**	0	8	0.3	1
BROMOBENZENE	9	0	0	--	--	--	0.5	0.5	0	0	20	NA
BROMOCHLOROMETHANE	9	0	0	--	--	--	0.5	0.5	--	--	NA	NA
BROMODICHLOROMETHANE	9	0	0	--	--	--	**0.5**	**0.5**	0	9	0.2	80
BROMOFORM	9	0	0	--	--	--	1	1	0	0	9	80

TABLE 8-10: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

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Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (µg/L)												
BROMOMETHANE	9	0	0	--	--	--	1	1	0	0	9	NA
CARBON DISULFIDE	9	0	0	--	--	--	0.5	0.5	0	0	1,000	NA
CARBON TETRACHLORIDE	9	0	0	--	--	--	**0.5**	**0.5**	0	9	0.2	0.5
CHLOROBENZENE	9	0	0	--	--	--	0.5	0.5	0	0	110	70
CHLOROETHANE	9	2	22	0.6	0.5J	0.7J	1	1	0	0	5	NA
CHLOROFORM	9	0	0	--	--	--	0.5	0.5	0	0	0.5	80
CHLOROMETHANE	9	1	11	0.3	0.3	0.3	1	1	0	0	2	NA
CIS-1,2-DICHLOROETHENE	9	6	67	3	0.5J	5.4	0.5	0.5	0	0	61	6
DIBROMOCHLOROMETHANE	9	0	0	--	--	--	**0.5**	**0.5**	0	9	0.1	80
DIBROMOMETHANE	9	0	0	--	--	--	0.5	0.5	--	--	NA	NA
DICHLORODIFLUOROMETHANE	9	0	0	--	--	--	1	1	0	0	390	NA
DIISOPROPYL ETHER	9	0	0	--	--	--	0.5	0.5	--	--	NA	NA
ETHYL TERT-BUTYL ETHER	9	0	0	--	--	--	0.5	0.5	--	--	NA	NA
ETHYLBENZENE	9	0	0	--	--	--	0.2	0.5	0	0	3	300
ETHYLENE DIBROMIDE	9	0	0	--	--	--	0.5	0.5	--	--	NA	0.05
HEXACHLOROBUTADIENE	9	0	0	--	--	--	0.5	0.5	0	0	0.9	NA
ISOPROPYLBENZENE	9	0	0	--	--	--	0.5	0.5	--	--	NA	NA
M,P-XYLENE	9	0	0	--	--	--	0.5	0.5	0	0	210	NA
METHYL-T-BUTYL ETHER	9	1	11	0.1	0.1J	0.1J	0.2	0.5	0	0	6	13
METHYLENE CHLORIDE	9	0	0	--	--	--	0.1	**5**	0	7	4	NA
N-BUTYLBENZENE	9	0	0	--	--	--	0.5	0.5	--	--	NA	NA
N-PROPYLBENZENE	9	0	0	--	--	--	0.5	0.5	0	0	240	NA
NAPHTHALENE	9	0	0	--	--	--	2	2	0	0	6	NA
O-XYLENE	9	0	0	--	--	--	0.5	0.5	0	0	210	NA
P-ISOPROPYLTOLUENE	9	0	0	--	--	--	0.5	0.5	--	--	NA	NA
SEC-BUTYLBENZENE	9	0	0	--	--	--	0.5	0.5	0	0	240	NA
STYRENE	9	0	0	--	--	--	0.5	0.5	0	0	1,600	100
TERT-AMYL METHYL ETHER	9	0	0	--	--	--	0.5	0.5	--	--	NA	NA
TERT-BUTANOL	9	3	33	4	2.7J	6.6J	10	20	--	--	NA	NA
TERT-BUTYLBENZENE	9	0	0	--	--	--	0.5	0.5	0	0	240	NA
TETRACHLOROETHENE	9	0	0	--	--	--	0.5	0.5	0	0	0.7	5

TABLE 8-10: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

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Volatile Organic Compounds (µg/L)												
TOLUENE	9	0	0	--	--	--	0.5	0.5	0	0	720	150
TRANS-1,2-DICHLOROETHENE	9	6	67	0.3	0.2	0.3J	0.5	0.5	0	0	120	10
TRICHLOROETHENE	9	4	44	**0.4**	**0.2J**	**0.8**	**0.5**	**0.5**	4	5	0.03	5
TRICHLOROFLUOROMETHANE	9	0	0	--	--	--	1	1	--	--	NA	NA
VINYL CHLORIDE	9	5	56	**2**	**0.4J**	**4.2**	**0.5**	**0.5**	5	4	0.02	0.5
Total Petroleum Hydrocarbons (mg/L)												
DIESEL RANGE ORGANICS	9	0	0	--	--	--	0.05	0.05	--	--	NA	NA
GASOLINE RANGE ORGANICS	9	1	11	0.01	0.012	0.012	0.014	0.05	--	--	NA	NA
JP5 RANGE ORGANICS	9	0	0	--	--	--	0.05	0.05	--	--	NA	NA
MOTOR OIL RANGE ORGANICS	9	0	0	--	--	--	0.3	0.3	--	--	NA	NA
Metals (µg/L)												
Filtered												
ALUMINUM	6	2	33	525	80J	970J	6.4	100	0	0	36,000	NA
ANTIMONY	6	2	33	0.41	0.27J	0.55J	0.11	**50**	0	1	15.0	6.0
ARSENIC	6	5	83	**6.9**	**2.7**	**11**	**1.9**	**1.9**	5	1	0.045	10.0
BARIUM	6	6	100	126	43	210J	0	0	0	0	2,600	1,000
BERYLLIUM	6	0	0	--	--	--	2	2	0	0	73.0	4.0
CADMIUM	6	0	0	--	--	--	5	5	0	0	18.0	5.0
CALCIUM	6	6	100	44,800	20,000	83,000	0	0	--	--	NA	NA
CHROMIUM	6	0	0	--	--	--	0.57	10	0	0	55,000	50.0
COBALT	6	6	100	0.25	0.068J	0.5	0	0	0	0	730	NA
COPPER	6	6	100	0.56	0.29	0.83J	0	0	0	0	1,500	1,300
IRON	6	6	100	1,160	58J	4,000	0	0	0	0	11,000	NA
LEAD	6	3	50	0.16	0.064J	0.3J	0.37	0.95	--	--	NA	15.0
MAGNESIUM	6	6	100	31,000	16,000J	60,000J	0	0	--	--	NA	NA
MANGANESE	6	6	100	457	92J	**1,400J**	0	0	1	0	880	NA
MERCURY	6	1	17	0.041	0.041J	0.041J	0.12	0.21	0	0	11.0	2.0
MOLYBDENUM	6	6	100	2.4	1.4J	3.7	0	0	0	0	180	NA
NICKEL	6	6	100	1.2	0.42J	2.4	0	0	0	0	730	100
POTASSIUM	6	6	100	21,200	13,000	34,000	0	0	--	--	NA	NA

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Metals (µg/L)												
Filtered												
SELENIUM	6	5	83	1.0	0.5J	1.5J	5	5	0	0	180	50.0
SILVER	6	0	0	--	--	--	0.044	5	0	0	180	NA
SODIUM	6	6	100	290,000	130,000	530,000	0	0	--	--	NA	NA
THALLIUM	6	0	0	--	--	--	0.065	2	0	0	2.4	2.0
VANADIUM	6	0	0	--	--	--	1.4	10	0	0	260	NA
ZINC	6	3	50	7.0	1.3J	10J	0.85	12	0	0	11,000	NA

TABLE 8-10: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Basewide Groundwater Monitoring, 2002 and 2003
Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

NOTES:

Bold denotes values exceeding the PRG

--	Not detected
J	Estimated value
MCL	Maximum Contaminant Level
mg/L	Milligrams per liter
NA	No criteria available
PRG	Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or CAL-modified (2002)
µg/L	Micrograms per liter

TABLE 8-11: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES

Basewide Polynuclear Aromatic Hydrocarbon Investigation, 2003

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Polynuclear Aromatic Hydrocarbons (µg/kg)											
2-METHYLNAPHTHALENE	84	57	68	2	0.24J	63	5	100	--	--	NA
ACENAPHTHENE	84	16	19	2	0.28J	10	5	100	0	0	3,700,000
ACENAPHTHYLENE	84	26	31	1	0.19J	5.8 J	5	100	--	--	NA
ANTHRACENE	84	41	49	3	0.22J	19	5	100	0	0	22,000,000
BENZ(A)ANTHRACENE	84	68	81	9	0.2J	84	5	100	--	--	NA
BENZO(A)PYRENE	84	70	83	14	0.41J	**130**	5	**100**	5	1	62
BENZO(B)FLUORANTHENE	84	75	89	14	0.31J	150	5	50	0	0	620
BENZO(G,H,I)PERYLENE	84	73	87	18	0.31J	150	5	50	--	--	NA
BENZO(K)FLUORANTHENE	84	62	74	9	0.3J	73	5	100	0	0	380
CHRYSENE	84	72	86	16	0.17J	270	5	50	0	0	3,800
DIBENZ(A,H)ANTHRACENE	84	42	50	5	0.29J	28	5	100	--	--	NA
FLUORANTHENE	84	80	95	15	0.25J	170	5	5.7	0	0	2,300,000
FLUORENE	84	20	24	6	0.22J	77	5	100	0	0	2,700,000
INDENO(1,2,3-CD)PYRENE	84	65	77	13	0.21J	130	5	100	0	0	620
NAPHTHALENE	84	47	56	2	0.29J	32	5	100	0	0	56,000
PHENANTHRENE	84	71	85	8	0.26J	160	5	100	--	--	NA
PYRENE	84	76	90	18	0.34J	150 J	5	100	0	0	2,300,000

TABLE 8-11: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES

Basewide Polynuclear Aromatic Hydrocarbon Investigation, 2003
Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

NOTES:

Bold denotes values exceeding the PRG

J	Estimated value
NA	No PRG available
PRG	Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or Cal-modified (2002)
µg/kg	Micrograms per kilogram

TABLE 8-12: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES

Environmental Baseline Survey

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Volatile Organic Compounds (µg/kg)											
1,1,1-TRICHLOROETHANE	22	0	0	--	--	--	2	14	0	0	1,200,000
1,1,2,2-TETRACHLOROETHANE	19	0	0	--	--	--	5	14	0	0	410
1,1,2-TRICHLOROETHANE	19	0	0	--	--	--	5	14	0	0	730
1,1-DICHLOROETHANE	19	0	0	--	--	--	5	14	0	0	2,800
1,1-DICHLOROETHENE	22	0	0	--	--	--	2	14	0	0	120,000
1,2-DICHLOROETHANE	22	0	0	--	--	--	2	14	0	0	280
1,2-DICHLOROETHENE (TOTAL)	8	0	0	--	--	--	10	12	0	0	43,000
1,2-DICHLOROPROPANE	19	0	0	--	--	--	5	14	0	0	340
2-BUTANONE	22	0	0	--	--	--	10	26	--	--	NA
2-HEXANONE	19	0	0	--	--	--	5	26	--	--	NA
4-METHYL-2-PENTANONE	19	0	0	--	--	--	10	26	--	--	NA
ACETONE	19	2	11	9	5J	12 J	10	52	0	0	1,600,000
BENZENE	22	0	0	--	--	--	2	14	0	0	600
BROMODICHLOROMETHANE	19	0	0	--	--	--	5	14	0	0	820
BROMOFORM	19	0	0	--	--	--	5	14	0	0	62,000
BROMOMETHANE	19	0	0	--	--	--	10	26	0	0	3,900
CARBON DISULFIDE	19	0	0	--	--	--	5	14	0	0	360,000
CARBON TETRACHLORIDE	19	0	0	--	--	--	5	14	0	0	250
CHLOROBENZENE	19	0	0	--	--	--	5	14	0	0	150,000
CHLOROETHANE	19	0	0	--	--	--	10	26	0	0	3,000
CHLOROFORM	19	1	5	5	5.4J	5.4 J	5	14	0	0	940
CHLOROMETHANE	19	0	0	--	--	--	10	26	0	0	1,200
CIS-1,2-DICHLOROETHENE	14	0	0	--	--	--	2	14	0	0	43,000
CIS-1,3-DICHLOROPROPENE	19	0	0	--	--	--	5	14	0	0	780
DIBROMOCHLOROMETHANE	19	0	0	--	--	--	5	14	0	0	1,100
ETHYLBENZENE	22	1	5	21	21	21	2	12	0	0	8,900
HEXANE	14	0	0	--	--	--	5	20	0	0	110,000
M,P-XYLENE	3	0	0	--	--	--	2	20	0	0	270,000
METHYLENE CHLORIDE	22	0	0	--	--	--	10	52	0	0	9,100
O-XYLENE	14	1	7	49	49	49	2	10	0	0	270,000
STYRENE	19	0	0	--	--	--	5	14	0	0	1,700,000

TABLE 8-12: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

Environmental Baseline Survey

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Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Volatile Organic Compounds (µg/kg)											
TETRACHLOROETHENE	22	0	0	--	--	--	2	14	0	0	1,500
TOLUENE	22	2	9	7	3J	11 J	2	12	0	0	520,000
TRANS-1,2-DICHLOROETHENE	14	0	0	--	--	--	2	14	0	0	69,000
TRANS-1,3-DICHLOROPROPENE	19	0	0	--	--	--	5	14	0	0	780
TRICHLOROETHENE	22	1	5	5	5J	5 J	2	14	0	0	53
TRICHLOROFLUOROMETHANE	11	0	0	--	--	--	5	14	0	0	390,000
VINYL ACETATE	11	0	0	--	--	--	51	140	0	0	430,000
VINYL CHLORIDE	22	0	0	--	--	--	2	26	0	0	79
XYLENE (TOTAL)	19	2	11	82	63	100	5	12	0	0	270,000
Semivolatile Organic Compounds (µg/kg)											
1,2,4-TRICHLOROBENZENE	18	0	0	--	--	--	340	8,700	0	0	650,000
1,2-DICHLOROBENZENE	18	0	0	--	--	--	340	8,700	0	0	370,000
1,3-DICHLOROBENZENE	18	0	0	--	--	--	340	8,700	0	0	16,000
1,4-DICHLOROBENZENE	18	0	0	--	--	--	340	**8,700**	0	1	3,400
2,2'-OXYBIS(1-CHLOROPROPANE)	15	0	0	--	--	--	340	8,700	--	--	NA
2,4,5-TRICHLOROPHENOL	18	0	0	--	--	--	820	43,000	0	0	6,100,000
2,4,6-TRICHLOROPHENOL	18	0	0	--	--	--	340	**8,700**	0	1	6,900
2,4-DICHLOROPHENOL	18	0	0	--	--	--	340	8,700	0	0	180,000
2,4-DIMETHYLPHENOL	18	0	0	--	--	--	340	8,700	0	0	1,200,000
2,4-DINITROPHENOL	16	0	0	--	--	--	820	43,000	0	0	120,000
2,4-DINITROTOLUENE	18	0	0	--	--	--	340	8,700	0	0	120,000
2,6-DINITROTOLUENE	18	0	0	--	--	--	340	8,700	0	0	61,000
2-CHLORONAPHTHALENE	18	0	0	--	--	--	340	8,700	--	--	NA
2-CHLOROPHENOL	18	0	0	--	--	--	340	8,700	0	0	63,000
2-METHYLPHENOL	18	0	0	--	--	--	340	8,700	--	--	NA
2-NITROANILINE	18	0	0	--	--	--	820	**43,000**	0	6	1,700
2-NITROPHENOL	18	0	0	--	--	--	340	43,000	--	--	NA
3,3'-DICHLOROBENZIDINE	18	0	0	--	--	--	340	**43,000**	0	7	1,100
3-NITROANILINE	18	0	0	--	--	--	820	43,000	--	--	NA
4,6-DINITRO-2-METHYLPHENOL	18	0	0	--	--	--	820	43,000	--	--	NA

TABLE 8-12: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

Environmental Baseline Survey

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Semivolatile Organic Compounds (µg/kg)											
4-BROMOPHENYL-PHENYLETHER	18	1	6	20	20 J	20 J	340	8,700	--	--	NA
4-CHLORO-3-METHYLPHENOL	18	0	0	--	--	--	340	8,700	--	--	NA
4-CHLOROANILINE	18	0	0	--	--	--	340	8,700	0	0	240,000
4-CHLOROPHENYL-PHENYLETHER	18	1	6	29	29 J	29 J	340	8,700	--	--	NA
4-METHYLPHENOL	18	0	0	--	--	--	340	8,700	0	0	310,000
4-NITROANILINE	18	0	0	--	--	--	820	43,000	--	--	NA
4-NITROPHENOL	18	0	0	--	--	--	820	43,000	--	--	NA
ANILINE	7	0	0	--	--	--	340	8,700	0	0	85,000
AZOBENZENE	7	0	0	--	--	--	340	**8,700**	0	1	4,400
BENZIDINE	7	0	0	--	--	--	**340**	**8,700**	0	7	2
BENZYL ALCOHOL	7	0	0	--	--	--	340	8,700	0	0	18,000,000
BIS(2-CHLOROETHOXY)METHANE	18	0	0	--	--	--	340	8,700	--	--	NA
BIS(2-CHLOROETHYL)ETHER	18	0	0	--	--	--	**340**	**8,700**	0	18	210
BIS(2-ETHYLHEXYL)PHTHALATE	18	5	28	63	25 J	96 J	340	8,700	0	0	35,000
BUTYLBENZYLPHTHALATE	18	0	0	--	--	--	340	8,700	0	0	12,000,000
CARBAZOLE	11	1	9	34	34 J	34 J	340	390	0	0	24,000
DI-N-BUTYLPHTHALATE	18	5	28	63	29 J	80 J	340	8,700	--	--	NA
DI-N-OCTYLPHTHALATE	18	0	0	--	--	--	340	8,700	--	--	NA
DIBENZOFURAN	18	1	6	33	33 J	33 J	340	8,700	0	0	290,000
DIETHYLPHTHALATE	18	2	11	500	56 J	940	340	8,700	0	0	49,000,000
DIMETHYLPHTHALATE	18	1	6	73	73 J	73 J	340	8,700	0	0	100,000,000
HEXACHLOROBENZENE	18	0	0	--	--	--	**340**	**8,700**	0	18	300
HEXACHLOROBUTADIENE	18	0	0	--	--	--	340	**8,700**	0	1	6,200
HEXACHLOROCYCLOPENTADIENE	18	0	0	--	--	--	340	8,700	0	0	370,000
HEXACHLOROETHANE	18	0	0	--	--	--	340	8,700	0	0	35,000
ISOPHORONE	18	0	0	--	--	--	340	8,700	0	0	510,000
N-NITROSO-DI-N-PROPYLAMINE	18	0	0	--	--	--	**340**	**8,700**	0	18	69
N-NITROSODIMETHYLAMINE	7	0	0	--	--	--	**340**	**8,700**	0	7	10
N-NITROSODIPHENYLAMINE	18	1	6	49	49 J	49 J	340	8,700	0	0	99,000
NITROBENZENE	18	0	0	--	--	--	340	8,700	0	0	20,000
PENTACHLOROPHENOL	18	0	0	--	--	--	820	**43,000**	0	2	3,000

TABLE 8-12: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

Environmental Baseline Survey
Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Semivolatile Organic Compounds (µg/kg)											
PHENOL	18	0	0	--	--	--	340	8,700	0	0	37,000,000
PCBs/Pesticides (µg/kg)											
4,4'-DDD	4	0	0	--	--	--	3.5	3.9	0	0	2,400
4,4'-DDE	4	0	0	--	--	--	3.5	3.9	0	0	1,700
4,4'-DDT	4	0	0	--	--	--	3.5	3.9	0	0	1,700
ALDRIN	4	0	0	--	--	--	1.8	2	0	0	29
ALPHA-BHC	4	0	0	--	--	--	1.8	2	--	--	NA
ALPHA-CHLORDANE	4	0	0	--	--	--	1.8	2	0	0	1,600
AROCLOR-1016	4	0	0	--	--	--	35	39	0	0	3,900
AROCLOR-1221	4	0	0	--	--	--	71	80	0	0	220
AROCLOR-1232	4	0	0	--	--	--	35	39	0	0	220
AROCLOR-1242	4	0	0	--	--	--	35	39	0	0	220
AROCLOR-1248	4	0	0	--	--	--	35	39	0	0	220
AROCLOR-1254	4	0	0	--	--	--	35	39	0	0	220
AROCLOR-1260	4	0	0	--	--	--	35	39	0	0	220
BETA-BHC	4	0	0	--	--	--	1.8	2	--	--	NA
DELTA-BHC	4	0	0	--	--	--	1.8	2	--	--	NA
DIELDRIN	4	0	0	--	--	--	3.5	3.9	0	0	30
ENDOSULFAN I	4	0	0	--	--	--	1.8	2	0	0	370,000
ENDOSULFAN II	4	0	0	--	--	--	3.5	3.9	0	0	370,000
ENDOSULFAN SULFATE	4	0	0	--	--	--	3.5	3.9	--	--	NA
ENDRIN	4	0	0	--	--	--	3.5	3.9	0	0	18,000
ENDRIN ALDEHYDE	4	0	0	--	--	--	3.5	3.9	--	--	NA
ENDRIN KETONE	4	0	0	--	--	--	3.5	3.9	--	--	NA
GAMMA-BHC (LINDANE)	4	0	0	--	--	--	1.8	2	--	--	NA
GAMMA-CHLORDANE	4	0	0	--	--	--	1.8	2	0	0	1,600
HEPTACHLOR	4	0	0	--	--	--	1.8	2	0	0	110
HEPTACHLOR EPOXIDE	4	0	0	--	--	--	1.8	2	0	0	53
METHOXYCHLOR	4	0	0	--	--	--	18	20	0	0	310,000
TOXAPHENE	4	0	0	--	--	--	180	200	0	0	440

TABLE 8-12: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

Environmental Baseline Survey

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Total Petroleum Hydrocarbons (mg/kg)											
DIESEL RANGE ORGANICS	36	8	22	22	2	62	1	50	--	--	NA
GASOLINE RANGE ORGANICS	36	2	6	10	2.1	18 J	0.5	50	--	--	NA
MOTOR OIL RANGE ORGANICS	35	14	40	360	22J	2,600	21	29	--	--	NA
Metals (mg/kg)											
ALUMINUM	14	14	100	7,310	3,410	19,700	0	0	0	0	76,000
ANTIMONY	17	2	12	5.4	0.79J	10 J	0.69	25	0	0	31.0
ARSENIC	14	11	79	**4.6**	**1.2**	**20 J**	**0.84**	**1.2**	11	3	0.39
BARIUM	14	14	100	83.0	18.1	443	0	0	0	0	5,400
BERYLLIUM	17	12	71	0.61	0.17J	1.9	0.14	25	0	0	150
CADMIUM	17	6	35	0.29	0.07	0.52	0.06	25	0	0	37.0
CALCIUM	14	14	100	3,910	341	16,400	0	0	--	--	NA
CHROMIUM	17	16	94	41.3	11.3J	**291**	25	25	1	0	210
COBALT	14	14	100	8.5	3.4	26.2	0	0	0	0	900
COPPER	17	15	88	32.5	6.3J	148 J	25	25	0	0	3,100
IRON	14	14	100	14,700	6,080J	**46,800 J**	0	0	2	0	23,000
LEAD	17	14	82	9.5	1.4J	30.9	25	25	0	0	150
MAGNESIUM	14	14	100	3,470	1,760	6,550	0	0	--	--	NA
MANGANESE	14	14	100	271	71.8	1,190 J	0	0	0	0	1,800
MERCURY	17	2	12	0.59	0.22	0.96	0.05	**25**	0	3	23.0
MOLYBDENUM	14	2	14	3.1	2.8	3.3	1.5	2.9	0	0	390
NICKEL	17	17	100	28.3	4.3	71	0	0	0	0	1,600
POTASSIUM	14	14	100	663	471	1,030	0	0	--	--	NA
SELENIUM	14	0	0	--	--	--	0.53	3	0	0	390
SILVER	17	1	6	1.4	1.4	1.4	0.18	25	0	0	390
SODIUM	14	14	100	446	116	1,150	0	0	--	--	NA
THALLIUM	14	8	57	1.7	0.9	2.6	0.1	3.3	0	0	5.2
VANADIUM	14	14	100	32.7	14.6	96.6	0	0	0	0	550
ZINC	17	17	100	41.6	16.4	167 J	0	0	0	0	23,000

TABLE 8-12: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES

Environmental Baseline Survey
Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

NOTES:

Bold denotes values exceeding the PRG

–	Not detected
BHC	Benzene Hexachloride
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethene
DDT	Dichlorodiphenyltrichloroethane
J	Estimated value
mg/kg	Milligrams per kilogram
NA	No PRG available
PCB	Polychlorinated biphenyl
PRG	Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or Cal-modified (2002)
µg/kg	Micrograms per kilogram

TABLE 8-13: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Environmental Baseline Survey

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Semivolatile Organic Compounds (µg/L)												
1,2,4-TRICHLOROBENZENE	1	0	0	--	--	--	10	10	0	0	190	5
1,2-DICHLOROBENZENE	1	0	0	--	--	--	10	10	0	0	370	600
1,3-DICHLOROBENZENE	1	0	0	--	--	--	**10**	**10**	0	1	6	NA
1,4-DICHLOROBENZENE	1	0	0	--	--	--	**10**	**10**	0	1	0.5	5
2,2'-OXYBIS(1-CHLOROPROPANE)	1	0	0	--	--	--	10	10	--	--	NA	NA
2,4,5-TRICHLOROPHENOL	1	0	0	--	--	--	25	25	0	0	3,600	50
2,4,6-TRICHLOROPHENOL	1	0	0	--	--	--	**10**	**10**	0	1	1	NA
2,4-DICHLOROPHENOL	1	0	0	--	--	--	10	10	0	0	110	NA
2,4-DIMETHYLPHENOL	1	0	0	--	--	--	10	10	0	0	730	NA
2,4-DINITROPHENOL	1	0	0	--	--	--	25	25	0	0	73	NA
2,4-DINITROTOLUENE	1	0	0	--	--	--	10	10	0	0	73	NA
2,6-DINITROTOLUENE	1	0	0	--	--	--	10	10	0	0	36	NA
2-CHLORONAPHTHALENE	1	0	0	--	--	--	10	10	--	--	NA	NA
2-CHLOROPHENOL	1	0	0	--	--	--	10	10	0	0	30	NA
2-METHYLNAPHTHALENE	1	0	0	--	--	--	10	10	--	--	NA	NA
2-METHYLPHENOL	1	0	0	--	--	--	10	10	0	0	1,800	NA
2-NITROANILINE	1	0	0	--	--	--	**25**	**25**	0	1	1	NA
2-NITROPHENOL	1	0	0	--	--	--	10	10	--	--	NA	NA
3,3'-DICHLOROBENZIDINE	1	0	0	--	--	--	**10**	**10**	0	1	0.2	NA
3-NITROANILINE	1	0	0	--	--	--	25	25	--	--	NA	NA
4,6-DINITRO-2-METHYLPHENOL	1	0	0	--	--	--	25	25	--	--	NA	NA
4-BROMOPHENYL-PHENYLETHER	1	0	0	--	--	--	10	10	--	--	NA	NA
4-CHLORO-3-METHYLPHENOL	1	0	0	--	--	--	10	10	--	--	NA	NA
4-CHLOROANILINE	1	0	0	--	--	--	10	10	0	0	150	NA
4-CHLOROPHENYL-PHENYLETHER	1	0	0	--	--	--	10	10	--	--	NA	NA
4-METHYLPHENOL	1	0	0	--	--	--	10	10	0	0	180	NA
4-NITROANILINE	1	0	0	--	--	--	25	25	--	--	NA	NA
4-NITROPHENOL	1	0	0	--	--	--	25	25	--	--	NA	NA
ACENAPHTHENE	1	0	0	--	--	--	10	10	0	0	370	NA
ACENAPHTHYLENE	1	0	0	--	--	--	10	10	--	--	NA	NA
ANTHRACENE	1	0	0	--	--	--	10	10	0	0	1,800	NA

TABLE 8-13: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Environmental Baseline Survey

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Semivolatile Organic Compounds (µg/L)												
BENZO(A)ANTHRACENE	1	0	0	--	--	--	**10**	**10**	0	1	0.09	0.1
BENZO(A)PYRENE	1	0	0	--	--	--	**10**	**10**	0	1	0.009	0.2
BENZO(B)FLUORANTHENE	1	0	0	--	--	--	**10**	**10**	0	1	0.09	NA
BENZO(G,H,I)PERYLENE	1	0	0	--	--	--	10	10	--	--	NA	NA
BENZO(K)FLUORANTHENE	1	0	0	--	--	--	**10**	**10**	0	1	0.06	NA
BIS(2-CHLOROETHOXY)METHANE	1	0	0	--	--	--	10	10	--	--	NA	NA
BIS(2-CHLOROETHYL)ETHER	1	0	0	--	--	--	**10**	**10**	0	1	0.01	NA
BIS(2-ETHYLHEXYL)PHTHALATE	1	0	0	--	--	--	**10**	**10**	0	1	5	NA
BUTYLBENZYLPHTHALATE	1	0	0	--	--	--	10	10	0	0	7,300	NA
CARBAZOLE	1	0	0	--	--	--	**10**	**10**	0	1	3	NA
CHRYSENE	1	0	0	--	--	--	**10**	**10**	0	1	0.6	NA
DI-N-BUTYLPHTHALATE	1	0	0	--	--	--	10	10	--	--	NA	NA
DI-N-OCTYLPHTHALATE	1	0	0	--	--	--	10	10	--	--	NA	NA
DIBENZO(A,H)ANTHRACENE	1	0	0	--	--	--	**10**	**10**	0	1	0.009	NA
DIBENZOFURAN	1	0	0	--	--	--	10	10	0	0	24	NA
DIETHYLPHTHALATE	1	0	0	--	--	--	10	10	0	0	29,000	NA
DIMETHYLPHTHALATE	1	0	0	--	--	--	10	10	0	0	360,000	NA
FLUORANTHENE	1	0	0	--	--	--	10	10	0	0	1,500	NA
FLUORENE	1	0	0	--	--	--	10	10	0	0	240	NA
HEXACHLOROBENZENE	1	0	0	--	--	--	**10**	**10**	0	1	0.04	1
HEXACHLOROBUTADIENE	1	0	0	--	--	--	**10**	**10**	0	1	0.9	NA
HEXACHLOROCYCLOPENTADIENE	1	0	0	--	--	--	10	10	0	0	220	NA
HEXACHLOROETHANE	1	0	0	--	--	--	**10**	**10**	0	1	5	NA
INDENO(1,2,3-CD)PYRENE	1	0	0	--	--	--	**10**	**10**	0	1	0.09	NA
ISOPHORONE	1	0	0	--	--	--	10	10	0	0	71	NA
N-NITROSO-DI-N-PROPYLAMINE	1	0	0	--	--	--	**10**	**10**	0	1	0.01	NA
N-NITROSODIPHENYLAMINE	1	0	0	--	--	--	10	10	0	0	14	NA
NAPHTHALENE	1	0	0	--	--	--	**10**	**10**	0	1	6	NA
NITROBENZENE	1	0	0	--	--	--	**10**	**10**	0	1	3	NA
PENTACHLOROPHENOL	1	0	0	--	--	--	**25**	**25**	0	1	0.6	1
PHENANTHRENE	1	0	0	--	--	--	10	10	--	--	NA	NA

TABLE 8-13: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Environmental Baseline Survey
Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Semivolatile Organic Compounds (µg/L)												
PHENOL	1	0	0	--	--	--	10	10	0	0	22,000	NA
PYRENE	1	1	100	3	3J	3J	0	0	0	0	180	NA
Total Petroleum Hydrocarbons (mg/L)												
DIESEL RANGE ORGANICS	1	0	0	--	--	--	0.1	0.1	--	--	NA	NA
GASOLINE RANGE ORGANICS	1	0	0	--	--	--	0.05	0.05	--	--	NA	NA
MOTOR OIL RANGE ORGANICS	1	0	0	--	--	--	0.2	0.2	--	--	NA	NA

TABLE 8-13: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

Environmental Baseline Survey

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

NOTES:

Bold denotes values exceeding the PRG

--	Not detected
J	Estimated value
MCL	Maximum Contaminant Level
mg/L	Milligrams per liter
NA	No criteria available
PRG	Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or Cal-modified (2002)
µg/L	Micrograms per liter

TABLE 8-14: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES

TPH Investigations

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Volatile Organic Compounds (ug/kg)											
1,1,1-TRICHLOROETHANE	9	0	0	--	--	--	10	14	0	0	1,200,000
1,1,2,2-TETRACHLOROETHANE	9	0	0	--	--	--	10	14	0	0	410
1,1,2-TRICHLOROETHANE	9	0	0	--	--	--	10	14	0	0	730
1,1-DICHLOROETHANE	9	0	0	--	--	--	10	14	0	0	2,800
1,1-DICHLOROETHENE	9	0	0	--	--	--	10	14	0	0	120,000
1,2-DICHLOROETHANE	9	0	0	--	--	--	10	14	0	0	280
1,2-DICHLOROETHENE (TOTAL)	9	0	0	--	--	--	10	14	0	0	43,000
1,2-DICHLOROPROPANE	9	0	0	--	--	--	10	14	0	0	340
2-BUTANONE	9	0	0	--	--	--	2	32	--	--	NA
2-HEXANONE	9	0	0	--	--	--	10	14	--	--	NA
4-METHYL-2-PENTANONE	9	1	11	160	160	160	10	12	--	--	NA
ACETONE	9	0	0	--	--	--	11	14	0	0	1,600,000
BENZENE	29	2	7	330	30	**620**	0	**12,000**	1	2	600
BROMODICHLOROMETHANE	9	0	0	--	--	--	10	14	0	0	820
BROMOFORM	9	0	0	--	--	--	10	14	0	0	62,000
BROMOMETHANE	9	0	0	--	--	--	10	14	0	0	3,900
CARBON DISULFIDE	9	1	11	2	2J	2 J	11	14	0	0	360,000
CARBON TETRACHLORIDE	9	0	0	--	--	--	10	14	0	0	250
CHLOROBENZENE	9	0	0	--	--	--	10	14	0	0	150,000
CHLOROETHANE	9	0	0	--	--	--	10	14	0	0	3,000
CHLOROFORM	9	0	0	--	--	--	10	14	0	0	940
CHLOROMETHANE	9	0	0	--	--	--	10	14	0	0	1,200
CIS-1,3-DICHLOROPROPENE	9	0	0	--	--	--	10	14	0	0	780
DIBROMOCHLOROMETHANE	9	0	0	--	--	--	10	14	0	0	1,100
ETHYLBENZENE	29	3	10	360	130	700	0	**12,000**	0	2	8,900
METHYL-T-BUTYL ETHER	13	0	0	--	--	--	27	620	0	0	17,000
METHYLENE CHLORIDE	9	0	0	--	--	--	10	14	0	0	9,100
STYRENE	9	0	0	--	--	--	10	14	0	0	1,700,000
TETRACHLOROETHENE	9	0	0	--	--	--	10	14	0	0	1,500
TOLUENE	29	1	3	10	10	10	0	12,000	0	0	520,000
TRANS-1,3-DICHLOROPROPENE	9	0	0	--	--	--	10	14	0	0	780

TABLE 8-14: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

TPH Investigations

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Volatile Organic Compounds (ug/kg)											
TRICHLOROETHENE	9	0	0	--	--	--	10	14	0	0	53
VINYL CHLORIDE	9	0	0	--	--	--	10	14	0	0	79
XYLENE (TOTAL)	29	4	14	110	2J	390	0	12,000	0	0	270,000
Semivolatile Organic Compounds (µg/kg)											
1,2,4-TRICHLOROBENZENE	9	0	0	--	--	--	36	14,000	0	0	650,000
1,2-DICHLOROBENZENE	9	0	0	--	--	--	17	6,700	0	0	370,000
1,3-DICHLOROBENZENE	9	0	0	--	--	--	17	6,700	0	0	16,000
1,4-DICHLOROBENZENE	9	0	0	--	--	--	17	**6,700**	0	1	3,400
2,2'-OXYBIS(1-CHLOROPROPANE)	9	0	0	--	--	--	36	14,000	--	--	NA
2,4,5-TRICHLOROPHENOL	9	0	0	--	--	--	86	33,000	0	0	6,100,000
2,4,6-TRICHLOROPHENOL	9	0	0	--	--	--	36	**14,000**	0	1	6,900
2,4-DICHLOROPHENOL	9	0	0	--	--	--	36	14,000	0	0	180,000
2,4-DIMETHYLPHENOL	9	0	0	--	--	--	36	14,000	0	0	1,200,000
2,4-DINITROPHENOL	8	0	0	--	--	--	86	33,000	0	0	120,000
2,4-DINITROTOLUENE	9	0	0	--	--	--	36	14,000	0	0	120,000
2,6-DINITROTOLUENE	9	0	0	--	--	--	36	14,000	0	0	61,000
2-CHLORONAPHTHALENE	9	0	0	--	--	--	36	14,000	--	--	NA
2-CHLOROPHENOL	9	0	0	--	--	--	36	14,000	0	0	63,000
2-METHYLPHENOL	9	0	0	--	--	--	36	14,000	--	--	NA
2-NITROANILINE	9	0	0	--	--	--	86	**33,000**	0	2	1,700
2-NITROPHENOL	9	0	0	--	--	--	36	14,000	--	--	NA
3,3'-DICHLOROBENZIDINE	9	0	0	--	--	--	36	**14,000**	0	2	1,100
3-NITROANILINE	9	0	0	--	--	--	86	33,000	--	--	NA
4,6-DINITRO-2-METHYLPHENOL	9	0	0	--	--	--	86	33,000	--	--	NA
4-BROMOPHENYL-PHENYLETHER	9	0	0	--	--	--	36	14,000	--	--	NA
4-CHLORO-3-METHYLPHENOL	9	0	0	--	--	--	36	14,000	--	--	NA
4-CHLOROANILINE	9	0	0	--	--	--	36	14,000	0	0	240,000
4-CHLOROPHENYL-PHENYLETHER	9	0	0	--	--	--	36	14,000	--	--	NA
4-METHYLPHENOL	9	0	0	--	--	--	36	14,000	0	0	310,000
4-NITROANILINE	9	0	0	--	--	--	86	33,000	--	--	NA

TABLE 8-14: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

TPH Investigations

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Semivolatile Organic Compounds (ug/kg)											
4-NITROPHENOL	9	0	0	--	--	--	86	33,000	--	--	NA
BIS(2-CHLOROETHOXY)METHANE	9	0	0	--	--	--	36	14,000	--	--	NA
BIS(2-CHLOROETHYL)ETHER	9	0	0	--	--	--	36	**14,000**	0	3	210
BIS(2-ETHYLHEXYL)PHTHALATE	9	0	0	--	--	--	14	5,400	0	0	35,000
BUTYLBENZYLPHTHALATE	9	0	0	--	--	--	6	14,000	0	0	12,000,000
CARBAZOLE	9	6	67	3,600	10 J	20,000	36	330	0	0	24,000
DI-N-BUTYLPHTHALATE	9	0	0	--	--	--	36	14,000	--	--	NA
DI-N-OCTYLPHTHALATE	9	0	0	--	--	--	36	14,000	--	--	NA
DIBENZOFURAN	9	4	44	1,500	18 J	3,900 J	36	330	0	0	290,000
DIETHYLPHTHALATE	9	0	0	--	--	--	36	14,000	0	0	49,000,000
DIMETHYLPHTHALATE	9	0	0	--	--	--	36	14,000	0	0	100,000,000
HEXACHLOROBENZENE	9	0	0	--	--	--	36	**14,000**	0	3	300
HEXACHLOROBUTADIENE	9	0	0	--	--	--	36	**14,000**	0	1	6,200
HEXACHLOROCYCLOPENTADIENE	9	0	0	--	--	--	36	14,000	0	0	370,000
HEXACHLOROETHANE	9	0	0	--	--	--	36	14,000	0	0	35,000
ISOPHORONE	9	0	0	--	--	--	36	14,000	0	0	510,000
N-NITROSO-DI-N-PROPYLAMINE	9	0	0	--	--	--	36	**14,000**	0	6	69
N-NITROSODIPHENYLAMINE	9	0	0	--	--	--	36	14,000	0	0	99,000
NITROBENZENE	9	0	0	--	--	--	36	14,000	0	0	20,000
PENTACHLOROPHENOL	9	0	0	--	--	--	86	**33,000**	0	2	3,000
PHENOL	9	0	0	--	--	--	36	14,000	0	0	37,000,000
Total Petroleum Hydrocarbons (mg/kg)											
DIESEL RANGE ORGANICS	29	6	21	120	6.4	430	1	260	--	--	NA
GASOLINE RANGE ORGANICS	29	5	17	210	4.4	490	0	200	--	--	NA
JET FUEL	16	7	44	77	2.5	410	1	40	--	--	NA
JP5 RANGE ORGANICS	9	0	0	--	--	--	11	260	--	--	NA
MOTOR OIL RANGE ORGANICS	23	12	52	740	22	6,900 J	10	400	--	--	NA
Metals (mg/kg)											
ALUMINUM	9	8	89	6,540	4,260	8,170	8,810	8,810	0	0	76,000

TABLE 8-14: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

TPH Investigations
Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Metals (mg/kg)											
ANTIMONY	9	0	0	--	--	--	0.4	0.55	0	0	31.0
ARSENIC	9	8	89	**2.7**	**2.1J**	**3.9**	**3.7**	**3.7**	8	1	0.39
BARIUM	9	8	89	57.0	36.6J	91.1	91.6	91.6	0	0	5,400
BERYLLIUM	9	0	0	--	--	--	0.024	0.05	0	0	150
CADMIUM	9	0	0	--	--	--	0.042	0.058	0	0	37.0
CALCIUM	9	8	89	2,810	1,710	3,900	3,460	3,460	--	--	NA
CHROMIUM	9	8	89	36.7	24.8	56.2	49.2	49.2	0	0	210
COBALT	9	8	89	7.8	5.3J	11.2	11	11	0	0	900
COPPER	9	8	89	10.8	5.8J	13.6 J	12.7	12.7	0	0	3,100
IRON	9	8	89	15,100	8,820	20,900	16,500	16,500	0	0	23,000
LEAD	18	12	67	29.0	4.9J	94.1 J	0	7.4	0	0	150
MAGNESIUM	9	8	89	3,680	2,290	6,020	5,310	5,310	--	--	NA
MANGANESE	9	8	89	389	97	1,690 J	275	275	0	0	1,800
MERCURY	9	1	11	0.16	0.16	0.16	0.1	0.64	0	0	23.0
MOLYBDENUM	9	0	0	--	--	--	0.11	0.25	0	0	390
NICKEL	9	8	89	36.8	25.9	66.6	63.2	63.2	0	0	1,600
POTASSIUM	9	8	89	715	586J	829 J	1,090	1,090	--	--	NA
SELENIUM	9	1	11	0.62	0.62J	0.62 J	0.33	0.61	0	0	390
SILVER	9	0	0	--	--	--	0.056	0.1	0	0	390
SODIUM	9	1	11	757	757J	757 J	25.8	376	--	--	NA
THALLIUM	9	0	0	--	--	--	0.29	1.2	0	0	5.2
VANADIUM	9	8	89	26.8	19.6J	31.5	35.3	35.3	0	0	550
ZINC	9	8	89	30.0	18.8	45	36.7	36.7	0	0	23,000

TABLE 8-14 SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES

TPH Investigations

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

NOTES:

Bold denotes values exceeding the PRG

--	Not detected
J	Estimated value
mg/kg	Milligrams per kilogram
NA	No PRG available
PRG	Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or Cal-modified (2002)
µg/kg	Micrograms per kilogram

TABLE 8-15: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

TPH Investigations

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (ug/L)												
1,1,1,2-TETRACHLOROETHANE	1	0	0	--	--	--	**5**	**5**	0	1	0.4	NA
1,1,1-TRICHLOROETHANE	8	3	38	7	0.8	16	1	5	0	0	3,200	200
1,1,2,2-TETRACHLOROETHANE	6	0	0	--	--	--	**1**	**5**	0	6	0.06	1
1,1,2-TRICHLOROETHANE	6	0	0	--	--	--	**1**	**5**	0	6	0.2	5
1,1-DICHLOROETHANE	13	9	69	**31**	1.4	**176**	1	**5**	8	1	2	5
1,1-DICHLOROETHENE	6	0	0	--	--	--	1	5	0	0	340	6
1,1-DICHLOROPROPENE	1	0	0	--	--	--	5	5	--	--	NA	NA
1,2,3-TRICHLOROBENZENE	1	0	0	--	--	--	5	5	--	--	NA	NA
1,2,3-TRICHLOROPROPANE	1	0	0	--	--	--	**5**	**5**	0	1	0.006	NA
1,2,4-TRICHLOROBENZENE	1	0	0	--	--	--	5	5	0	0	190	5
1,2,4-TRIMETHYLBENZENE	6	0	0	--	--	--	1	5	0	0	12	NA
1,2-DIBROMO-3-CHLOROPROPANE	1	0	0	--	--	--	**5**	**5**	0	1	0.002	0.2
1,2-DICHLOROBENZENE	1	0	0	--	--	--	5	5	0	0	370	600
1,2-DICHLOROETHANE	9	4	44	**3**	**0.6**	**11**	**1**	**5**	4	5	0.1	0.5
1,2-DICHLOROPROPANE	9	3	33	**9**	**3.8**	**18**	**1**	**5**	3	6	0.2	5
1,3,5-TRIMETHYLBENZENE	6	0	0	--	--	--	1	5	0	0	12	NA
1,3-DICHLOROBENZENE	1	0	0	--	--	--	5	5	0	0	6	NA
1,3-DICHLOROPROPANE	1	0	0	--	--	--	5	5	--	--	NA	NA
1,4-DICHLOROBENZENE	1	0	0	--	--	--	**5**	**5**	0	1	0.5	5
2,2-DICHLOROPROPANE	1	0	0	--	--	--	5	5	--	--	NA	NA
2-BUTANONE	1	0	0	--	--	--	100	100	--	--	NA	NA
2-CHLOROTOLUENE	1	0	0	--	--	--	5	5	--	--	NA	NA
4-CHLOROTOLUENE	1	0	0	--	--	--	5	5	--	--	NA	NA
4-METHYL-2-PENTANONE	1	0	0	--	--	--	50	50	--	--	NA	NA
ACETONE	1	1	100	43	43J	43J	0	0	0	0	610	NA
BENZENE	33	0	0	--	--	--	**0.5**	**10**	0	33	0.3	1
BROMOBENZENE	1	0	0	--	--	--	5	5	0	0	20	NA
BROMOCHLOROMETHANE	1	0	0	--	--	--	5	5	--	--	NA	NA
BROMODICHLOROMETHANE	6	0	0	--	--	--	**1**	**5**	0	6	0.2	80
BROMOFORM	6	0	0	--	--	--	1	5	0	0	9	80
BROMOMETHANE	6	0	0	--	--	--	5	5	0	0	9	NA

TABLE 8-15: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

TPH Investigations

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (ug/L)												
CARBON DISULFIDE	1	0	0	--	--	--	5	5	0	0	1,000	NA
CARBON TETRACHLORIDE	6	0	0	--	--	--	**1**	**5**	0	6	0.2	0.5
CHLOROBENZENE	6	0	0	--	--	--	1	5	0	0	110	70
CHLOROETHANE	6	0	0	--	--	--	**5**	**5**	0	6	5	NA
CHLOROFORM	6	0	0	--	--	--	**1**	**5**	0	6	0.5	80
CHLOROMETHANE	6	0	0	--	--	--	**5**	**5**	0	6	2	NA
CIS-1,2-DICHLOROETHENE	8	2	25	4	0.97	6.5	1	5	0	0	61	6
CIS-1,3-DICHLOROPROPENE	6	0	0	--	--	--	**1**	**5**	0	6	0.4	0.5
DIBROMOCHLOROMETHANE	6	0	0	--	--	--	**1**	**5**	0	6	0.1	80
DIBROMOMETHANE	1	0	0	--	--	--	5	5	--	--	NA	NA
DICHLORODIFLUOROMETHANE	1	0	0	--	--	--	5	5	0	0	390	NA
ETHYLBENZENE	33	4	12	**81**	0.7J	**278.8**	0.5	**10**	3	3	3	300
ETHYLENE DIBROMIDE	1	0	0	--	--	--	5	5	--	--	NA	0.05
HEXACHLOROBUTADIENE	1	0	0	--	--	--	**5**	**5**	0	1	0.9	NA
ISOPROPYLBENZENE	1	0	0	--	--	--	5	5	--	--	NA	NA
M,P-XYLENE	4	0	0	--	--	--	1	1	0	0	210	NA
METHYL-T-BUTYL ETHER	19	0	0	--	--	--	2	**10**	0	1	6	13
METHYLENE CHLORIDE	6	1	17	4	4J	4J	2	**5**	0	1	4	NA
N-BUTYLBENZENE	1	0	0	--	--	--	5	5	--	--	NA	NA
N-PROPYLBENZENE	1	0	0	--	--	--	5	5	0	0	240	NA
NAPHTHALENE	1	0	0	--	--	--	5	5	0	0	6	NA
O-XYLENE	4	0	0	--	--	--	1	1	0	0	210	NA
P-ISOPROPYLTOLUENE	1	0	0	--	--	--	5	5	--	--	NA	NA
SEC-BUTYLBENZENE	1	0	0	--	--	--	5	5	0	0	240	NA
STYRENE	6	0	0	--	--	--	1	5	0	0	1,600	100
TERT-BUTYLBENZENE	1	0	0	--	--	--	5	5	0	0	240	NA
TETRACHLOROETHENE	6	1	17	0.5	0.5J	0.5J	**1**	**5**	0	5	0.7	5
TOLUENE	33	5	15	4	0.8J	10.3	0.5	10	0	0	720	150
TRANS-1,2-DICHLOROETHENE	7	1	14	2	2.1	2.1	1	5	0	0	120	10
TRANS-1,3-DICHLOROPROPENE	6	0	0	--	--	--	**1**	**5**	0	6	0.4	0.5
TRICHLOROETHENE	9	4	44	**4**	**0.7J**	**12**	**1**	**5**	4	5	0.03	5

TABLE 8-15: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

TPH Investigations

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Tap Water PRG	MCL
Volatile Organic Compounds (ug/L)												
TRICHLOROFLUOROMETHANE	1	0	0	--	--	--	5	5	--	--	NA	NA
VINYL CHLORIDE	6	0	0	--	--	--	**0.5**	**5**	0	6	0.02	0.5
XYLENE (TOTAL)	29	5	17	12	1.7	21.8	0.5	10	0	0	210	1,800
Total Petroleum Hydrocarbons (mg/L)												
DIESEL RANGE ORGANICS	30	16	53	160	0.16	2,029	0.05	0.5	--	--	NA	NA
GASOLINE RANGE ORGANICS	29	7	24	250	0.067	1,332	0.05	0.5	--	--	NA	NA
JET FUEL	15	3	20	0.09	0.062	0.11	0.05	0.67	--	--	NA	NA
JP5 RANGE ORGANICS	1	1	100	0.1	0.1	0.1	0	0	--	--	NA	NA
MOTOR OIL RANGE ORGANICS	11	0	0	--	--	--	0.25	0.5	--	--	NA	NA
Metals (µg/L)												
Filtered												
LEAD	2	1	50	34.0	34	34	3	3	--	--	NA	15.0

TABLE 8-15: SITE 21 STATISTICAL SUMMARY OF GROUNDWATER ANALYSES

TPH Investigations

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

NOTES:

Bold denotes values exceeding the PRG

--	Not detected
J	Estimated value
MCL	Maximum Contaminant Level
mg/L	Milligrams per liter
NA	*No criteria available*
PRG	Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or Cal-modified (2002)
µg/L	Micrograms per liter

TABLE 8-16: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES

All Soil Investigations

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Volatile Organic Compounds (ug/kg)											
1,1,1-TRICHLOROETHANE	49	0	0	--	--	--	2	14	0	0	1,200,000
1,1,2,2-TETRACHLOROETHANE	46	0	0	--	--	--	5	14	0	0	410
1,1,2-TRICHLOROETHANE	46	0	0	--	--	--	5	14	0	0	730
1,1-DICHLOROETHANE	46	0	0	--	--	--	5	14	0	0	2,800
1,1-DICHLOROETHENE	49	0	0	--	--	--	2	14	0	0	120,000
1,2-DICHLOROETHANE	49	0	0	--	--	--	2	14	0	0	280
1,2-DICHLOROETHENE (TOTAL)	26	0	0	--	--	--	10	14	0	0	43,000
1,2-DICHLOROPROPANE	46	0	0	--	--	--	5	14	0	0	340
2-BUTANONE	49	0	0	--	--	--	2	32	--	--	NA
2-HEXANONE	46	0	0	--	--	--	5	26	--	--	NA
4-METHYL-2-PENTANONE	46	1	2	160	160	160	10	26	--	--	NA
ACETONE	46	2	4	9	5J	12 J	10	120	0	0	1,600,000
BENZENE	69	2	3	330	30	**620**	5.2	**12,000**	1	2	600
BROMODICHLOROMETHANE	46	0	0	--	--	--	5	14	0	0	820
BROMOFORM	46	0	0	--	--	--	5	14	0	0	62,000
BROMOMETHANE	46	0	0	--	--	--	5.2	26	0	0	3,900
CARBON DISULFIDE	46	1	2	2	2J	2 J	5	69	0	0	360,000
CARBON TETRACHLORIDE	46	0	0	--	--	--	5	14	0	0	250
CHLOROBENZENE	46	0	0	--	--	--	5	14	0	0	150,000
CHLOROETHANE	46	0	0	--	--	--	5.2	26	0	0	3,000
CHLOROFORM	46	1	2	5	5.4J	5.4 J	5	14	0	0	940
CHLOROMETHANE	46	0	0	--	--	--	5.2	26	0	0	1,200
CIS-1,2-DICHLOROETHENE	14	0	0	--	--	--	2	14	0	0	43,000
CIS-1,3-DICHLOROPROPENE	46	0	0	--	--	--	5	14	0	0	780
DIBROMOCHLOROMETHANE	46	0	0	--	--	--	5	14	0	0	1,100
ETHYLBENZENE	69	4	6	280	21	700	5.2	**12,000**	0	2	8,900
ETHYLENE DIBROMIDE	9	0	0	--	--	--	0.313	0.472	--	--	NA
HEXANE	14	0	0	--	--	--	5	20	0	0	110,000
M,P-XYLENE	3	0	0	--	--	--	2	20	0	0	270,000
METHYL-T-BUTYL ETHER	13	0	0	--	--	--	27	620	0	0	17,000
METHYLENE CHLORIDE	49	0	0	--	--	--	5.2	52	0	0	9,100

TABLE 8-16: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

All Soil Investigations

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Volatile Organic Compounds (ug/kg)											
O-XYLENE	14	1	7	49	49	49	2	10	0	0	270,000
STYRENE	46	0	0	--	--	--	5	14	0	0	1,700,000
TETRACHLOROETHENE	49	0	0	--	--	--	2	14	0	0	1,500
TOLUENE	69	3	4	8	3J	11 J	5.2	12,000	0	0	520,000
TRANS-1,2-DICHLOROETHENE	23	1	4	10	9.7	9.7	2	14	0	0	69,000
TRANS-1,3-DICHLOROPROPENE	46	0	0	--	--	--	5	14	0	0	780
TRICHLOROETHENE	49	1	2	5	5J	5 J	2	14	0	0	53
TRICHLOROFLUOROMETHANE	11	0	0	--	--	--	5	14	0	0	390,000
VINYL ACETATE	20	0	0	--	--	--	5.2	140	0	0	430,000
VINYL CHLORIDE	49	0	0	--	--	--	2	26	0	0	79
XYLENE (TOTAL)	66	7	11	87	2J	390	5.2	12,000	0	0	270,000
Semivolatile Organic Compounds (µg/kg)											
1,2,4-TRICHLOROBENZENE	48	0	0	--	--	--	36	14,000	0	0	650,000
1,2-DICHLOROBENZENE	48	0	0	--	--	--	17	8,700	0	0	370,000
1,3-DICHLOROBENZENE	48	0	0	--	--	--	17	8,700	0	0	16,000
1,4-DICHLOROBENZENE	48	0	0	--	--	--	17	**8,700**	0	2	3,400
2,2'-OXYBIS(1-CHLOROPROPANE)	45	0	0	--	--	--	36	14,000	--	--	NA
2,4,5-TRICHLOROPHENOL	48	0	0	--	--	--	86	43,000	0	0	6,100,000
2,4,6-TRICHLOROPHENOL	48	0	0	--	--	--	36	**14,000**	0	2	6,900
2,4-DICHLOROPHENOL	48	0	0	--	--	--	36	14,000	0	0	180,000
2,4-DIMETHYLPHENOL	48	0	0	--	--	--	36	14,000	0	0	1,200,000
2,4-DINITROPHENOL	45	0	0	--	--	--	86	43,000	0	0	120,000
2,4-DINITROTOLUENE	48	0	0	--	--	--	36	14,000	0	0	120,000
2,6-DINITROTOLUENE	48	0	0	--	--	--	36	14,000	0	0	61,000
2-CHLORONAPHTHALENE	48	0	0	--	--	--	36	14,000	--	--	NA
2-CHLOROPHENOL	48	0	0	--	--	--	36	14,000	0	0	63,000
2-METHYLPHENOL	48	0	0	--	--	--	36	14,000	--	--	NA
2-NITROANILINE	48	0	0	--	--	--	86	**43,000**	0	9	1,700
2-NITROPHENOL	48	0	0	--	--	--	36	43,000	--	--	NA
3,3'-DICHLOROBENZIDINE	48	0	0	--	--	--	36	**43,000**	0	9	1,100

TABLE 8-16: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

All Soil Investigations

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Semivolatile Organic Compounds (ug/kg)											
3-NITROANILINE	48	0	0	--	--	--	86	43,000	--	--	NA
4,6-DINITRO-2-METHYLPHENOL	48	0	0	--	--	--	86	43,000	--	--	NA
4-BROMOPHENYL-PHENYLETHER	48	1	2	20	20 J	20 J	36	14,000	--	--	NA
4-CHLORO-3-METHYLPHENOL	48	0	0	--	--	--	36	14,000	--	--	NA
4-CHLOROANILINE	48	0	0	--	--	--	36	14,000	0	0	240,000
4-CHLOROPHENYL-PHENYLETHER	48	1	2	29	29 J	29 J	36	14,000	--	--	NA
4-METHYLPHENOL	48	0	0	--	--	--	36	14,000	0	0	310,000
4-NITROANILINE	48	0	0	--	--	--	86	43,000	--	--	NA
4-NITROPHENOL	48	0	0	--	--	--	86	43,000	--	--	NA
ANILINE	7	0	0	--	--	--	340	8,700	0	0	85,000
AZOBENZENE	7	0	0	--	--	--	340	**8,700**	0	1	4,400
BENZIDINE	7	0	0	--	--	--	**340**	**8,700**	0	7	2
BENZOIC ACID	12	0	0	--	--	--	320	1,300	0	0	100,000,000
BENZYL ALCOHOL	19	0	0	--	--	--	150	8,700	0	0	18,000,000
BIS(2-CHLOROETHOXY)METHANE	48	0	0	--	--	--	36	14,000	--	--	NA
BIS(2-CHLOROETHYL)ETHER	48	0	0	--	--	--	36	**14,000**	0	30	210
BIS(2-ETHYLHEXYL)PHTHALATE	48	5	10	63	25 J	96 J	14	8,700	0	0	35,000
BUTYLBENZYLPHTHALATE	48	0	0	--	--	--	6	14,000	0	0	12,000,000
CARBAZOLE	29	7	24	3,100	10 J	20,000	36	1,100	0	0	24,000
DI-N-BUTYLPHTHALATE	48	5	10	63	29 J	80 J	36	14,000	--	--	NA
DI-N-OCTYLPHTHALATE	48	0	0	--	--	--	36	14,000	--	--	NA
DIBENZOFURAN	48	5	10	1,200	18 J	3,900 J	36	8,700	0	0	290,000
DIETHYLPHTHALATE	48	2	4	500	56 J	940	36	14,000	0	0	49,000,000
DIMETHYLPHTHALATE	48	1	2	73	73 J	73 J	36	14,000	0	0	100,000,000
HEXACHLOROBENZENE	48	0	0	--	--	--	36	**14,000**	0	30	300
HEXACHLOROBUTADIENE	48	0	0	--	--	--	36	**14,000**	0	2	6,200
HEXACHLOROCYCLOPENTADIENE	48	0	0	--	--	--	36	14,000	0	0	370,000
HEXACHLOROETHANE	48	0	0	--	--	--	36	14,000	0	0	35,000
ISOPHORONE	48	0	0	--	--	--	36	14,000	0	0	510,000
N-NITROSO-DI-N-PROPYLAMINE	48	0	0	--	--	--	36	**14,000**	0	45	69
N-NITROSODIMETHYLAMINE	7	0	0	--	--	--	**340**	**8,700**	0	7	10

TABLE 8-16: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

All Soil Investigations

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Semivolatile Organic Compounds (ug/kg)											
N-NITROSODIPHENYLAMINE	48	1	2	49	49 J	49 J	36	14,000	0	0	99,000
NITROBENZENE	48	0	0	--	--	--	36	14,000	0	0	20,000
PENTACHLOROPHENOL	48	0	0	--	--	--	86	**43,000**	0	4	3,000
PHENOL	48	0	0	--	--	--	36	14,000	0	0	37,000,000
Polynuclear Aromatic Hydrocarbons (µg/kg)											
2-METHYLNAPHTHALENE	84	57	68	2	0.24 J	63	5	100	--	--	NA
ACENAPHTHENE	84	16	19	2	0.28 J	10	5	100	0	0	3,700,000
ACENAPHTHYLENE	84	26	31	1	0.19 J	5.8 J	5	100	--	--	NA
ANTHRACENE	84	41	49	3	0.22 J	19	5	100	0	0	22,000,000
BENZ(A)ANTHRACENE	84	68	81	9	0.2 J	84	5	100	--	--	NA
BENZO(A)PYRENE	84	70	83	14	0.41 J	**130**	5	**100**	5	1	62
BENZO(B)FLUORANTHENE	84	75	89	14	0.31 J	150	5	50	0	0	620
BENZO(G,H,I)PERYLENE	84	73	87	18	0.31 J	150	5	50	--	--	NA
BENZO(K)FLUORANTHENE	84	62	74	9	0.3 J	73	5	100	0	0	380
CHRYSENE	84	72	86	16	0.17 J	270	5	50	0	0	3,800
DIBENZ(A,H)ANTHRACENE	84	42	50	5	0.29 J	28	5	100	--	--	NA
FLUORANTHENE	84	80	95	15	0.25 J	170	5	5.7	0	0	2,300,000
FLUORENE	84	20	24	6	0.22 J	77	5	100	0	0	2,700,000
INDENO(1,2,3-CD)PYRENE	84	65	77	13	0.21 J	130	5	100	0	0	620
NAPHTHALENE	84	47	56	2	0.29 J	32	5	100	0	0	56,000
PHENANTHRENE	84	71	85	8	0.26 J	160	5	100	--	--	NA
PYRENE	84	76	90	18	0.34 J	150 J	5	100	0	0	2,300,000
PCBs/Pesticides (µg/kg)											
4,4'-DDD	22	1	5	12	12 J	12 J	3.3	10.5	0	0	2,400
4,4'-DDE	22	0	0	--	--	--	3.3	18	0	0	1,700
4,4'-DDT	22	1	5	58	58 J	58 J	3.3	10.5	0	0	1,700
ALDRIN	22	0	0	--	--	--	1.7	9	0	0	29
ALPHA-BHC	22	0	0	--	--	--	1.7	9	--	--	NA
ALPHA-CHLORDANE	22	0	0	--	--	--	1.7	9	0	0	1,600

TABLE 8-16: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

All Soil Investigations
Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
PCBs/Pesticides (ug/kg)											
AROCLOR-1016	22	0	0	--	--	--	33	180	0	0	3,900
AROCLOR-1221	22	0	0	--	--	--	35	**360**	0	1	220
AROCLOR-1232	22	0	0	--	--	--	33	180	0	0	220
AROCLOR-1242	22	0	0	--	--	--	33	180	0	0	220
AROCLOR-1248	22	0	0	--	--	--	33	180	0	0	220
AROCLOR-1254	22	0	0	--	--	--	33	180	0	0	220
AROCLOR-1260	22	1	5	140	140 J	140 J	33	52	0	0	220
BETA-BHC	22	0	0	--	--	--	1.7	9	--	--	NA
DELTA-BHC	22	0	0	--	--	--	1.7	9	--	--	NA
DIELDRIN	22	0	0	--	--	--	3.3	18	0	0	30
ENDOSULFAN I	22	0	0	--	--	--	1.7	9	0	0	370,000
ENDOSULFAN II	22	0	0	--	--	--	3.3	18	0	0	370,000
ENDOSULFAN SULFATE	22	0	0	--	--	--	3.3	18	--	--	NA
ENDRIN	22	0	0	--	--	--	3.3	18	0	0	18,000
ENDRIN ALDEHYDE	10	0	0	--	--	--	3.3	18	--	--	NA
ENDRIN KETONE	22	0	0	--	--	--	3.3	18	--	--	NA
GAMMA-BHC (LINDANE)	22	0	0	--	--	--	1.7	9	--	--	NA
GAMMA-CHLORDANE	22	0	0	--	--	--	1.7	9	0	0	1,600
HEPTACHLOR	22	0	0	--	--	--	1.7	9	0	0	110
HEPTACHLOR EPOXIDE	22	0	0	--	--	--	1.7	9	0	0	53
METHOXYCHLOR	22	0	0	--	--	--	17	90	0	0	310,000
TOXAPHENE	22	0	0	--	--	--	69.5	**900**	0	1	440
Total Petroleum Hydrocarbons (mg/kg)											
DIESEL RANGE ORGANICS	77	14	18	65	2	430	1	260	--	--	NA
GASOLINE RANGE ORGANICS	77	8	10	130	2.1	490	0	200	--	--	NA
JET FUEL	16	7	44	77	2.5	410	1	40	--	--	NA
JP5 RANGE ORGANICS	21	0	0	--	--	--	10	260	--	--	NA
MOTOR OIL RANGE ORGANICS	70	30	43	470	22 J	6,900 J	10	400	--	--	NA

TABLE 8-16: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES (Continued)

All Soil Investigations

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Non-detected Concentration	Maximum Non-detected Concentration	Number of Detections Over PRG	Number of Non-detects Over PRG	Residential PRG
Metals (mg/kg)											
ALUMINUM	44	43	98	8,550	3,410	21,600 J	8,810	8,810	0	0	76,000
ANTIMONY	47	8	17	4.2	0.79 J	10 J	0.4	25	0	0	31.0
ARSENIC	44	38	86	**3.9**	**1.2**	**20 J**	**0.84**	**3.7**	38	6	0.39
BARIUM	44	43	98	71.5	18.1	443	91.6	91.6	0	0	5,400
BERYLLIUM	47	30	64	1.1	0.17 J	2.5	0.024	25	0	0	150
CADMIUM	47	10	21	1.7	0.07	9.5	0.042	25	0	0	37.0
CALCIUM	44	43	98	6,640	341	43,700 J	3,460	3,460	--	--	NA
CHROMIUM	48	46	96	39.8	11.3 J	**291**	25	49.2	1	0	210
COBALT	44	43	98	8.8	2.9 J	26.2	11	11	0	0	900
COPPER	47	44	94	21.9	5.4	148 J	12.7	25	0	0	3,100
IRON	44	43	98	15,600	6,080 J	**46,800 J**	16,500	16,500	6	0	23,000
LEAD	57	46	81	26.5	1.4 J	**416**	0	25	1	0	150
MAGNESIUM	44	43	98	4,220	1,760	11,700 J	5,310	5,310	--	--	NA
MANGANESE	44	43	98	272	71.8	1,690 J	275	275	0	0	1,800
MERCURY	47	6	13	0.76	0.16	2.6	0.05	**25**	0	3	23.0
MOLYBDENUM	32	2	6	3.1	2.8	3.3	0.11	3.3	0	0	390
NICKEL	47	46	98	37.0	4.3	150	63.2	63.2	0	0	1,600
POTASSIUM	44	41	93	895	461	2,900	795	1,090	--	--	NA
SELENIUM	44	1	2	0.62	0.62 J	0.62 J	0.209	3	0	0	390
SILVER	47	6	13	1.6	0.587	5.64	0.056	25	0	0	390
SODIUM	44	36	82	662	88.2 J	2,950	25.8	376	--	--	NA
THALLIUM	44	8	18	1.7	0.9	2.6	0.1	3.3	0	0	5.2
VANADIUM	44	43	98	33.3	14.6	96.6	35.3	35.3	0	0	550
ZINC	47	46	98	42.7	16.1	267	36.7	36.7	0	0	23,000

TABLE 8-16: SITE 21 STATISTICAL SUMMARY OF SOIL ANALYSES

All Soil Investigations

Remedial Investigation Report for CERCLA Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

NOTES:

Bold denotes values exceeding the PRG

--	Not detected
BHC	Benzene Hexachloride
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethene
DDT	Dichlorodiphenyltrichloroethane
J	Estimated value
mg/kg	Milligrams per kilogram
NA	No PRG available
PCB	Polychlorinated biphenyl
PRG	Preliminary Remediation Goal, U.S. Environmental Protection Agency, Region 9 or Cal-modified (2002)
µg/kg	Micrograms per kilogram

TABLE 8-17: SITE 21 STATISTICAL SUMMARY OF SOIL GAS SAMPLING ANALYSES

Remedial Investigation Report for Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Analyte	Number of Samples Analyzed	Number of Detections	Percent of Detections	Average of Detected Concentration	Minimum Detected Concentration	Maximum Detected Concentration	Minimum Detection Limit	Maximum Detection Limit	Number of Detection Limits Over PRG	Region 9 PRG
Volatile Organic Compounds in Soil Gas (µg/m³)										
1,1,1-TRICHLOROETHANE	4	1	25	133.85	133.85	133.85	17.18	70.42	0	2,300
1,1,2,2-TETRACHLOROETHANE	4	0	0	--	--	--	**21.62**	**88.6**	4	0.033
1,1,2-TRICHLOROETHANE	4	0	0	--	--	--	**17.18**	**70.42**	4	0.12
1,1-DICHLOROETHANE	4	0	0	--	--	--	**12.75**	**52.24**	4	1.2*
1,1-DICHLOROETHENE	4	0	0	--	--	--	12.49	51.17	0	210
1,2-DICHLOROBENZENE	4	0	0	--	--	--	18.93	77.6	0	210
1,2-DICHLOROETHANE	4	0	0	--	--	--	**12.75**	**52.24**	4	0.074
1,3-DICHLOROBENZENE	4	0	0	--	--	--	**18.93**	**77.6**	4	3.3
1,4-DICHLOROBENZENE	4	0	0	--	--	--	**18.93**	**77.6**	4	0.31
BENZENE	4	4	100	**68.28**	**41.36**	**90.95**	--	--	0	0.23
CHLOROETHANE	4	0	0	--	--	--	**8.31**	**34.06**	4	2.3
CHLOROMETHANE	4	0	0	--	--	--	**6.5**	**26.65**	4	1.1
CIS-1,2-DICHLOROETHENE	4	0	0	--	--	--	12.49	**51.17**	3	37
ETHYLBENZENE	4	4	100	**211.82**	**169.77**	**243.55**	--	--	0	1.7
M-XYLENE	4	4	100	**927.56**	**811.06**	**1,025.23**	--	--	0	110
O-XYLENE	4	4	100	**226.01**	**214.8**	**236.54**	--	--	0	110
TETRACHLOROETHENE	4	1	25	**31.55**	**31.55**	**31.55**	**84.54**	**88.06**	3	0.67
TOLUENE	4	4	100	**1,048.81**	**564.48**	**1,456.82**	--	--	0	400
TRANS-1,2-DICHLOROETHENE	4	0	0	--	--	--	12.49	51.17	0	73
TRICHLOROETHENE	4	2	50	**87.64**	**82.13**	**93.15**	**66.58**	**67.69**	2	0.017
VINYL CHLORIDE	4	0	0	--	--	--	**8.05**	**32.99**	4	0.11

Notes:

Bolded results exceed PRGs.

--	Not annalyzed
*	PRG is the "Cal-modified PRG"
µg/kg	Micrograms per kilogram
mg/kg	Milligrams per kilogram
NA	Constituent not listed in the PRG index
No PRG Listed	Constituent listed in PRG index, but no PRG indicated
PRG	Preliminary remediation goal
TPH	Total Petroleum Hydrocarbons

TABLE 8-18: SITE 21 SOIL NATURE AND EXTENT EVALUATION SUMMARY

Remedial Investigation Report for Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

ANALYTICAL GROUP / CHEMICAL	EXCEEDS SCREENING LEVELS?	USED BY THE NAVY AT THE SITE?	RISK DRIVER?	BACKGROUND METAL?[1]	RELATED TO SITE ACTIVITY?	DATA GAP?
VOCs						
Benzene	Yes	Yes	No	--	Yes	No
Carbazole	No	No	Yes	--	Yes	No
Metals						
Arsenic	Yes	No	Yes	No	Yes	No
Cadmium	No	No	Yes	Yes	No	No
Chromium	Yes	No	No	Yes	No	No
Copper	No	No	Yes	No	Yes	No
Iron	Yes	No	Yes	No	Yes	No
Lead	Yes	Yes	Yes	No	Yes	No
PAHs						
Benzo(a)pyrene	Yes	No	Yes	--	No	No
Total Petroleum Hydrocarbons						
Diesel	--	Yes	No	--	Yes	No
Gasoline	--	Yes	No	--	Yes	No
Motor Oil	--	Yes	No	--	Yes	No

Notes:

-- Does not apply to these chemicals

1 Based on the background comparison

TABLE 8-19: SITE 21 HHRA SUMMARY FOR SOIL

Remedial Investigation Report for Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

EXPOSURE SCENARIOS			SITE 21[a]	
			Cancer	Non-cancer[b]
Residential				
0-2 feet bgs	RME	Adult	7E-05	2
		Child	5E-05	5
		Total Risk	1E-04	NA
	CTE	Adult	7E-06	0.5
		Child	2E-05	2
		Total Risk	3E-05	NA
0-8 feet bgs	RME	Adult	2E-05	1
		Child	2E-05	3
		Total Risk	4E-05	NA
	CTE	Adult	2E-06	0.3
		Child	6E-06	1
		Total Risk	8E-06	NA
Commercial/Industrial				
0-2 feet bgs	RME	Adult	1E-05	0.3
		Total Risk	1E-05	NA
	CTE	Adult	9E-07	0.1
		Total Risk	9E-07	NA
0-8 feet bgs	RME	Adult	4E-06	0.2
		Total Risk	4E-06	NA
	CTE	Adult	3E-07	0.1
		Total Risk	3E-07	NA
Construction Worker				
0-2 feet bgs	RME	Adult	2E-06	1
		Total Risk	2E-06	NA
	CTE	Adult	1E-07	0.07
		Total Risk	1E-07	NA
0-8 feet bgs	RME	Adult	5E-07	1
		Total Risk	5E-07	NA
	CTE	Adult	4E-08	0.05
		Total Risk	4E-08	NA

Notes:

a	Includes risk from background
b	Non-cancer risk does not include risk from lead
bgs	Below ground surface
CTE	Central tendency exposure
RME	Reasonable maximum exposure
NA	Not applicable

TABLE 8-20: SITE 21 HHRA REASONABLE MAXIMUM EXPOSURE COMMERCIAL/INDUSTRIAL RISK DRIVERS FOR SURFACE SOIL

Remedial Investigation Report for Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Commercial/Industrial Scenario

Receptor: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient for a Child[a,b]				
				Ingestion	Dermal	Produce	Inhalation	Exposure Routes Total	Ingestion	Dermal	Produce	Inhalation	Exposure Routes Total
Surface Soil (0-2 ft bgs)	Soil	Surface Soil/ Particulates	Arsenic	1.E-05	2.E-06	--	--	1.E-05	--	--	--	--	--
				--	--	--	--	--	--	--	--	--	--
			Chemical Total	1.E-05	2.E-06	0.E+00	0.E+00	1.E-05					
		Exposure Point Total						1.E-05					
	Vapors	Vapors from Surface Soil to Outdoor Air	No volatile COPCs	--	--	--	--	--	--	--	--	--	--
				--	--	--	--	--	--	--	--	--	--
			Chemical Total										
		Exposure Point Total											
Medium Total								1.E-05					

Notes:

--	Not applicable or available
a	Based RME assumptions
b	Non-cancer risk does not include risk from lead
COPC	Chemical of potential concern
ft bgs	Feet below ground surface

TABLE 8-21: SITE 21 HHRA REASONABLE MAXIMUM EXPOSURE COMMERCIAL/INDUSTRIAL RISK DRIVERS FOR SUBSURFACE SOIL

Remedial Investigation Report for Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Commercial/Industrial Scenario

Receptor: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient for Child [a,b]				
				Ingestion	Dermal	Produce	Inhalation	Exposure Routes Total	Ingestion	Dermal	Produce	Inhalation	Exposure Routes Total
Subsurface Soil (0-6 ft bgs)	Soil	Surface Soil/ *Particulates*	Arsenic	3.E-06	6.E-07	--	--	1.E-06	--	--	--	--	--
				--	--	--	--	--	--	--	--	--	--
			Chemical Total	3.E-06	6.E-07	0.E+00	0.E+00	1.E-06					
		Exposure Point Total						1.E-06					
	Vapors	Vapors from Surface Soil to Outdoor Air	*No volatile COPCs*	--	--	--	--	--	--	--	--	--	--
				--	--	--	--	--	--	--	--	--	--
			Chemical Total										
		Exposure Point Total											
Medium Total								1.E-06					

Notes:

--	Not applicable or not available
a	Based RME assumptions
b	Non-canncer risk does not include risk from lead
COPC	Chemical of potential concern
ft bgs	Feet below ground surface

TABLE 8-22: SITE 21 HHRA REASONABLE MAXIMUM EXPOSURE RESIDENTIAL RISK DRIVERS FOR SURFACE SOIL
Remedial Investigation Report for Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Residential Scenario

Receptor: Adult/Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient for a Child[a,b]				
				Ingestion	Dermal	Produce	Inhalation	Exposure Routes Total	Ingestion	Dermal	Produce	Inhalation	Exposure Routes Total
Surface Soil (0-2 ft bgs)	Soil	Surface Soil/ Particulates	Arsenic	5.E-05	4.E-06	7.E-05	3.E-08	1.E-04	0.9	0.07	0.3		1
			Cadmium						0.2	0.0007	1		1
			Iron						1	0.003			1
			Chemical Total	5.E-05	4.E-06	7.E-05	3.E-08	1.E-04	2	0.1	2		4
		Exposure Point Total						1.E-04					4
	Vapors	Vapors from Surface Soil to Outdoor Air	No volatile COPCs										
			Chemical Total					0.E+00					0
		Exposure Point Total						0.E+00					0
Medium Total								1.E-04					4

Notes:

--	Not applicable or available
a	Based RME assumptions
b	Non-canncer risk does not include risk from lead
COPC	Chemical of potential concerr
ft bgs	Feet below ground surface

TABLE 8-23: SITE 21 HHRA REASONABLE MAXIMUM EXPOSURE RESIDENTIAL RISK DRIVERS FOR SUBSURFACE SOIL

Remedial Investigation Report for Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Residential Scenario

Receptor: Adult/Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient for a Child[a,b]			
				Ingestion	Dermal	Produce	Inhalation	Exposure Routes Total	Ingestion	Dermal	Inhalation	Exposure Routes Total
Surface Soil	Soil	Surface Soil/	Arsenic	1E-05	1E-06	2E-05	1E-08	3E-05				
			Carbazole	1E-07	4E-09	1E-06	9E-12	1E-06				
(0-8 ft bgs)		Particulates	Chemical Total	1E-05	1E-06	2E-05	1E-08	4E-05				0.0
		Exposure Point Total						4E-05				0.0
	Vapors	Vapors from Surface Soil to Outdoor Air	No volatile COPCs									
			Chemical Total					*0E+00*				*0*
		Exposure Point Total						0E+00				0
Medium Total								4E-05				0.0

Notes:

--	Not applicable or available
a	Based RME assumptions
b	Non-canncer risk does not include risk from lead
COPC	Chemical of potential concern
ft bgs	Feet below ground surface

TABLE 8-24: SITE 21 CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN FOR SOIL

Remedial Investigation Report for Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

Chemical	Screening Evaluation	
	Rejected	Retained
Metals (mg/kg)		
Aluminum[a]		X
Antimony[b]	CSB	
Arsenic[a]		X
Barium[a]		X
Beryllium[c]		X
Cadmium[b]	CSB	
Calcium[a]	EN	
Chromium[a]	CSB	
Cobalt[a]		X
Copper[a]		X
Iron[a]	EN	
Lead[a]		X
Magnesium[a]	EN	
Manganese[c]		X
Mercury[b]	CSB	
Nickel[a]	CSB	
Potassium[a]	EN	
Silver[b]	CSB	
Sodium[a]	EN	
Vanadium[a]		X
Zinc[a]		X
Pesticides (mg/kg)		
4,4'-DDD[b]		X
4,4'-DDT[b]		X
Aroclor-1260[b]		X
SVOCs (mg/kg)		
2-Methylnaphthalene[d]		X
Acenaphthene[b]		X
Acenaphthylene[b]		X
Anthracene[b]		X
Benzo(a)anthracene[a]		X
Benzo(a)pyrene[a]		X
Benzo(b)fluoranthene[a]		X
Benzo(g,h,i)perylene[a]		X
Benzo(k)fluoranthene[d]		X
Chrysene[a]		X
Dibenz(a,h)anthracene		X
Fluoranthene[a]		X
Fluorene[b]		X
Indeno(1,2,3-cd)pyrene[a]		X
Naphthalene[d]		X
Phenanthrene[d]		X
Pyrene[a]		X

Notes:

[a] Distribution determined to be lognormal

[b] Distribution not tested

[c] Distribution determined to be normal

[d] Distribution determined to be unknown, but assumed to be normal based on examination of

[e] Distribution determined to be unknown, but assumed to be lognormal based on examination of

COPEC Chemical of potenial ecological concern

CSB Concentrations within statistical background

EN Essential nutrient

mg/kg Millogram per kilogram

SVOC Semivolatile organic chemical

VOC Volatile organic chemical

TABLE 8-25: SITE 21 ERA SOIL HAZARD QUOTIENTS

Remedial Investigation Report for Sites 3, 4, 11, and 21, Alameda Point, Alameda, California

COPEC	Measurement Endpoints							
	Reproductive or Physiological Impacts to the California Ground Squirrel		Reproductive or Physiological Impacts to the Alameda Song Sparrow		Reproductive or Physiological Impacts to the American Robin		Reproductive or Physiological Impacts to the Red-tailed Hawk	
	Hazard Quotient							
	High TRV	Low TRV	High TRV	Low TRV	High TRV	Low TRV	High TRV	Low TRV
Aluminum	1.31E+02[a]	1.31E+03[a]	1.29E-01[a]	1.17E+00[a]	4.15E-01[a]	3.79E+00[a]	2.14E+00[a]	1.96E+01[a]
Arsenic	5.28E-02[b]	2.73E-01[b]	1.50E-04[a]	6.00E-04[a]	4.96E-04[a]	1.98E-03[a]	2.01E-03[a]	8.02E-03[a]
Barium	9.41E-02[b]	2.98E-01[b]	2.68E-02[a]	5.40E-02[a]	8.66E-02[a]	1.73E-01[a]	4.03E-01[a]	8.12E-01[a]
Beryllium	4.35E-03[b]	4.35E-02[b]	QE	QE	QE	QE	QE	QE
Cobalt	2.13E-02[a]	2.63E-01[a]	QE	QE	QE	QE	QE	QE
Copper	1.44E-02[b]	2.83E+00[b]	1.17E-03[b]	1.56E-02[b]	3.93E-03[b]	5.24E-02[b]	7.74E-03[b]	1.03E-01[b]
Lead	1.37E-01[b]	3.43E+00[a]	1.24E-02[a]	9.06E+01[a]	4.29E-02[a]	3.15E+02[a]	1.00E-01[a]	7.32E+02[a]
Alternate Lead TRV[c]	NA	NA	NA	2.50E-01[a]	NA	8.67E-01[a]	NA	2.02E+00[a]
Manganese	4.65E-01[a]	4.67E+00[a]	2.91E-03[a]	2.91E-02[a]	9.36E-03[a]	9.36E-02[a]	4.56E-02[a]	4.56E-01[a]
Vanadium	5.33E-01[a]	5.33E+00[a]	3.36E-04[b]	3.36E-03[b]	1.08E-03[b]	1.08E-02[b]	5.59E-03[b]	5.59E-02[b]
Zinc	1.60E-02[a]	4.17E+00[b]	1.23E-03[b]	1.23E-02[b]	3.91E-03[b]	3.91E-02[b]	2.21E-02[b]	2.21E-01[b]
DDTt	2.13E-04[a]	4.27E-03[a]	1.27E-04[a]	4.70E-03[a]	3.98E-04[a]	1.47E-02[a]	3.30E-02[a]	1.23E+00[a]
Total PCBs	6.04E-02[b]	2.37E-01[b]	1.48E-04[a]	5.22E-03[a]	4.65E-03[a]	1.63E-02[a]	3.84E-02[a]	1.36E+00[a]
HMW PAHs	7.00E-04[b]	1.75E-02[b]	QE	QE	QE	QE	QE	QE
LMW PAHs	5.18E-06[a]	1.52E-05[a]	QE	QE	QE	QE	QE	QE

Notes:

[a] TRV based on an reproductive effect.

[b] TRV based on an physiological effect.

[c] The Navy established avian low TRV of 0.014 mg/kg-day is considered highly conservative. For comparison purposes an alternate, less conservative, low TRV of 3.85 mg/kg-day, as referenced by Sample and others (1996), was used.

COPEC Chemical of potential ecological concern

DDT Dichlorodiphenyltrichloroethane

DDTt Sum of 4,4-dichlorodiphenyldichloroethane, 4,4-dichlorodiphenyldichloroethene, and 4,4-dichlorodiphenyltrichloroethane

HMW High molecular weight

LMW Low molecular weight

mg/kg-day Milligram per kilogram per day

NA Not applicable

PAH Polynuclear aromatic hydrocarbon

PCB Polychlorinated biphenyl

QE No TRV developed for Ecological COPC and endpoint, qualitative evaluation only

TRV Toxicity reference value

Reference:

Sample, B.E., D.M. Opresko, and G.W. Suter, II. 1996. "Toxicological Benchmarks for Wildlife: 1996 Revision." ES/ER/TM-86/R3. Oak Ridge National Laboratory. Oak Ridge, Tennessee.

9.0 REMEDIAL INVESTIGATION FOR THE OU-WIDE GROUNDWATER PLUME

The CERCLA sites that comprise OU-2B are Site 3 – the Abandoned Fuel Storage Area, Site 4 – Building 360 (Aircraft Engine Facility), Site 11 –Building 14 (Engine Test Cell), and Site 21 – Building 162 (Ship Fitting and Engine Repair) (see Figure 9-1). Because an operable unit (OU)-wide groundwater plume was formed by the convergence of groundwater plumes emanating from multiple OU-2B sites, this OU-wide groundwater plume was evaluated separately so that the cumulative effects of these contaminants are addressed. Soil data for Sites 3, 4, 11, and 21 and one discrete lead groundwater plume located at Site 3 were evaluated in the previous site-specific sections (see Sections 5.0 through 8.0). The lead groundwater plume at Site 3 is not commingled with this OU-wide groundwater plume; therefore, the lead groundwater plume is not discussed in this section and was addressed in Section 5.0.

The site history, setting, and environmental investigations conducted at these OU-2B sites in conformance with CERCLA were also presented in the previous site-specific sections (see Sections 5.0 through 8.0). OU-2B groundwater sampling locations are shown on Figure 9-2, and Table 9-1 summarizes the groundwater samples collected by investigation and the types of analyses conducted.

The following sections present the remedial investigation (RI) results (Section 9.1) and the RI conclusions and recommendations (Section 9.2) for the OU-wide groundwater plume. Section 3.0 discusses the approaches used to conduct these evaluations. Appendices E, F, and G, respectively, present the complete background comparison, human health risk assessment (HHRA), and ecological risk assessment (ERA).

9.1 OU-WIDE GROUNDWATER PLUME REMEDIAL INVESTIGATION RESULTS

The purpose of this section is to present the results of investigations conducted at OU-2B in support of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) risk management process. Evaluations conducted at OU-2B included (1) a site-specific conceptual site model (CSM), (2) a data quality assessment, (3) a background comparison, (4) a nature and extent evaluation, (5) a fate and transport evaluation, (6) an HHRA, and (7) an ERA. Sections 9.1.1 through 9.1.7 present the results of these evaluations. Appendices E, F, and G, respectively, present the complete background comparison, HHRA, and ERA.

9.1.1 Site-Specific Conceptual Site Model

The CSM for the OU-wide groundwater plume was used to support the nature and extent evaluations and risk assessments by identifying potential sources of contamination, media affected, exposure pathways, and future receptors. Figure 9-3 presents the CSM for OU-wide groundwater plume.

Through environmental investigations and literature searches for each site within OU-2B, physical features or activities at each site that might have generated hazardous waste or released

chemicals to the environment were identified. The following physical features at Sites 3, 4, 11, and 21 were identified as potential sources of contamination (see Figure 9-1):

Site 3

- Building 112 and Naval Air Station (NAS) generator accumulation point (GAP) 10 (zinc smelter, overhaul and repair aircraft support facility) – hydraulic fluid, cutting fluids, lubricant oils, paints, stains, varnishes, solvents, adhesives, cleaners, various corrosive materials, waste oils, and asbestos
- Building 119 (restaurant) – sanitizer products, degreaser, wood finisher, patching plaster, paint, floor wax, and powdered bleach
- Building 337 (chemical supply storehouse) – paints, adhesives, gasoline, diesel, polychlorinated biphenyls (PCB), and waste oils
- Buildings 222, 517 and 517A (also known as Building 220) (garden shop) - pool supplies, plant fertilizers, pesticides, and other garden supplies
- Former Building 109, former Structure 430, underground storage tanks (UST) 97-A through 97-E, and associated fuel lines (fuel delivery system) – petroleum and related compounds (such as benzene, toluene, ethylbenzene, and xylene [BTEX])

Of these potential sources, former Structure 430, use of pesticide and PCB-containing oils for dust and weed control, and USTs 97-A through 97-E and associated fuel lines were identified as likely sources of soil and groundwater contamination at the site.

Site 4

- Building 163A and Naval Aviation Depot (NADEP) GAP 59 (equipment maintenance) – freon, metals, corrosives, petroleum products, halogenated and nonhalogenated organics, and paint.
- Building 170 (Partial) – corrosion preventative compounds, packaging foam, cutting oil, lubrication oil, thinner, adhesives, resins, varnish, and paints
- Building 360; TP-06; TP-09; M-06; and NADEP GAPs 01, 49A, 50 through 52, 55, 56, 57A, 58, and 80 (painting, blasting, degreasing, solvent cleaning, and plating of aircraft parts) – acetone, aluminum oxides, ammonium chloride, chromic acid, aerosol paint, epoxy paint, paint thinner, lubrication and engine oils, JP-5, PD-680, blasting grit, and cyanide
- Buildings 360A through D (engine component storage) – unknown materials storage

- Building 372 and NADEP GAP 61 (turbo propeller test cell) – lubrication oil, aircraft oil, gear oil, PCBs, paint, nonhalogenated organics, metals, and solvents; known release of JP-5

- Building 414 (hazardous materials storage) – paints, solvents, cleaners, strippers, caustics, and abrasive blasting media

- Aboveground storage tanks (AST) 360A through E – diesel (ASTs 360A, B, and C) and Stoddard solvent and paint and paint seal wastes (ASTs 360D and E)

- AST 372 – fuel and fuel oil

- Industrial waste treatment plant (IWTP) 360 – hexavalent chromium and cyanide wastewater, and hot and cold rinse tank water

- UST 163-1 – fuel oil

- USTs 372-1 and 372-2 – JP-5 and lubrication and waste oils, respectively; UST 372-2 leaked during removal

- Oil-water separator (OWS)-163, OWS-360, OWS-372A, OWS-372B, and OWS-414 – solvents, metals, paints, and petroleum products

Of these potential sources, Buildings 163A, 360, 372, and 414; NADEP GAP 59; ASTs 360A, B, C, and E, and AST 372; UST 163-1 and USTs 372-1; and OWS-163, OWS-360, and OWS-372Awere identified as likely sources of soil and groundwater contamination at the site.

Site 11

- Building 14 (equipment rework, engine preparation, engine testing and storage, and engine disassembly and assembly) – solvent cleaners, paint, paint solvents, trichlorotrifluoroethane, methylene chloride, chlorinated hydrocarbons, detergents, nonhalogenated organics, ferrocene, Freon, silicone oil, mercury, powdered metals, hydraulic fluid, turbine oil, JP-5, motor oil, and other petroleum products

- Building 14 and NADEP GAP 47 (hazardous waste storage) – a sump that managed mixtures of water and motor oil

- Building 14 and NADEP GAP 48 (hazardous waste storage) – drums of lubrication oil, engine oil, solvents, and aerosol paints

- Building 14, OWSs 14A through E (aircraft testing, engine cleaning, and repair) – connected to the storm sewer system, and used to separate oil and water/paint mixtures from water

- Building 14 and ASTs 14A, B, C, and D (engine cleaning, repair, and storage) – stored preservative oil, compressor cleaning solution, and smoke abatement chemicals

- USTs 14-1 through 14-6 (collectively referred to as UST(R)-06) (aircraft testing, repair, and storage) – stored lubricating oil, gasoline, and diesel

- ASTs 37A through D (aircraft testing and repair) – stored JP-5, diesel, heavy oils, spilled solvents, and fuels

- USTs 37-1 through 37-4 – stored diesel, gasoline and other various fuels

Of these potential sources, Building 14, OWSs 14A and D, USTs 14-1 through 14-6, ASTs 37A through D, and USTs 37-1 through 37-4 and associated fuel lines and storm sewers were identified as likely sources of soil and groundwater contamination at the site.

Site 21

- Building 162 (ship and aircraft maintenance shop) – solvent cleaners, paint, solvent strippers, penetrating oils, resins, phenol, and ethanolamine

- Building 162 and NAS GAP 11 (hazardous waste storage) – a sump used to collect waste oils and a storage area for drums filled with cadmium and lead, sandblast wastes, and lead-based paint

- Building 162 and NADEP GAP 46 (hazardous waste storage – aerosol paint; 1,1,1--trichloroethane (TCA); lubrication oil; PD-680; and acetone

- Building 162 and solid waste management unit (SWMU) 162 (hazardous waste storage) – oil and 1, 1, 1-TCA

- Building 162 and OWS-162 (hazardous waste material handling)-managed oil-water mixtures

- Building 398 (turbine testing and accessories shop) – solvent cleaner (PD680); 1,1,1-TCA; hydrogenated hydrocarbons; paint; paint thinner; acetone; grease; hydraulic fluid; dyes; acrylic lacquers; and mercury

- Building 398 and NADEP GAP 44 (hazardous waste storage) – lubrication oil, JP-5, and M-114 solvent

- Building 398 and NADEP GAP 45 (hazardous waste storage) – aerosol paint, waste oil, filters, spent solvents, and spent cleaning compounds

- Building 113 (paint shop, abrasive blasting, and container repair) – paints, resins, hydroxides, solvents, solvent strippers, and cleaners

- Building 113 and NADEP GAP 76 (hazardous waste storage) – aerosol paints; rust remover; lacquer thinner; oil; enamel paint; and 1,1,1-TCA
- Building 113 and NADEP GAP 77 (hazardous waste storage) – blasting grit
- AST 113 (diesel fuel storage) - petroleum hydrocarbons
- USTs 162-1 and 162-2 (UST [R]-09) (petroleum hydrocarbon storage) - petroleum hydrocarbons and lead
- USTs 398-1 and 398-2 (area of concern 398) (jet fuel storage) - petroleum hydrocarbons and lead
- Aluminum smelter - aluminum

Of these potential sources, Buildings 162, 398, and 113 and their associated sanitary sewer and fuel lines; NADEP GAP 44; and USTs 162-1, 162-2, 398-1, and 398-2 were identified as likely sources of soil and groundwater contamination at the site.

Exposure pathways and primary and secondary release mechanisms may include the following:

- Direct release of solvents, oil, or other hazardous wastes to soil from spills or equipment washing and secondary release to groundwater through infiltration or secondary release to air through volatilization
- Direct release of solvents, oil, or other hazardous wastes to groundwater from disposal in sinks or floor drains and leaks in sanitary sewer lines
- Secondary release from soil to groundwater through infiltration
- Secondary release from groundwater to indoor air through volatilization
- Secondary release from groundwater to surface water through migration
- Secondary release from groundwater to domestic use wells
- Secondary release from groundwater to surface water through storm sewers

As the CSM for OU-wide groundwater plume shows (see Figure 9-2), residential and commercial/industrial receptors were identified as potential human receptors for groundwater, and exposure pathways include ingestion, dermal contact, and inhalation of vapors from groundwater and inhalation of vapors in indoor air. Exposure of marine ecological receptors to contaminants through groundwater discharged to the Seaplane Lagoon is also identified as a complete ecological exposure pathway.

9.1.2 Data Quality Assessment

As discussed in Sections 5.0 through 8.0, investigations were conducted at Sites 3, 4, 11, and 21 under CERCLA, the EBS, and the TPH Program in order to identify and assess the extent of contamination in soil and groundwater and to determine risk. Data were collected over a period of approximately 10 years using a biased and phased sampling approach. These data, through an iterative process, were used to construct and refine the site-specific CSMs presented in Sections 5.0 through 8.0 and to identify and fill data gaps until the quantity and quality of the data at the site was judged to be sufficient to complete the RI based on the data quality objectives presented in Section 3.4.2. Two individual groundwater contaminant plumes were identified, an OU-wide groundwater plume and a lead groundwater plume located in the northern portion of Site 3. The OU-wide groundwater plume is discussed in this section.

OU-wide groundwater data generated during the environmental investigations that were considered to be of sufficient quality for use in the RI are presented in Appendix D. Table 9-1 provides a site-by-site groundwater sampling summary. Table 9-2 presents a statistical summary of groundwater analytical results for OU-2B. The summary is organized according to according to analytical group and include the following information: (1) the number and percent of detections of chemicals; (2) the average, minimum, and maximum detected concentrations; (3) minimum and maximum detection limits for nondetected samples; and (4) whether the maximum detected concentrations or detection limits exceed EPA Region 9 residential PRGs or Cal-modified PRGs (EPA 2002). PRGs and MCLs are provided in the tables for comparison purposes only.

At OU-2B, groundwater samples collected under the environmental investigations were analyzed for volatile organic compounds (VOC), semivolatile organic compounds (SVOC), polynuclear aromatic hydrocarbons (PAH), pesticides, metals, and general chemistry parameters (see Table 9-1). Of the samples collected and analyzed, 1,676 VOC and 203 SVOC results were considered acceptable for use in the RI. In addition, 33 pesticides/PCB, 293 metals, 18 exavalent chromium, and 35 PAH results were considered acceptable.

As with the soil sample results, detection limits for some of the data used to evaluate OU-wide groundwater are elevated over U.S. Environmental Protection Agency (EPA) Region 9 residential PRGs (Table 9-2) (EPA 2002); these elevated detection limits are the consequence of one or more of the following circumstances: (1) the evolution of lower detection limits as technology improves, (2) the revision of PRGs over time (which are not always technologically feasible), (3) and matrix interference. The first two of these circumstances generally do not result in significantly elevated detection limits. However, matrix interferences sometimes cause significant elevations in the detection limits for a chemical contaminant; which leads to uncertainty as to whether that undetected compound could be present in significant concentrations at a site. Although some detection limits (sample quantitation limits) were elevated above 2002 PRGs, detection limits for non-detected chemicals were typically sufficiently low to permit identification of potential health risks, with the exception of the following SVOCs that had more than 50 percent of the detection limits for non-detected analytes above PRGs in groundwater: 2-nitroaniline, benzidine, bis(2-cholorethyl)ether, hexachlorobenzene, n-nitroso-di-n-propylamine, n-nitrosodimethylamine. Detection limits were also elevated for the following VOCs: 1,1,1-TCA, 1,1,2-TCA, and vinyl chloride.

Because detection limits for SVOCs and a few VOCs in groundwater were elevated, the need for further sampling and analysis of groundwater may be necessary to confirm the concentrations of these chemicals in OU-wide groundwater. Although groundwater data gaps were identified, it was determined that the types and numbers of samples collected at the site (see Figures 9-4 through 9-8) and the analyses conducted (see Table 9-2) were sufficient to characterize the site and conduct risk assessments because data collection focused mainly on potential sources and was conducted in phases. The phased approach afforded stakeholders opportunities to provide feedback on the suitability or adequacy of the data to identify releases and complete the RI report. There is a low potential of any source at the site not being adequately evaluated if it poses a potential risk to human health or the environment.

Both definitive and screening-level data were generated. Screening data were considered appropriate for use in only nature and extent and fate and transport evaluations. See Section 3.4.2 for further detail regarding determining data quality and the use of definitive and screening-level data. In general, definitive quality data are consistent with EPA Analytical Level III, as specified in EPA's "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" (1988a), and samples were analyzed in accordance with Contract Laboratory Program methods.

A subset of the groundwater data was selected for use in the OU-wide groundwater risk assessments as shown in the following table. Data were considered to be appropriate for use if they (1) are validated, (2) reflect current site conditions, and (3) are within the groundwater contaminant plume boundary. Only direct-push and groundwater monitoring well data located within the plume boundaries were used in the HHRA because data concentrated within the plume boundaries provide a more conservative estimate of risk under potential future scenarios in which a well or a residence could be placed at the center of a plume. The last four quarters of groundwater monitoring data were used because these data are more reflective of current site conditions. Samples collected from the second water-bearing zone (SWBZ) were excluded from the risk assessment because it is considered Class III groundwater, which is not a potential source of drinking water. Generally, data from monitoring wells and using direct-push techniques collected from 1998 to 2003 were considered to reflect current site conditions and were included in the risk assessments.

SUMMARY OF OU-WIDE GROUNDWATER DATA FOR RISK ASSESSMENT

Analytical Group	OU-wide Groundwater Plume
VOCs	292
SVOCs	109
PAHs	110
Pesticides/PCBs	0
Metals	70
Hexavalent Chromium	7

No pesticide/PCB groundwater data were evaluated in the risk assessments. Because pesticides and PCBs were not detected in groundwater during the initial RI sampling conducted at OU-2B in 1991 and 1994, they were not the focus of subsequent sampling.

9.1.3 Background

The OU-wide groundwater plume background comparison involved comparing a background data set with analytical results for metals in samples representative of the OU-wide groundwater plume. This comparison was used to determine which metals in groundwater are considered naturally occurring (background) or potentially resulting from historical site activities. Appendix E presents the complete background comparison approach, which is summarized in Section 3.4.3.

Based on the groundwater background comparison, the following metals in the OU-wide groundwater plume are not attributed to background:

- Barium
- Calcium
- Trivalent Chromium
- Cobalt
- Iron
- Lead
- Magnesium
- Manganese
- Molybdenum
- Nickel
- Potassium
- Sodium

9.1.4 Nature and Extent

The main objectives of the nature and extent evaluation were to (1) present the types and concentrations of detected chemicals exceeding screening levels, (2) characterize the types and concentrations of chemicals that were used by the U.S. Department of the Navy (Navy), and (3) describe the spatial distribution and concentration patterns of all chemicals that demonstrate significant risk to human health or the environment (risk drivers). Risk drivers are defined by the risk assessments, which were conducted prior to this nature and extent evaluation, as those chemicals that pose a carcinogenic risk above 1E-06, an HI above 1, or pose potential risk to ecological receptors. Results of the nature and extent evaluation for OU-wide groundwater are presented below.

9.1.4.1 Chemicals Exceeding Screening Levels

The purpose of this evaluation is to provide an initial screening of chemical concentrations detected in OU-wide groundwater; it is not to quantify risk, which is estimated in the risk assessments. Concentrations of chemicals detected in OU-wide groundwater were compared to screening levels, which consisted of tap water PRGs for groundwater (EPA 2002).

Sampling locations for chemicals with concentrations exceeding screening levels are presented on Figures 9-9 through 9-11 and 9-37. Chemicals are grouped by analytical group, and sampling locations with concentrations exceeding these screening levels are designated.

Chemicals in groundwater exceeding these screening levels are summarized in the embedded table below. The summary is organized according to analytical groups and includes the maximum detected concentrations and the number of detected concentrations exceeding the screening levels.

Chemicals in OU-Wide Groundwater Exceeding Screening Levels

Analytical Group	Location of Maximum Detection	Maximum Detected Concentration	Screening Level	Number of Detected Concentrations Exceeding Screening Levels/Total Analyzed
SVOCs (µg/L)				
1,4-Dichlorobenzene	MW360-4	21	0.5	14/203
Bis(2-chloroethyl)ether	M11-01	0.5	0.01	1/203
Bis(2-ethylhexyl)phthalate	G04-08	33	5	2/203
Carbazole	MW360-3	10	3	1/181
Dibenzofuran	030-S19-011	460,000	24	1/203
Fluorene	030-S19-011	200,000	240	1/203
Pentachlorophenol	M03-07	1	0.6	1/203
VOCs (µg/L)				
1,1,1-Trichloroethane	4-2-ADD16	120,000	3,200	7/1542
1,1,2-Trichloroethane	4-2-ADD21	270	0.2	46/1326
1,1-Dichloroethane	4-2-ADD16	6,200	2	152/1355
1,1-Dichloroethene	4-2-ADD16	190,000	340	139/1540
1,2,4-Trimethylbenzene	M03-04	46	12	2/183
1,2-Dichloroethane	S04-1-4	1,100	0.1	98/1542
1,2-Dichloroethene (total)	S04-DGS-DP03	5,200	61	27/292
1,2-Dichloropropane	398-7-MOJ	18	0.2	3/552
1,3,5-Trimethylbenzene	M03-04	20	12	1/183
1,4-Dichlorobenzene	MW360-1	73	0.5	33/562
Acetone	M03-11	63,000	610	3/389
Benzene	S03-DGS-DP22	4,600	0.3	151/1125
Bromodichloromethane	MW360-1	10	0.2	7/549
Carbon tetrachloride	S04-2D-A	3.1	0.2	2/570
Chlorobenzene	S03-DGS-DP25	560	110	1/782
Chloroethane	S11-DGS-DP108	560	5	14/985
Chloroform	CA04-01	34	0.5	20/549
Chloromethane	S03-DGS-DP20	13	2	5/778
Cis-1,2-dichloroethene	4-1-ADD22	19,000	61	161/1255
Dibromochloromethane	M03-05	0.5	0.1	1/549
Ethylbenzene	372-5-ERM	3,364	3	51/1125
M,P-xylene	S03-DGS-DP22	9,600	210	4/412
Methyl-T-butyl ether	S04-5C-A	86	6	7/606

Chemicals in OU-Wide Groundwater Exceeding Screening Levels				
Analytical Group	Location of Maximum Detection	Maximum Detected Concentration	Screening Level	Number of Detected Concentrations Exceeding Screening Levels/Total Analyzed
Methylene chloride	M03-11	75	4	5/783
Naphthalene	S04-DGS-DP14	1,700	6	9/382
O-xylene	S03-DGS-DP22	2,200	210	1/412
Tetrachloroethene	S21-DGS-DP02	14	0.7	34/1542
Toluene	M03-04	2,300	720	3/1126
Trans-1,2-dichloroethene	4-1-ADD22	1,400	120	20/1251
Trichloroethene	4-1-ADD22	200,000	0.03	568/1547
Vinyl Chloride	4-1-ADD34	7,800	0.02	243/1541
Metals (µg/L)				
Aluminum	MW360-4	397,000	36,000	5/263
Antimony	DHP-S03-05	104	15	3/256
Arsenic	MW360-1	170	0.045	136/268
Cadmium	G04-09	183	18	2/273
Iron	MW360-4	461,000	11,000	19/265
Manganese	D04-03	29,400	880	92/265
Molybdenum	M04-05	783	180	9/253
Nickel	MW360-1	1,700	730	7/270
Thallium	DHP-S03-05	69.2	2.4	9/242
Vanadium	MW360-4	800	260	2/268
PAHs (µg/L)				
Benzo(a)anthracene	M03-06	1	0.09	3/203
Benzo(a)pyrene	M03-06	1	0.009	4/203
Benzo(b)fluoranthene	M03-06	1	0.09	3/203
Chrysene	M03-06	1	0.6	2/203
Indeno(1,2,3-cd)pyrene	M03-06	0.8	0.09	3/203
Naphthalene	030-S19-011	3,400,000	6	4/203

No pesticides or PCB in OU-wide groundwater exceeded screening levels. The following conclusions were made for SVOCs, VOCs, metals, and PAHs that are elevated above screening levels in OU-wide groundwater.

Concentrations of the SVOCs 1,4-dichlorobenzene, benzo(a)anthracene, benzo(a)pyrene [B(a)P], benzo(b)fluoranthene, bis(2-chloroethyl)ether, bis(2-ethylhexyl)phthalate, carbazole, chrysene, dibenzofuran, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, and pentachlorophenol in OU-wide groundwater are elevated above screening levels. SVOCs were elevated in groundwater across the OU but appear to be concentrated in three main areas, around Building 14 in Site 11, around Buildings 372 and 360 in Site 4, and in the former plating shop in Building 360 (see Figure 9-9). Elevated concentrations of SVOCs were also detected at the following three sampling locations

located outside of these areas: M03-04 south of Building 112 in Site 3, M03-07 southwest of Building 90 in Site 3, and M03-06 roughly 150 feet north of Building 170 in Site 4.

Thirty-one VOCs are elevated above screening levels in OU-wide groundwater and appear to be detected throughout the site (see Figure 9-10). Trichloroethene (TCE), vinyl chloride, cis-1,2-dichloroethene (DCE), and 1,1- dichloroethane (DCA) had the most detections. Especially high concentrations of VOCs were detected in samples collected beneath and around the western part of Building 360, beneath and around the western part of Building 372, beneath the northeastern portion of Building 398, beneath the central portion of Building 162, and in the northern portion of Site 4.

Concentrations of the metals aluminum, antimony, arsenic, cadmium, iron, manganese, molybdenum, nickel, thallium, and vanadium are elevated above screening levels throughout OU-wide groundwater. Metals are elevated in groundwater located in the southern portion of Site 3 near several USTs, Site 4 west of Building 360, beneath the former plating shop in Building 360, in Site 11 south of Building 14, and to the west of Building 162 in Site 21 (see Figure 9-11).

Three PAHs, benzo(a)anthracene, benzo(b)fluoranthene, and B(a)P exceed tap water PRGs (EPA 2002). Elevated concentrations of benzo(a)anthracene, benzo(b)fluoranthene, and B(a)P in groundwater appear to be located in a few specific areas located throughout the OU. Elevated levels of benzo(a)anthracene was detected west of Building 119 in Site 3, near fuel lines in the southern part of Site 3, near fuel and sanitary sewer lines in Site 4, south of Building 14 in Site 11, and near a sanitary and storm sewer line east of Building 398 in Site 3, and along the eastern border of Site 3. Elevated levels of benzo(b)fluoranthene were found in two locations, near fuel lines in the southern part of Site 3 and south of Building 14 in Site 11. Elevated levels of B(a)P were detected south of Building 112 in Site 3, near a sanitary and storm sewer line east of Building 398 in Site 3, south of Building 14 in Site 11, and near fuel and sanitary sewer lines in Site 4 (see Figure 9-37). As with metals, past site activities may have impacted the solubility of PAHs.

9.1.4.2 Characterizing Chemicals Used by the Navy

The purpose of this evaluation is to provide additional information to determine whether contamination hot spots or data gaps are present at the sites. Chemicals believed to be used at OU-2B and their breakdown products include various metals, petroleum hydrocarbons and solvents such as 1,1,1-TCA; 1,1,2-TCA; tetrachloroethene (PCE); TCE; 1,2-DCE; 1,1-DCE; 1,1-DCA; and vinyl chloride. The concentrations of these chemicals, as well as others, and a general description of their extent in groundwater are discussed below.

Even though TPH is not a CERCLA contaminant, groundwater was sampled at various locations across the OU for TPH, which includes all TPH-fractions (TPH as diesel, gasoline, jet fuel, or motor oil) and TPH-associated constituents (BTEX and lead). An evaluation of TPH in groundwater was conducted by site based on the TPH strategy for Alameda Point (see Appendix H) to assess contamination and possible risk at the site. Analytical results for

groundwater samples associated with the sites were screened against site-specific preliminary remediation criteria (PRC) to evaluate the potential risk to human health and ecological receptors from TPH-related constituents using the Regional Water Quality Control Board (RWQCB) guidance for low-risk fuel site closure (RWQCB). On the basis of this evaluation, further action is recommended for OU-2B groundwater for TTPH and TPH-associated constituents. Corrective action is currently being conducted under the Navy's TPH program to address TPH groundwater contamination in the portion of Site 11 known as Corrective Action Area (CAA 11).

TPH impacted groundwater is discussed below and TPH sampling locations are presented on Figure 9-8.

The following table lists the chemicals believed to have been used at OU-2B, the range of concentrations detected in groundwater at the site, detection frequency, and the sampling location of the maximum concentration detected. Figure 9-12 shows the locations of the samples with maximum concentrations.

GROUNDWATER ANALYTICAL RESULTS FOR CHEMICALS BELIEVED TO HAVE BEEN USED AT OU-2B

Chemical	Detection Frequency	Range of Concentrations (µg/L)	Sampling Location of Maximum Concentration	Sample Depth (feet bgs)
VOCs				
1,1,1-TCA	104 / 1,537	0.4 - 120,000	4-2-ADD16	33 – 37
1,1,2-TCA	46 / 1,326	0.4 – 270	4-2-ADD21	32 – 37
1,1-DCA	227 / 1,355	0.1 - 6,200	4-2-ADD16	6 – 9
1,1-DCE	376 / 1,535	0.1 - 190,000	4-2-ADD16	38 – 41
1,2,4-Trimethylbenzene	10 / 183	0.4 - 46	M03-04	3 – 11
1,2-Dichlorobenzene	59 / 563	0.1 – 320	MW360-1	5 – 15
1,2-DCA	98 / 1,542	0.2 - 1,100	S04-1-4	25 – 30
1,2-DCE (total)	103/292	0.1 - 5,200	4-1-ADD22	16 – 19
1,3,5-Trimethylbenzene	7 / 183	0.2 – 20	M03-04	3 – 11
1,3-Dichlorobenzene	12 / 562	0.07 - 4.5	MW360-1	5 – 15
1,4-Dichlorobenzene	39 / 562	0.3 – 73	MW360-1	5 – 15
Acetone	38 / 389	0.5 - 63,000	M03-11	26 – 36
Benzene	157 / 1,125	0.1- 4,600	S03-DGS-DP22	5 – 7
Ethylbenzene	108 / 1,125	0.2 - 3,364	372-5-ERM	0
Methylene chloride	31 / 778	0.64 – 75	M03-11	26 – 36
PCE	41 / 1,542	0.2 – 14	S21-DGS-DP02	30 – 32
Toluene	258 / 1,120	0.1 - 2,300	M03-04	3 – 11
TCE	568 / 1,542	0.2 - 200,000	4-1-ADD22	16 – 19
Vinyl chloride	243 / 1,541	0.3 - 7,800	4-1-ADD34	6 – 10
Xylene (total)	123 / 713	0.2 - 18,707	372-5-ERM	0
Metals				
Aluminum	77 / 263	5.6 - 397,000	MW360-4	5 – 15
Cadmium	72 / 273	0.054 – 183	G04-09	0
Chromium	99 / 272	0.1 - 3,090	M04-05	3.5 - 13.5
Chromium (hexavalent)	6 / 18	0.19 - 1,020	G04-02	0

Chemical	Detection Frequency	Range of Concentrations (µg/L)	Sampling Location of Maximum Concentration	Sample Depth (feet bgs)
Copper	105 / 262	0.079 – 280	MW360-4	5 – 15
Lead	41 / 293	0.045 – 90	S03-DGS-DP14	3.5 – 5
Mercury	12 / 256	0.041 - 0.34	M04-06	3.5 - 13.5
Zinc	115/265	0.49 to 2,230	DHP-S03-01	31.3
TPH				
MTBE	21 / 606	0.1 – 86	S04-5C-A	11

1 Exceeded screening levels in one or more samples. Other chemicals exceeded screening levels, but were not believed to be used at OU-2B; these chemicals include SVOCs, PAHs, VOCs (1,2-Dichloropropane, Bromodichloromethane, Carbon tetrachloride, chlorobenzene, chloroethane, chloroform, chlorobenzene, chloromethane), and metals (antimony, arsenic, iron, manganese, molybdenum, nickel, thallium, and vanadium).

Most of the chemicals detected in groundwater across OU-2B are consistent with the historical activities that occurred at Sites 3, 4, 11, and 21, including painting, paint stripping, and degreasing, plating, jet engine testing, equipment cleaning and repair, and the use of petroleum hydrocarbons. In several areas, chemicals were apparently released to soil and migrated to groundwater, were released directly to groundwater, or were released to storm sewer lines which drained into Seaplane Lagoon. The main chemicals used at the site include chlorinated solvent, petroleum hydrocarbons, and metals. Each of these chemicals and their location are summarized below.

Chlorinated hydrocarbons and their breakdown products have been detected in groundwater at detectable concentrations across OU-2B. The highest concentrations of these compounds are mainly found in groundwater near Building 360 and Seaplane Lagoon. More specifically, the highest concentrations of TCE, 1,2-DCE, vinyl chloride, 1,2-dichlorobenzene, 1,3-dichlorobenzene, and 1,4-dichlorobenzene were detected at sampling locations 4-1-ADD22, 4-1-ADD34, and MW360-1, which are located to the north of Building 360 (see Figure 9-5). The highest concentrations of 1,1,1-TCA, ,1,12-TCA, 1,1-DCA, 1,2-DCA, 1,1-DCE were detected at sampling locations 4-2-ADD16, 4-2ADD21, and S04-1-4 located below the western central part of Building 360 or just to the west of the of the central part of Building 360 (see Figure 9-4). Only one chlorinated compound, PCE, was detected near Seaplane lagoon at sampling location S21-DGS-DP02. Chlorinated solvents were likely used in the largest quantities at Building 360 but were also used at Building 14, Building 162 and Building 398 for degreasing, engine cleaning, and paint stripping activities.

Acetone and methylene chloride were also used as cleaning solvents at OU-2B in Buildings 14, 162, 360, and 398. They were detected at their highest concentrations at sampling location M03-11 located just outside the OU-2B boundary (see Figure 9-5).

Petroleum hydrocarbons are detected in groundwater across OU-2B and are generally commingled with CERCLA contaminants. The highest concentrations of petroleum hydrocarbon compounds were detected in samples collected to the east of former Structure 430 and to the east of Building 372. The highest concentrations of 1,2,4-trimethylbenzene, benzene, and toluene were detected at sampling locations S03-DGS-DP22 and M03-04 and 1,3,5-trimethylbenzene, ethylbenzene, and xylene were detected at sampling locations M03-10

and 372-5-ERM located to the west of Building 372 (see Figure 9-1). Methyl-tertiary-butyl ether (MTBE) was the only compound not detected at its highest concentrations in these two locations. MTBE was detected at it highest concentration at sampling location S04-5C-A located just north of Building 360. Petroleum hydrocarbons were stored in ASTs and USTs and used at OU-2B. However, petroleum hydrocarbons were probably used and stored in their largest quantities at Site 3 where several 100,000 gallon USTs (97A through 97E) stored aviation gas (AVGAS) and supplied AVGAS to former Structure 430 (an aircraft truck refueling station) (see Figure 9-1).

Several metals were used at OU-2B and detected in groundwater including aluminum, cadmium, chromium, copper, mercury and zinc. The highest concentrations of aluminum, copper, and mercury were detected in samples collected at sampling locations MW360-4 and M04-06 located to the east of Building 360 (see Figure 9-6). Aluminum was used as aluminum oxide in Building 360 and at the former aluminum recovery facility, where Building 398 now exists. Copper is an ingredient in the jet engine lubricant that likely was used at OU-2B in Buildings 162, 360, and 398. Mercury was used at Building 162 to repair navigation instruments and in Building 398, where spills were reported. Cadmium, hexavalent chromium, and total chromium were detected at their highest concentrations at sampling locations G04-02, G04-09, and M04-05 located below the central part of Building 360 (near the plating shop) or just to the east of the central part of Building 360 (see Figure 9-1). Cadmium and chromium has been used at Building 360 as a component in the plating of aircraft engine parts since the building was built in 1953 until operations ceased in 1997. According to the initial assessment study (IAS), waste streams from the plating shop typically were disposed of into Seaplane Lagoon until 1975 when they were diverted into the Building 360 IWTP (Ecology and Environment, Inc. [E&E] 1983).

Zinc was detected in groundwater across OU-2B. The maximum concentration was detected in a grab groundwater sample collected at DHP-S03-01 in Site 3. This sampling location is well south of Building 112 where a zinc smelter operated. There is no apparent correlation of zinc with those operations.

Total petroleum hydrocarbons were detected in groundwater across OU-2B (see Figure 9-13). Potential sources of TPH and TPH-associated constituents in groundwater at OU-2B include the following:

- **Site 3.** Former Structure 430 (aircraft truck refueling structure) and Building 398, located within adjacent Site 21.

- **Site 4.** Building 360 (painting, blasting, degreasing, solvent cleaning, and plating of aircraft parts) and GAPs 49A, 52, 55, 56, and 57A and ASTs 360A through 360D; Building 372 (turbo propeller test cell), including GAP 61, SWMU 372, former AST 372, OWS-360, OWS-372A, OWS-372B, USTs 616-1 and 616-2, former USTs 372-1 and 372-2, and associated fuel and sewer lines.

- **Site 11.** Building 14 (equipment rework, engine preparation, engine testing and storage, and engine disassembly and assembly), including OWS-014B, ASTs 598A through 598C, former USTs 14-1 through 14-3 and 14-6, former USTs 37-1 through

37-12, former ASTs 37A through 37D and 14A through 14D, and associated fuel lines and storm sewers.

Total TPH concentrations exceeded the floating product screening level in 44 groundwater samples at 42 sampling locations. Floating product was detected at Sites 3 and 21 in the area east of Building 398 at concentrations ranging from 27 to 2,029 milligrams per liter (mg/L). Floating product was detected at Site 4 in the area west of and underneath Building 372 at concentrations ranging from 32.6 to 138,019 mg/L. Site 11 contained floating product associated with the fuel lines at concentrations ranging from 24.2 to 475 mg/L. In addition to the area east of Building 398, floating product was detected at Site 21 near fuel lines east of the Seaplane Lagoon at concentrations ranging from 36.56 to 120 mg/L.

MTBE concentrations exceeded the PRC for potential drinking water in samples collected from ten sampling locations within OU-2B at concentrations ranging from 0.0062 to 1.7 mg/L. Sampling locations are in the western portion of Site 3 along a sanitary sewer line; at Site 4 beneath Building 372 and north of Building 360 along a storm sewer line; and south of Building 14 at Site 11 near fuel lines.

9.1.4.2 Risk Drivers

Following the evaluations of chemicals that exceeded screening levels and chemicals used by the Navy, a more detailed evaluation was conducted for those chemicals that pose potential significant risk (risk drivers). This evaluation was not limited to those chemicals used by the Navy; rather selection of risk drivers was defined by the HHRA and ERA (see Sections 3.4.6 and 3.4.7) and background comparison (see Section 3.4.3). Risk drivers are defined as those chemicals that pose a carcinogenic risk above 1E-06, an hazard index (HI) above 1, or pose potential risk to ecological receptors. Next, the background comparison results were used to identify risk drivers attributed to background.

Based on the HHRA, the following chemicals were identified as groundwater risk drivers:

- 1,1-DCA
- 1,2-DCA
- 1,2-DCE (total)
- 1,4-Dichlorobenzene
- 1,1,2-TCA
- Antimony
- Arsenic
- Benzo(a)anthracene
- B(a)P
- Benzene
- Bis(2-ethylhexyl)phthalate
- Bromodichloromethane
- Cadmium
- Chloroethane
- Chloroform
- Chromium (hexavalent)
- Iron
- Manganese
- Methylene Chloride
- Naphthalene
- PCE
- TCE
- Thallium
- Vinyl Chloride

Based on the ERA, manganese in groundwater was identified as a risk driver. According to the background comparison, antimony, arsenic, cadmium, and thallium are attributed to background.

The evaluation of these contaminants primarily includes (1) site-specific figures to assess the spatial distribution and concentration patterns of the contaminants and (2) a review of the figures, data, and site hydrology to determine the boundaries of the contamination, the volume of the affected media, and identification, if possible, of the suspected source(s) of these chemicals.

Part of the evaluation of groundwater risk drivers was to determine if dense nonaqueous phase-liquid (DNAPL) were present. This evaluation was conducted using the process described in "Estimating Potential for Occurrence of DNAPL at Superfund Sites" (EPA 1992a). This document presents several criteria for evaluating the presence of DNAPL at a site, which include the following:

- The use of DNAPL-related chemicals at the site (including TCE, DCE, and TCA)
- Concentrations of DNAPL-related chemicals in groundwater above 1 percent of the solubility of the chemical,
- Concentrations of DNAPL-related chemicals in soil above 10,000 milligrams per kilogram
- Increasing concentrations of DNAPL-related chemicals with depth or the presence of DNAPL in anomalous upgradient or cross gradient locations from the source
- Observation of DNAPL in samples collected at the site

The discussions below focus on the nature and extent of the following chemicals in OU-wide groundwater and their breakdown products:

- 1,1-DCA
- 1,2-DCA
- 1,2-DCE (total)
- 1,4-Dichlorobenzene
- 1,1,2-TCA
- Benzo(a)anthracene
- B(a)P
- Benzene
- Bis(2-ethylhexyl)phthalate
- Bromodichloromethane
- Chloroethane
- Chloroform
- Chromium (hexavalent)
- Iron
- Manganese
- Methylene Chloride
- Naphthalene
- PCE
- TCE
- Vinyl Chloride

Table 9-3 summarizes the nature and extent evaluation.

Volatile Organic Compounds in Groundwater

The groundwater VOCs are generally discussed in the order of their breakdown products as shown in Figure 9-42. Chlorinated compounds including PCE, TCE, 1,2-DCE (total) are discussed first. Then 1,1,1-TCA and 1,1-DCE are discussed even though they are not risk drivers because of their potential to breakdown into vinyl chloride. Vinyl chloride is evaluated next because it is the most toxic breakdown products of all the compounds listed above. Benzene was evaluated next due to its elevated risk. Finally, 1,4-dichlorobenzene, 1,2-DCA, bromodichloromethane, chloromethane, chloroform, and methylene chloride are discussed in alphabetical order.

Tetrachloroethene in Groundwater. Figure 9-14 shows the distribution of PCE in groundwater across OU-2B. PCE was detected in 41 out of 1,542 groundwater samples collected from across OU-2B at concentrations ranging from 0.2 to 14 µg/L and at depths ranging from 25 to 47 feet below ground surface (bgs). The maximum concentration of 14 µg/L was detected at direct-push location S21-DGS-DP02 from 30 to 32 feet bgs. Sampling locations with the highest concentrations of PCE are located near Building 360 at S04-DGS-DP31 (13 µg/L) and close to Seaplane Lagoon off the southeast corner of Building 113 at S21-DGS-DP02 (14 µg/L). The horizontal extent of PCE in groundwater appears to extend north to south from M03-04 to 372-MW3 and east to west from MW360-4 to S21-DGS-DP11 near Seaplane Lagoon.

The presence of PCE is consistent with the use of chlorinated solvents as a degreaser in Buildings 360, 398, 162, and 14. It is assumed that the chlorinated plume originated at Building 360 and is believed to have migrated to the west of Buildings 162 and 14. However, it is not certain whether past activities in these buildings contributed to the plume.

Trichlorethene in Groundwater. Figure 9-15 shows the distribution of TCE in groundwater across OU-2B. TCE was detected in 568 of 1,542 groundwater samples collected from across OU-2B at concentrations ranging from 0.2 to 200,000 µg/L. The maximum concentration of 200,000 µg/L was detected in a sample collected at sampling location 4-1-ADD22 from a depth of 16 to 19 feet bgs. Sampling locations with the highest concentrations of TCE are located northwest of Building 360. The horizontal extent of TCE in groundwater appears to extend north to south from M03-04 to M03-13 and east to west from HP-S04-02 to S11-DGS-DP104. Concentrations of TCE generally decrease in samples collected closer to Seaplane Lagoon. The vertical extent of TCE in groundwater extends from 5 to 77 feet bgs as can be seen on cross-sections A to A', A to A", and B to B'(see Figures 9-16 through 9-18).

TCE was used as a cleaner and degreaser in Buildings 360 and 368. It was also likely used in Buildings 14 and 162. TCE concentrations generally appear coincident with PCE concentrations; however, TCE is much more prevalent in groundwater than PCE at OU-2B, indicating that TCE was likely used in greater quantities or more recently than PCE. In addition, TCE is a degradation product of PCE. The presence of TCE is consistent with activities and materials in Buildings 360, 398, 162, and 14, however, given the distribution of TCE concentrations in groundwater, Building 360 is likely the main source of TCE in groundwater.

In addition, a continuing source of TCE may be present at depth below and/or northwest of Building 360 in the form of DNAPL, where the highest concentrations of TCE are located. The presence of DNAPL was evaluated using the process described in Section 9.2.3. TCE was used at Building 360, is present at concentrations exceeding 1% of its solubility limit (1,100 mg/L), and concentrations of TCE in groundwater increase with depth and appear cross gradient from the source (Building 360). Based on the criteria listed above, DNAPL may be present at the site.

1,2-Dichloroethene (total) in Groundwater. Figure 9-19 shows the distribution of 1,2-DCE (total) in groundwater across OU-2B. Total 1,2-DCE is composed of two compounds, cis-1,2-DCE and trans-1,2-DCE. The main component of total 1,2-DCE in groundwater at OU-2B is cis-1,2-DCE. Of 1,535 groundwater samples collected from across OU-2B, 1,2-DCE (total) was detected in 444 samples at concentrations ranging from 0.1 to 19,000 µg/L. The maximum concentration of 19,000 µg/L was detected in a sample collected at sampling location 4-1-ADD22 from a depth of 16 to 19 feet bgs. Sampling locations with the highest concentrations of 1,2-DCE are located northwest of Building 360. The horizontal extent of 1,2-DCE in groundwater appears to extend north to south from S03-DGS-DP23 to S04-DGS-DP28 and east to west from HP-S04-02 to S11-DGS-DP104. Concentrations of 12-DCE generally decrease in samples collected closer to Seaplane Lagoon. The vertical extent of 1,2-DCE in groundwater extends from 5 to 62 feet bgs.

The 1,2-DCE (total) is a degradation product of TCE and PCE. Furthermore, 1,2-DCE is collocated with TCE as shown in Figure 9-20, which presents concentration versus depth profiles for PCE, TCE, 1,2-DCE, and vinyl chloride at the following three discrete sampling locations across OU-2B: (1) 4-1-ADD22 at the source, (2) S04-DGS-DP46 in the middle of OU-2B, and (3) S21-DGS-DP02 near Seaplane Lagoon. The presence of 1,2-DCE is likely associated with the presence of the parent compounds TCE and PCE.

1,1,2-Trichloroethane in Groundwater. Figure 9-21 shows the distribution of 1,1,2-TCA in groundwater across OU-2B. 1,1,2-TCA was detected at 46 of 1,326 groundwater samples collected from across OU-2B at concentrations ranging from 0.4 to 270 µg/L. The maximum concentration of 270 µg/L was detected at sampling location 4-2-ADD21 from 32 to 37 feet bgs. Sampling locations with the highest concentrations of 1,1,2-TCA are located in groundwater below the western central part of Building 360. The horizontal extent of 1,1,2-TCA in groundwater appears to extend north to south from S03-DGS-DP23 to S04-DGS-DP29 and east to west from S04-DGS-DP38 to S21-DGS-DP105. Vertical extent of 1,1,2-TCA in groundwater extends from approximately 5 to 50 feet bgs.

The presence of 1,1,2-TCA is consistent with the use of chlorinated solvents in Building 360. Building 360 is likely the main source of 1,1,2-TCA in groundwater at OU-2B.

1,1,1-Trichloroethane in Groundwater. Figure 9-22 shows the distribution of 1,1,1-TCA in groundwater across OU-2B. 1,1,1-TCA was detected in 104 of 1,537 groundwater samples collected from across OU-2B at concentrations ranging from 0.4 to 120,000 µg/L. The maximum concentration of 120,000 µg/L was detected at sampling location 4-2-ADD16 from 33 to 37 feet bgs. Sampling locations with the highest concentrations of TCA are located under the central western portion of Building 360 and immediately to the west of this area. The horizontal

extent of 1,1,1-TCA in groundwater appears to extend north to south from 398-2-ERM to 372-MW3 and east to west from HP-S04-02 to 398-2-ERM. Concentrations of 1,1,1-TCA generally decrease in samples collected closer to Seaplane Lagoon. The vertical extent of 1,1,1-TCA in groundwater extends from 5 to at least 45 feet bgs as can be seen on cross-section B to B' (see Figure 9-23).

The presence of 1,1,1-TCA is consistent with the use of chlorinated solvents as cleaning agents and degreasers in Buildings 360 and 398. In addition, 1,1,1-TCA was stored and likely used in Buildings 113 and 162; however, the extent of 1,1,1-TCA does not extend under these buildings, indicating that these buildings are not sources of 1,1,1-TCA in groundwater. Given the distribution of 1,1,1-TCA concentrations in groundwater, Building 360 is likely the main source of 1,1,1-TCA in groundwater.

In addition, a continuing source of 1,1,1-TCA may be present below and/or to the west of the western central portion of Building 360 in the form of DNAPL, where the highest concentrations of 1,1,1-TCA are located. The presence of DNAPL was evaluated using the process described in Section 9.2.3. The compound,1,1,1-TCA was used at Building 360, is present at concentrations exceeding 1 percent of its solubility limit (1,330 mg/L), and concentrations of 1,1,1-TCA in groundwater increase with depth. Based on the criteria listed above, DNAPL may be present at the site.

1,1-Dichloroethene in Groundwater. Figure 9-24 shows the distribution of 1,1-DCE in groundwater across OU-2B. The compound, 1,1-DCE was detected in 376 of 1,535 groundwater samples collected from across OU-2B at concentrations ranging from 0.1 to 190,000 µg/L. The maximum concentration of 190,000 µg/L was detected at sampling location 4-2-ADD16 from 38 to 41 feet bgs. Sampling locations with the highest concentrations of are located under and to the west of the western central portion of Building 360. The horizontal extent of 1,1-DCE in groundwater appears to extend north to south from S21-DGS-DP06 to S04-0-4 and east to west from MW360-4 to S21-DGS-DP11. Concentrations of 1,1-DCE generally decrease in samples collected closer to Seaplane Lagoon. The vertical extent of 1,1-DCE in groundwater extends from 5 to 55 feet bgs as can be seen on cross-sections B to B', A to A', A to A," and B to B' (see Figures 9-23, 9-25, and 9-26).

The compound, 1,1-DCE is a degradation product of 1,1,1-TCA and may have been used as a cleaner and degreaser in Buildings 360. The presence of 1,1-DCE is likely associated with activities conducted in Building 360 and with the presence of the parent compounds 1,1,1-TCA.

In addition, a continuing source of 1,1-DCE may be present below and/or to the west of the central portion of Building 360 in the form of DNAPL, where the highest concentrations of 1,1,1-DCE are located. The presence of DNAPL was evaluated using the process described in Section 9.2.3. 1,1-DCE was used at Building 360, is present at concentrations exceeding 1% of its solubility limit (2,250 mg/L), and concentrations of 1,1-DCE in groundwater increase with depth. Based on the criteria listed above, DNAPL may be present at the site.

Vinyl Chloride in Groundwater. Figure 9-27 shows the distribution of vinyl chloride in groundwater across OU-2B. Vinyl chloride was detected in 243 of 1,541 groundwater samples collected from across OU-2B at concentrations ranging from 0.3 to 7,800 µg/L. The maximum concentration of 7,800 µg/L was detected at sampling location 4-1-ADD34 from 6 to 10 feet bgs. The horizontal extent of vinyl chloride in groundwater extends north to south across OU-2B from S03-DGS-DP20 to S04-DGS-DP34 and east to west from HP-S04-02 to S21-DGS-DP11. The vertical extent of vinyl chloride in groundwater extends from 5 to 45 feet bgs as can be seen in cross-sections A to A', A to A", and B to B' (see Figures 9-16 through 9-18, 9-23, 9-25, and 9-26).

Vinyl chloride was not used at OU-2B; however, it is a degradation product of 1,1,2-TCA; 1,1,1-TCA; PCE; TCE; 1,1-DCE; and 1,2-DCE (total). It is collocated with the plumes of all these compounds. Based on the location of the highest concentrations of vinyl chloride (located to the northwest of Building 360), the main parent compounds for vinyl chloride at OU-2B are likely TCE and 1,1,1-TCA.

Benzene in Groundwater. Figure 9-28 shows the distribution of benzene in groundwater across OU-2B. Benzene was detected in 157 of 1,119 groundwater samples collected from across OU-2B at concentrations ranging from 0.1 to 4,600 µg/L. The maximum concentration of 4,600 µg/L was detected in a sample collected at sampling location S03-DGS-DP22, which corresponds to a location where free product was observed in the soil borings during the PAH investigation completed in 2003. Other samples collected from this area at sampling locations S03-DGS-DP03, S03-DGS-DP20, S03-DGS-DP23, S03-DGS-DP25, M03-04, and CA03-02 contained benzene at concentrations exceeding 100 µg/L. In addition, several samples collected near the western end of Building 372 in 1995 contained benzene at concentrations exceeding 100 µg/L. More recent data are not available for this area; however, it is likely that a plume of free product petroleum hydrocarbons is present near Building 372 that could be a continuing source of benzene.

The main sources of benzene in groundwater at OU-2B are likely USTs 97-A through 97-E, former Structure 430, and Building 372. In addition, solvent use at Buildings 360, 398, 14, 162, and 113 were likely minor contributors to benzene contamination across OU-2B; however, the main benzene source appears to be related to petroleum hydrocarbons in groundwater at OU-2B. Petroleum hydrocarbons and BTEX compounds are evaluated further in Appendix H.

1,4-Dichlorobenzene in Groundwater. Figure 9-29 shows the distribution of 1,4-dichlorobenzene in groundwater across OU-2B. 1,4-Dichlorobenzene was detected in 39 of 562 groundwater samples collected from across OU-2B at concentrations ranging from 0.3 to 73 µg/L. The maximum concentration of 73 µg/L was detected in a sample collected in 1998 from sampling location MW360-1. In addition, samples collected from IW-01, MW-02, MW-04, MW360-2, MW360-4, S04-DGS-DP01, S04-DGS-DP03, S04-DGS-DP10, and S04-DGS-DP46, from 5 to 37 feet bgs contained 1,4-dichlorobenzene at concentrations exceeding the screening level of 0.5 µg/L.

The 1,4-dichlorobenzene is present in groundwater near industrial waste treatment lines located east of Building 162, near storm sewer lines north of Building 360, near former Building 349 and near the storm sewer and industrial waste treatment lines east of Building 162. The concentrations of 1,4-dichlorobenzene at MW360-4 and MW360-2 have decreased recently, suggesting that 1,4-dichlorobenzene is degrading or migrating. However, 1,4-dichlorobenzene concentrations do not appear to be decreasing at other locations across OU-2B.

The 1,4-dichlorobenzene at OU-2B is generally detected with other chlorinated solvents. In addition, 1,4-dichlorobenzene may have been a minor ingredient in solvents used in Building 360; Buildings 360 and former building 349 are the likely source of 1,4-dichlorobenzene in groundwater at OU-2B.

1,1-Dichloroethane in Groundwater. Figure 9-30 shows the distribution of 1,1-DCA in OU-2B groundwater. 1,1-DCA is present in groundwater throughout OU-2B. It was detected in 227 of 1,355 groundwater samples at concentrations ranging from 0.1 to 6,200 µg/L. The maximum concentration of 1,1-DCA (6,200 µg/L) was detected in a sample collected in 2002 from sampling location 4-2-ADD16 between 6 to 9 feet bgs. Sampling locations with the highest concentrations are located in the southern portion of the OU under Building 360.

There are two 1,1-DCA plumes in OU-2B groundwater. The main plume covers the majority of the southern half of the OU and extends beneath Sites 4, 11, and 21, including Buildings 113, 360, and 372. A secondary plume encompasses the majority of groundwater beneath Building 98 in the northwest portion of OU-2B. One isolated concentration also was detected along the storm sewer line 100 feet west of Building 527.

The compound, 1,1-DCA is a degradation product of 1,1,1-TCA, and may have been used as a solvent during cleaning and degreasing activities within Buildings 360, 162 and 398. In addition, a continuing source could possibly remain under the central portion of Building 360 in the form of DNAPL where the highest concentrations of 1,1-DCA were located.

1,2-Dichloroethane in Groundwater. Figure 9-31 shows the distribution of 1,2-DCA in groundwater across OU-2B. 1,2-DCA was detected in groundwater throughout OU-2B. The compound, 1,2-DCA was detected in 98 of 1,542 groundwater samples at concentrations ranging from 0.2 to 1,100 µg/L. The maximum concentration of DCA detected at 1,100 µg/L was detected in a sample collected in 1998 from sampling location S04-1-4 between 25 to 30 feet bgs. Sampling locations with the highest concentrations are located in the southern portion of the OU, under and west of Building 360. The remaining concentrations of 1,2-DCA were detected in groundwater in the central portion of OU-2B east of Building 552 and in the eastern portion under and around Buildings 162, 398, and former Building 430. The vertical extent of 1,2-DCA in groundwater extends from 0 to 77 feet bgs with increasing concentrations at greater depths.

The compound, 1,2-DCA, is a degradation product of 1,1,2-TCA and may have been used as a solvent during cleaning and degreasing activities within Buildings 360, 162 and 398. In addition, a continuing source could possibly remain under the central portion of Building 360 in the form of DNAPL, which is where the highest concentrations of 1,2-DCA were located.

Bis(2-ethylhexyl)phthalate in Groundwater. Figure 9-32 shows the distribution of bis(2-ethylhexyl)phthalate in groundwater across OU-2B. Bis(2-ethylhexyl)phthalate was detected in 4 out of 203 groundwater samples collected across OU-2B at concentrations ranging from 3.0 to 33.0 µg/L, with two detections exceeding the risk-based screening level of 5.0 µg/L. The maximum concentration of 33.0 µg/L was detected in a sample collected in 1991 from sampling location G04-08. In addition, bis(2-ethylhexyl)phthalate was detected at a concentration of 24.0 µg/L at sampling location G04-07. Sampling locations G04-08 and G04-7 are located under the western portion of Building 360. Bis(2-ethylhexyl)phthalate was also detected in groundwater to the east and northwest of Building 360 at concentrations of 4 and 3 g/L, which are below the screening level.

In 1990, bis(2-ethylhexyl)phthalate was detected east of Building 360 at sampling location MW360-4. In 1991, bis(2-ethylhexyl)phthalate was detected under Building 360 (sampling locations G04-07 and G04-08). Ten years later in 2001, bis(2-ethylhexyl)phthalate was detected adjacent to the industrial waste line northwest of Building 360 at sampling location M04-07.

Bis(2-ethylhexyl)phthalate and other phthalates are found in many plastics. This particular compound is referred to as a "common laboratory contaminant." It is frequently detected in SVOC results at a low level. EPA functional guidelines (EPA 1999d) qualify detected results as not detected due to contamination at up to 10 times the detection limit, or 10 times the level found in the method blank, for common laboratory contaminants.

Bromodichloromethane in Groundwater. Figure 9-33 shows the distribution of bromodichloromethane in groundwater across OU-2B. Bromodichloromethane was detected in 7 of 549 groundwater samples collected from across OU-2B at concentrations ranging from 0.9 to 10 µg/L. The maximum concentration of 10 µg/L was detected in a sample collected in 2001 from sampling location MW360-1. In addition, samples from CA04-01, MW360-4, S04-DGS-DP10, and S04-DGS-DP49 from 0 to 22 feet bgs contained bromodichloromethane at concentrations exceeding the screening level of 0.18 µg/L.

Bromodichloromethane was detected in 2001 at MW360-4 and S04-DGS-DP10 near Building 360, S04-DGS-DP49 beneath Building 162, MW360-1 near the storm sewer located north of Building 360, and CA04-01 near industrial waste treatment lines at Building 372. Bromodichloromethane has not been detected in more recent samples collected from MW360-1 and MW360-4, suggesting that bromodichloromethane concentrations are decreasing at OU-2B.

Bromodichloromethane was generally detected in groundwater containing chlorinated solvents at OU-2B. In addition, bromodichloromethane may have been a minor ingredient in solvents used in Building 360 and Building 398. Because bromodichloromethane concentrations are generally decreasing across OU-2B, a continuing source of bromodichloromethane does not appear to be present at OU-2B.

Chloroform in Groundwater. Figure 9-34 shows the distribution of chloroform in groundwater across OU-2B. Chloroform was detected in 27 of 549 groundwater samples collected from across OU-2B at concentrations ranging from 0.1 to 34 µg/L. The maximum

concentration of 34 µg/L was detected in a sample collected in 2000 from piezometer location CA04-01. In addition, samples from MW-02, MW-04, DHP-S03-05, 11/21-CH4, D04-03, S04-2-4, M04-05, D04-02, SHP-S04-09, S04-DGS-DP26, S04-DGS-DP38, S04-DGS-DP05, S04-DGS-DP03, and 372-MW1 from 2.5 to 96.5 feet bgs contained chloroform at concentrations exceeding the screening level of 0.53 µg/L.

Chloroform is present in groundwater near Building 360 and near the center of OU-2B next to an industrial waste treatment line. Chloroform has also been detected at very low concentrations in more recent samples collected from D04-02, D04-03, M04-05, and M04-06, suggesting that chloroform concentrations are decreasing at OU-2B.

Chloroform was not used at OU-2B; however, chloroform is formed when chlorine is added to drinking water or wastewater. Wastewater was generated at Building 360 during processing activities that may have been treated with chlorine to destroy bacteria. In addition, chloroform may have been a minor ingredient in solvents used in Building 360; therefore, Building 360 may be the source of chloroform in groundwater at OU-2B. Because concentrations of chloroform appear to be decreasing in monitoring wells across OU-2B, a continuing source of chloroform does not appear to be present at OU-2B. Furthermore, the MCL for drinking water for trihalomethanes (including chloroform, bromodichloromethane, dibromochloromethane, and bromoform) is 100 µg/L. Based on the maximum concentration of chloroform detected in groundwater at OU-2B (34 µg/L), chloroform is not considered a concern at OU-2B and is not discussed further.

Chloroethane in Groundwater. Figure 9-35 shows the distribution of chloroethane in groundwater across OU-2B. Chloroethane was detected in 27 of 985 groundwater samples collected across OU-2B at concentrations ranging from 0.4 to 560 µg/L. The maximum concentration of 560 µg/L was detected in a sample collected in 2001 at 10 feet bgs from sampling location S11-DGS-DP108. In addition, chloroethane was detected at concentrations above the screening level of 5.0 µg/L in groundwater from sampling locations M03-06, S04-DGS-DP11, S21-DGS-DP106, and S21-DGS-DP13 at depths of 0 to 11 feet bgs.

Chloroethane was detected in shallow groundwater near the sanitary sewer line approximately 200 feet east of Building 414, near the storm sewer line approximately 175 feet east of Building 552, and under Buildings 360 and 398.

Chloroethane is a degradation product of both 1,1-DCA and 1,2-DCA and was commonly used in solvents and to produce gasoline additives. Chloroethane has a very pungent smell and is a gas at normal room temperature and pressure, but when pressurized exists as a liquid. Chloroethane is not a naturally occurring compound and exists in the environment as a result of human activities. Chloroethane may be present in OU-2B groundwater as a result of past activities in and around Buildings 360 and 398.

Methylene Chloride in Groundwater. Figure 9-36 shows the distribution of methylene chloride in groundwater across OU-2B. Methylene chloride was detected in 31 of 783 groundwater samples collected from across OU-2B at concentrations ranging from 0.64 to

75 µg/L. Samples collected from 10 to 36 feet bgs from locations 097-002, 097-004, 097-005, and 097-007 contained methylene chloride at concentrations exceeding the risk-based screening level of 4.3 µg/L.

Although methylene chloride was detected in 31 samples, 30 of these samples were collected to support the chemical oxidation removal action. Data from this removal action were not fully validated and 20 of the 30 samples with detected values were only laboratory qualified with a "B" qualifier. This means the blanks were contaminated. Because of concerns with data quality, the data collected from this investigation was not used in the risk assessment. It should be noted that of these samples with detected concentrations, the four highest concentrations ranged from 5 to 6 µg/L, which is just above the risk-based screening level of 4.3 µg/L.

Methylene chloride was detected in only 1 of the 424 OU-2B groundwater samples used in the risk assessments. This concentration of 75 µg/L, also the maximum concentration detected at the site, was collected in 2002 from location M03-11 to the east of the OU-2B boundary. This one sample that exceeded the screening level, with a concentration of 75 µg/L, was collected in 2002 from a location east of the boundary of OU-2B (M11-03). Samples collected at this well before and after this sample contained non-detected concentrations with detection limits of 5 and 18 µg/L. Data indicate that methylene chloride is attributed to laboratory contamination and not activities at Building 360.

Polynuclear Aromatic Hydrocarbons in Groundwater

B(a)P and benzo(a)anthracene were the only two PAHs to present risk in groundwater. These compounds are discussed below.

Benzo(a)pyrene and Benzo(a)anthracene in Groundwater. Figure 9-37 shows the distribution of B(a)P and benzo(a)anthracene in groundwater across OU-2B. Of the 203 samples collected from across OU-2B, B(a)P and benzo(a)anthracene were detected at four and five sampling locations, respectively, at concentrations exceeding their risk-based screening levels of 0.0092 µg/L and 0.092 µg/L, respectively.

B(a)P) and benzo(a)anthracene were detected in groundwater samples from monitoring well location M03-06 at the maximum concentration of 1 µg/L each. This well is located in an area containing elevated PAH concentrations in soil. B(a)P and benzo(a)anthracene were also detected at concentrations exceeding their screening levels at sampling location 030-S07-015. B(a)P was also detected at concentrations exceeding its screening level at sampling locations 398-MW4, M03-04, and M03-07. Benzo(a)anthracene was detected at concentrations exceeding its screening level at sampling locations MW97-1, MW97-3, and 398-MW4. These two PAHs do not appear to be related to OU-2B activities because the locations of the maximum detected concentrations are outside the main work areas, including buildings, industrial waste lines, sanitary sewer lines, storm sewer lines, and fuel lines. The source of these PAHs is likely related to the fill history of OU-2B as discussed in the site-specific sections.

Naphthalene in Groundwater. Figure 9-38 shows the distribution of naphthalene in groundwater across OU-2B. Naphthalene was detected in 33 of 619 groundwater samples (VOC, SVOC, and PAH analyses) at concentrations ranging from 0.2 to 1,700 µg/L. The maximum concentration was detected in a sample collected in 2001 from sampling location S04-DGS-DP14 at a depth of 10.0 feet bgs. In addition, naphthalene was detected above the screening level of 6.0 µg/L in groundwater collected from sampling locations 097-010, S03-DGS-DP20, and S04-DGS-DP01 at depths of 10.0 to 17.0 feet bgs.

Naphthalene is present in groundwater around former Building 430 to the north, east, and south, near the sanitary and storm sewers approximately 175 feet east of Building 162, near the border of Sites 3 and 4 approximately 200 feet west of Building 552 and outside the western wall of Building 360.

Naphthalene is mostly used in the production of chemicals which produce polyvinyl chloride plastics, moth repellants and deodorant blocks; it is a white solid that when mixed with air can be very flammable. Naphthalene is also naturally occurring in fossil fuels such as petroleum and coal and can also be produced by burning wood products. The presence of naphthalene in groundwater can possibly be attributed to fueling activities around former Building 430 as well as maintenance, storage and testing activities in Buildings 162, 360, 372 and former Building 349.

Metals in Groundwater

Hexavalent chromium, iron, and manganese are present above the maximum ambient concentrations in groundwater at OU-2B and are discussed further below.

Hexavalent Chromium in Groundwater. Figure 9-39 shows the distribution of hexavalent chromium in groundwater across OU-2B. Hexavalent chromium was detected in 6 of 18 groundwater samples collected in OU-2B at concentrations ranging from 48.5 to 1,020 µg/L. The maximum detected concentration of 1,020 µg/L was collected in 1991 from sampling location G04-02. In addition, hexavalent chromium exceeded the maximum background concentration of 110 µg/L in groundwater collected from sampling locations G04-06, G04-08, G04-09, and S04-DGS-DP06.

Hexavalent chromium samples collected in 1991 make up 5 of the 6 detections in groundwater at OU-2B. The remaining sample (sampling location S04-DGS-DP06) collected during the data gap sampling event in 2001 exceeded the maximum background concentration. Sampling location S04-DGS-DP06 is approximately 25 feet west of sampling location G04-02, which contained the maximum detected concentration. Analytical methods for hexavalent chromium in the early 90's were not very accurate and the method was still being developed; current laboratory techniques are substantially better and provide a more accurate data set. The sample collected in 2001 contained 190 µg/L of hexavalent chromium and 1,540 µg/L total chromium making hexavalent chromium a small fraction of the total chromium detected at sampling location S04-DGS-DP06.

Hexavalent chromium sampling was isolated to groundwater underneath the western portion of Building 360 and three sampling locations collected outside and to the west of the building. Hexavalent chromium was not detected in the two vacuum extraction samples and one direct-push groundwater sample collected west of Building 360. Detections of hexavalent chromium in 1991 were limited to direct push and surface samples collected underneath Building 360.

Chromium is a naturally occurring element found in rocks, animals, plants, soil, and in volcanic dust and gases and is produced by industrial processes, such as chrome plating, the manufacture of dyes and pigments, leather tanning, and wood preserving. The most common forms are chromium (0), trivalent (chromium III), and hexavalent (chromium VI). Plating activities within Building 360 likely contributed to the presence of hexavalent chromium in groundwater at OU-2B.

Iron in Groundwater. Figure 9-40 shows the distribution of iron in groundwater across OU-2B. Iron was detected in 175 of 265 groundwater samples collected across OU-2B at concentrations ranging from 6.6 to 461,000 µg/L. Iron concentrations exceeded the background screening level of 24,400 µg/L in groundwater collected within the eastern half of OU-2B. The maximum concentration of 461,000 µg/L was detected in a sample collected in 1990 from sampling location MW360-4. Groundwater collected from sampling locations G04-09, M03-07, MW97-1, MW97-2, and MW97-3 also contained iron at concentrations exceeding the background screening level.

Iron is naturally occurring in soil and accounts for 1 to 5 percent of total concentrations of elements in benchmark soils in central California (Kearney 1996). Iron's solubility is very low in high pH solutions such as seawater, and the relatively low concentrations detected throughout OU-2B groundwater could be attributed to iron's insolubility. The elevated detections may be the result of the soils ability to reduce iron or the soils redox potential, which may occur in the presence of petroleum hydrocarbons. The reduction of ferric iron to ferrous is caused by a series of chemical and biochemical reactions taking place in an anaerobic environment allowing the iron to go into solution causing higher concentrations in groundwater.

Manganese in Groundwater. Figure 9-41 shows the distribution of manganese in groundwater across OU-2B. Manganese was detected in 258 of 265 groundwater samples collected from across OU-2B at concentrations ranging from 0.25 to 29,400 µg/L. The maximum concentration of 29,400 µg/L was detected in a groundwater sample collected from 84 to 94 feet bgs from sampling location D04-03. In addition, groundwater samples from 14 other sampling locations contained manganese at concentrations exceeding the maximum background groundwater concentration of 2,480 µg/L. Of these locations, the most elevated manganese concentrations were detected in samples from 50 to 96 feet bgs at locations apparently collocated with saline water. It is possible that the geochemistry created by the presence of saline water favors manganese accrual in groundwater. Manganese concentrations were generally lower in samples collected from shallower groundwater. Manganese was not used at the site and its presence in groundwater is not likely related to site activities.

9.1.5 Fate and Transport

The objective of this evaluation is to determine whether the chemicals driving risk at OU-2B (1) have migrated or degraded, (2) are being released from a continuing source of contamination, and (3) are likely to be transported through groundwater or other potential pathways. The evaluation of these contaminants primarily includes the following activities:

- Identifying groundwater sampling locations with the maximum concentrations of these contaminants
- Identifying the presence of breakdown or parent products for these contaminants
- Evaluating the effect of groundwater flow or other potential pathways on the distribution of the contaminants

The following sections present the fate and transport evaluation for each chemical driving risk to human and ecological receptors in OU-wide groundwater and their breakdown products, which included the following:

- 1,1-DCA
- 1,2-DCA
- 1,2-DCE (total)
- 1,4-Dichlorobenzene
- 1,1,2-TCA
- Benzo(a)anthracene
- B(a)P
- Benzene
- Bis(2-ethylhexyl)phthalate
- Bromodichloromethane
- Chloroethane
- Chloroform
- Chromium (hexavalent)
- Iron
- Manganese
- Methylene Chloride
- Naphthalene
- PCE
- TCE
- Vinyl Chloride

9.1.5.1 Chlorinated Volatile Organic Hydrocarbons in Groundwater

Chlorinated hydrocarbons are present in groundwater across OU-2B. The main chlorinated hydrocarbons present in groundwater are PCE; TCE; 1,2-DCE (total); 1,1,2-TCA; 1,1,1-TCA; 1,1-DCE; vinyl chloride; 1,1-DCA and 1,2-DCA. Less substantial chlorinated compounds include: 1,4-dichlorobenzene, bis(2-ethylhexyl)phthalate, bromodichloromethane, chloroform, and chloroethane. Because bis(2-ethylhexyl)phthalate, bromodichloromethane, chloroform, and chloroethane are not considered a concern, they are not further evaluated in this section. In general, the chlorinated VOCs appear to originate from parent compounds: PCE, TCE, 1,1,2-TCA, and 1,1,1-TCA. The 1,1,2 and 1,1,1-TCA appears to be original solvent materials emanating from below the central portion of Building 360. The main source of TCE appears to be located north of Building 360. Based on data collected in the areas containing the highest concentrations of TCE (see Figure 9-15), 1,1,1-TCA (see Figure 9-22), and 1,1-DCE (see

Figure 9-19), a continuing source of TCE 1,1,1 TCA, and 1,1-DCE may exist in the form of DNAPL in soil near or below Building 360.

Figure 9-42 shows dechlorination degradation pathways for common solvents. PCE, TCE and 1,1,1-TCA are subject to degradation by reductive dechlorination, which occurs under anaerobic conditions. By-products of the degradation process for PCE include TCE, 1,2-DCE; 1,1-DCA; and vinyl chloride; and eventually water and carbon dioxide (TCE can be a parent compound as well). By-products of the degradation process for 1,1,1-TCA include 1,1-DCE; vinyl chloride; and eventually carbon dioxide and water. TCE; 1,2-DCE; and vinyl chloride in groundwater are collocated (see Figure 9-43), indicating that degradation has been occurring. The compounds, 1,1,1-TCA; 1,1-DCE; and vinyl chloride are collocated in groundwater (see Figure 9-44), indicating that degradation has been occurring. Generally, vinyl chloride is only present at depths above approximately 30 to 37 feet bgs, indicating that degradation is occurring more slowly at greater depths. Contaminants in shallower groundwater may be degrading more rapidly because of the presence of low levels of petroleum hydrocarbons and benzene. Available oxygen may be used up during the biodegradation of petroleum hydrocarbons, creating an anaerobic environment where reductive dechlorination can occur more rapidly.

TCE, 1,1,1-TCA, and 1,1-DCE are present at the site at concentrations that exceed 1 percent of the respective solubility limit, indicating that DNAPL may be present at the site. Generally, each of these compounds appears to be present at concentrations that exceed 1 percent of the solubility limit between 10 to 55 feet bgs. It is likely that DNAPL exists at the site and is present between 10 to 55 feet bgs.

TCE and its breakdown products 1,2-DCE and vinyl chloride have migrated in groundwater across the site to Sea Plane Lagoon. However, the 1,1,1 TCA plume has not migrated to Seaplane Lagoon and likely will not reach the lagoon prior to degrading; however, the breakdown products of 1,1,1-TCA including 1,1-DCE; and vinyl chloride have migrated to the Seaplane Lagoon. Groundwater generally moves slowly across OU-2B because the hydraulic gradient is only 0.002 to 0.006; however, because the plumes have already reached Seaplane Lagoon, the contaminants will continue to discharge to surface water.

Degradation of chlorinated compounds is occurring at OU-2B and likely will continue until parent compounds are no longer present in groundwater at OU-2B. The degradation process does not appear to impede migration of the plume to Seaplane Lagoon; therefore, chlorinated compounds are expected to continue to discharge to Seaplane Lagoon.

Based on quarterly sampling in 2001 and 2002, concentrations of 1,4-dichlorobenzene appear to be increasing over time in the vicinity of MW360-1. The source of this increase in 1,4-dichlorobenzene concentrations is identified as a data gap.

9.1.5.2 Benzene in Groundwater

Benzene was detected in wells across OU-2B at low concentrations except in areas of known petroleum hydrocarbon contamination (near former Structure 430 and on the east side of Building 372), and benzene concentrations in monitoring wells have been decreasing over time. There does not appear to be a continuing source of benzene near the former AVGAS fueling area (former Structure 430). Groundwater gradients at OU-2B are very low, and benzene does not appear to be migrating away from this area. Benzene concentrations in other areas across OU-2B appear to be decreasing, likely as a result of biodegradation; however, benzene is very soluble in water is likely migrating very slowly toward Sea Plane Lagoon with the flow of groundwater.

9.1.5.3 Polynuclear Aromatic Hydrocarbons in Groundwater

PAHs were detected in several monitoring wells across OU-2B at low concentrations, which is unusual because according to the Agency for Toxic Substances and Disease Registry (ATSDR) PAHs have low water solubility (ATSDR 1995). The only process likely to affect the fate of PAHs in groundwater is sorption to soils. PAHs sorb strongly to organic matter in soils. The PAH concentrations in groundwater at OU-2B are collocated with benzene concentrations; therefore, benzene and petroleum hydrocarbons associated with benzene are likely responsible for mobilizing PAHs in soils. When the petroleum hydrocarbons and benzene are removed from soil and groundwater, PAHs will likely sorb to soil and become immobile.

9.1.5.4 Metals in Groundwater

Iron and manganese tend to mobilize in groundwater under reducing conditions. The oxidation/reduction potential at OU-2B ranges from -200 to 160 millivolts but generally appears to be negative, indicating reducing conditions. Once the petroleum hydrocarbons are removed from groundwater at OU-2B, oxidizing conditions will likely return, and then iron and manganese in groundwater will form complexes with organic matter, iron, and aluminum in soil and no longer be in solution.

Chromium enters air, water, and soil mostly in the trivalent and hexavalent forms as a result of natural processes and human activities. Stainless steel welding, chemical manufacturing, and the use of compounds containing hexavalent chromium can increase levels in the air. Chromium suspended in air will combine with dust particles and be removed by rain or will settle out. In water, chromium binds to soil particles and other materials and settles out of solution; however, a small amount may dissolve in the water. Chromium in soil does not dissolve easily in water and can attach strongly to the soil particles, with only a very small amount of the chromium dissolving in water (ATSDR 2000). Soluble hexavalent chromium may remain in solution for long periods of time; however, groundwater conditions at OU-2B are in a reducing state causing hexavalent chromium to reduce to trivalent chromium and be reabsorbed into soil.

9.1.6 Human Health Risk Assessment

An HHRA was conducted for OU-wide groundwater as part of the RI to estimate potential human health risks associated with potential exposure to site-related chemicals during current and potential future uses of OU-2B groundwater. Section 3.4.6 summarizes the approach used to conduct the HHRA. A summary of the HHRA results for the OU-wide groundwater plume is presented below. The HHRA results for soil at Sites 3, 4, 11, and 21 are presented in Sections 5.0 through 8.0. The following sections discuss chemicals of potential concern (COPC), the exposure assessment, and the risk characterization for the OU-2B groundwater HHRA. Appendix F presents the complete HHRA.

9.1.6.1 Chemicals of Potential Concern

Data for groundwater samples collected within the OU-wide groundwater plume were selected to conduct the HHRA. Only chemicals in soil considered to be essential nutrients were excluded as COPCs. The essential human nutrients that were excluded are calcium, magnesium, potassium, and sodium. All other chemicals were retained for evaluation in the HHRA. Lead was selected as a COPC for OU-wide groundwater and was evaluated along with site soil using the LeadSpread model (California Environmental Protection Agency Department of Toxic Substances Control [DTSC] 2003).

9.1.6.2 Exposure Assessment

According to reuse plans for Alameda Point, residential, construction worker, and commercial/industrial uses most likely apply to future exposures at OU-2B (EDAW 1996; Navy 1999c). Residential, commercial/industrial, and construction worker scenarios were evaluated for the following groundwater pathways:

- **Residential** - inhalation of vapors in indoor air and domestic use of groundwater (ingestion, dermal contact, and inhalation of vapors)
- **Commercial/Industrial** - inhalation of vapors in indoor air
- **Construction Worker** – inhalation of vapors in outdoor air

The potential for noncancer health effects is expressed as an HI. If the resulting HI is less than 1, it is assumed that there is no significant potential for noncarcinogenic health effects due to cumulative effects. If the total HI exceeds 1, a "segregation of hazard indices" analysis is conducted. In this analysis, chemicals that have similar target organs are grouped together, and an HI is calculated for each group. If the HI for a target organ exceeds 1, there is potential for noncancer health effects.

It is important to note that the noncancer HI is estimated differently than lifetime carcinogenic risk; specifically, a child's exposure is not cumulatively additive to the projected adult exposure.

Noncancer effects manifest over a specific time period, and once the exposure period is over, the hazard has also passed (that is, no latency is assumed). Therefore, because a child receptor has the highest potential risk, risk management decisions for chemicals with noncancer health effects are based on the HI for a child for the residential and recreational scenarios. The total HI that includes background chemicals is calculated for all scenarios, and an incremental HI (which does not include background) is also calculated for the child resident.

Unlike noncancer health effects, it is assumed that there is no significant potential for noncarcinogenic health effects if the HI is below 1, carcinogenic risks associated with exposure to chemicals classified as carcinogens are estimated as the incremental probability that an individual will develop cancer over a lifetime as a direct result of an exposure. Risk management decisions for chemicals with carcinogenic effects are based on lifetime or total risk; therefore, risks for adult and child receptors are summed to obtain a total carcinogenic risk. To aid in the interpretation of the results, EPA guidance presents a range of goals for residual carcinogenic risk, which is "an excess upper-bound lifetime cancer risk to an individual of between 1 in 1,000,000 to 1 in 10,000" or between 1.0E-06 and 1.0E-04. The range between 1E-06 and 1E-04 is referred to as the "risk management range."

The reasonable maximum exposure (RME) carcinogenic risks and the noncancer HIs for OU-wide groundwater are summarized below by scenario. RME and CTE carcinogenic risks and noncancer HIs are presented in Table 9-4.

Groundwater

For the commercial/industrial scenario, only inhalation of vapors from groundwater in indoor air was evaluated. The RME carcinogenic risk for the commercial/industrial scenario is 1E-04 (see Table 9-4), which is at the upper end of the risk management range. The HI is 0.2, which is below the threshold HI of 1 for noncarcinogens. Commercial/industrial worker risk drivers are presented in Table 9-5.

For the construction worker, only inhalation of vapors in outdoor air was evaluated. The RME carcinogenic risk for the construction worker scenario is 6E-05, which is within the risk management range. The HI is 0.9, which is below the threshold HI of 1 for noncarcinogens. Carcinogenic risk drivers are 1,4-dichlorobenzene (5E-05) and TCE (7E-06).

For the residential scenario, carcinogenic risk is 1E-02 (see Table 9-4), which is above the risk management range. The HI for a child is 310, which is greater than the threshold HI of 1 for noncarcinogens. Risk drivers for groundwater include the following (see Table 9-6):

- 1,1-DCA
- 1,2-DCA
- 1,1-DCE
- 1,2-DCE (total)
- 1,4-Dichlorobenzene
- 1,1,2-TCA
- Antimony
- Cadmium
- Chloroethane
- Chloroform
- Chromium (hexavalent)
- Iron
- Manganese
- Methylene Chloride

- Arsenic
- Benzo(a)anthracene
- B(a)P
- Benzene
- Bis(2-ethylhexyl)phthalate
- Bromodichloromethane
- Naphthalene
- PCE
- TCE
- Thallium
- Vinyl Chloride

Based on the background comparison, arsenic, cadmium, manganese, and thallium are attributed to background.

Lead in Soil and Groundwater

Lead was selected as a COPC for OU-wide groundwater and was evaluated along with site soil using the LeadSpread model (DTSC 2003). Sections 5.0 through 8.0 summarize the site-specific results based on LeadSpread modeling. Risk is posed by lead in soil and the lead plume at Site 3. Risk is not posed by lead in the OU-wide groundwater plume.

9.1.7 Ecological Risk Assessment

Groundwater at OU-2B is addressed in the ERA on a plume basis because plumes originating from different OU-2B sites have converged to form a large plume covering most of OU-2B. The following sections discuss chemicals of potential ecological concern (COPEC), the ERA problem formulation, and assessment results. Section 3.4.7 summarizes the approach used to conduct the ERA. Appendix G presents the complete ERA.

9.1.7.1 Chemicals of Potential Ecological Concern

The most recent groundwater sampling data at OU-2B were used to conduct the ERA. Table 9-7 summarizes the groundwater COPECs.

9.1.7.2 Problem Formulation

The ERA considers groundwater exposure pathways as complete only if the groundwater beneath OU-2B could reach the Oakland Inner Harbor, Seaplane Lagoon, or San Francisco Bay. Because a groundwater plume from OU-2B is reaching Seaplane Lagoon, groundwater is considered a complete exposure pathway in the ERA. To assess risk to marine receptors, groundwater sample concentrations were directly compared to published saltwater screening criteria and background groundwater concentrations.

9.1.7.3 Assessment Results

As discussed in Section 3.4.7.1, saltwater screening criteria were obtained from the California Toxic Rule Criteria for Enclosed Bays and Estuaries, Saltwater Aquatic Life Protection, or, if these values were not available, from the California EPA (Cal/EPA) ambient water quality criteria for saltwater aquatic life protection guidance (Cal/EPA 2000; EPA 1999a). If a COPEC

had an available saltwater screening criterion, the maximum detected COPEC concentration was compared to that criterion as discussed in Section 3.4.7.1. If the maximum diluted COPEC concentration (one-tenth the detected concentration) exceeded the saltwater criterion, the diluted exposure point concentration [EPC] (one-tenth of the EPC) was divided by the saltwater criterion to derive a hazard quotient (HQ). If a COPEC did not have an available saltwater screening criterion, then it was qualitatively evaluated. Assessment results for surface water (marine) receptors are discussed below.

COPECs retained for groundwater at OU-2B included the following:

- Chromium
- Nickel
- TCE
- Aluminum
- Barium
- Cobalt
- Manganese
- Molybdenum
- Vanadium
- 1,2,4-Trichloromethylbenzene
- Acetone
- Carbon disulfide
- Isopropylbenzene
- Tert-butanol
- Vinyl chloride
- Xylene

Of these retained COPECs only chromium, nickel, and TCE have available screening criteria needed to derive HQs. The following table presents the comparison of the diluted EPC derived from OU-2B groundwater and the corresponding screening criteria:

COPEC	EPC	Diluted EPC[a]	Screening Criteria[a]	Comparison
Chromium	0.113	0.0113	0.05[b]	Less than 1.0 (0.226)
Nickel	0.0266	0.00266	0.0082	Less than 1.0 (0.324)
Trichloroethene	0.786	0.0786	0.2[c]	Less than 1.0 (0.393)

Notes:

a Based on the chronic criteria (CCC) California Toxics Rule Criteria (EPA) for Enclosed Bays and Estuaries, Saltwater Aquatic Life Protection, unless otherwise specified.
b Based on the CCC for hexavalent chromium
c California Toxics Rule Criteria not available, value from the EPA National Ambient Water Quality Criteria, Saltwater Aquatic Life Protection, as presented in the National Oceanographic and Atmospheric Administration SQuiRT Tables.

CCC Criteria Continuous Concentration
COPEC Chemical of potential ecological concern
EPA U.S. Environmental Protection Agency
EPC Exposure Point Concentration

Based on these HQ values, these chemicals do not pose significant potential risk to marine receptors in Seaplane Lagoon.

The other COPECs do not have published saltwater screening values; therefore, they were qualitatively assessed as discussed below. Appendix G provides more detailed information about this qualitative assessment.

Aluminum and barium are naturally occurring in surface water in the Seaplane Lagoon. Both metals, however, are unlikely to remain as free metals in the water column (ATSDR 1990 and 1999). Aluminum was detected in 37 of 70 groundwater samples collected from OU-2B at concentrations ranging from 5.6 to 224 µg/L. Background groundwater concentrations of aluminum at Alameda Point range from 3 to 4,530 µg/L. Barium was detected in 64 of 70 groundwater samples collected from OU-2B at concentrations ranging from 0.02 to 0.11 µg/L. Background concentrations of barium at Alameda Point range from 2.3 to 1,260 µg/L. Vanadium was detected in 43 of 70 groundwater samples collected from OU-2B at concentrations ranging from 0.72 to 46 µg/L. Background groundwater concentrations of vanadium at Alameda Point range from 2 to 50.8 µg/L. Based on background concentrations, aluminum, barium, and vanadium concentrations detected in groundwater samples from OU-2B appear to be consistent with background conditions.

Cobalt was detected in 60 of 70 groundwater samples collected from OU-2B at concentrations ranging from 0.06 to 41 µg/L. Background groundwater concentrations of cobalt at Alameda Point range from 0.8 to 1.05 µg/L. Manganese was detected in 68 of 70 groundwater samples collected from OU-2B at concentrations ranging from 0.82 to 26,000 µg/L. Background groundwater concentrations of manganese at Alameda Point range from 1.1 to 2,480 µg/L. Molybdenum was detected in 53 of 70 groundwater samples collected from OU-2B at concentrations ranging from 0.74 to 390 µg/L. Background groundwater concentrations of molybdenum at Alameda Point range from 0.5 to 19.4 µg/L.

The VOCs 1,2,4-trichloromethylbenzene, acetone, carbon disulfide, isopropylbenzene, tert-butanol, vinyl chloride, and xylene were detected in groundwater at OU-2B in 5.5 to 24 percent of the samples collected. Concentrations of these chemicals ranged from 0.1 to 63,000 µg/L. Applying a dilution factor of 10 to the maximum concentration detected in the groundwater results in a concentration of 6,300 µg/L in groundwater potentially reaching Seaplane Lagoon (National Oceanographic and Atmospheric Administration 1999). VOCs are not expected to persist in the surficial aerobic water column and will most likely volatilize to air. In addition, VOCs will not bioconcentrate or bioaccumulate into the tissues of marine receptors. Based on these factors, impacts from VOCs to marine receptors are expected to be low.

9.2 OU-WIDE GROUNDWATER PLUME CONCLUSIONS AND RECOMMENDATIONS

This section summarizes conclusions and recommendations regarding the nature and extent of chemicals in the OU-wide groundwater plume and risk posed by those chemicals. The contents of this section are based on: (1) the site-specific CSMs, (2) background comparisons, (3) the nature and extent evaluations, (4) the fate and transport evaluations, (5) the HHRA, and (6) the ERA.

9.2.1 Nature and Extent Conclusions

Most of the chemicals detected in groundwater across OU-2B are consistent with historical activities that occurred at Sites 3, 4, 11, and 21, which included painting, paint stripping, and equipment cleaning and repair. In several areas, chemicals were apparently released to soil and migrated to groundwater, were released directly to groundwater, or were released to storm sewer lines which drained into the Seaplane Lagoon.

The primary chemicals used at the site include chlorinated solvents, petroleum hydrocarbons, and metals. Chlorinated solvents and their breakdown products (TCE, 1,2-DCE, PCE, vinyl chloride, dichlorobenzene, TCA, and DCA) were detected in groundwater across OU-2B with the highest concentrations located near Building 360 and the Seaplane Lagoon. Petroleum hydrocarbons were detected in groundwater across OU-2B and are generally commingled with CERCLA contaminates. The highest concentrations of petroleum hydrocarbon compounds were detected to the east of former Structure 430 and to the east of Building 372. The highest concentrations of BTEX were detected to the west of Building 372. MTBE was detected at it highest concentration just north of Building 360. Several metals were used at OU-2B and detected in groundwater including aluminum, cadmium, chromium, copper, iron, mercury and zinc. The highest concentrations of aluminum, copper, and mercury were detected to the east of Building 360. Cadmium, hexavalent chromium, and total chromium were detected at their highest concentrations below the central portion of Building 360 (near the plating shop) or just to the east of the central part of Building 360. Waste streams from the plating shop typically were disposed of into Seaplane Lagoon until 1975 when they were diverted into the Building 360 IWTP (E&E 1983). Zinc was detected in groundwater across OU-2B. The maximum concentration was detected in a sample from a well south of Building 112 where the zinc smelter operated. There is no apparent correlation of zinc with those operations.

It is likely that the chlorinated solvents in groundwater originated at Building 360 and have migrated to the west of Buildings 162 and 14. TCE, DCE, TCA, and vinyl chloride concentrations generally decrease in samples collected closer to the Seaplane Lagoon. In addition, a secondary source of TCE and TCA may be DNAPL, which appears to be located north of Building 360 and beneath the building.

Benzene in groundwater is related to petroleum hydrocarbons, and USTs 97-A through 97-E and Building 372 are the likely sources.

Bis(2-ethylhexyl)phthalate was detected in 4 out of 203 groundwater samples collected near and underneath Building 360. Bis(2-ethylhexyl)phthalate and other phthalates are found in many plastics. This particular compound is referred to as a "common laboratory contaminant." It is frequently detected in SVOC results at a low level. EPA functional guidelines qualify detected results as not detected due to contamination at up to 10 times the detection limit, or 10 times the level found in the method blank, for common laboratory contaminants.

Bromodichloromethane was generally detected in groundwater containing chlorinated solvents, and Building 360 is the likely source. Because bromodichloromethane concentrations are

apparently decreasing across OU-2B, a continuing source of bromodichloromethane does not appear to be present. Based on the maximum concentration of bromodichloromethane detected in groundwater at OU-2B, bromodichloromethane is not considered a primary risk driver.

Chloroethane was detected in shallow groundwater near the sanitary sewer line approximately 200 feet east of Building 414, near the storm sewer line approximately 175 feet east of Building 552, and under Buildings 360 and 398. It is a degradation product of both 1,1-DCA and 1,2-DCA and was commonly used in solvents and to produce gasoline additives. Chloroethane is likely related to past activities in and around Buildings 360 and 398.

Chloroform was detected in groundwater near Building 360 and near the center of OU-2B next to an industrial waste treatment line. Chloroform was detected at very low concentrations in more recent samples, which suggests that chloroform concentrations are decreasing at OU-2B.

Chloromethane was detected in shallow groundwater near former Structure 430 (near the southwest corner of Building 162) and north of Building 170. The chloromethane detected at OU-2B is likely being released in minor amounts from the degradation of the marsh crust. Because detections are few and low in concentration, chloromethane is not considered a primary risk driver at OU-2B.

Methylene chloride was detected in 31 of 783 groundwater samples collected from across OU-2B. However, 30 of the samples were from an investigation that did not meet data quality objectives for risk assessment because of contaminants present in blank samples. The one sample with a detected concentration of 75 µg/L was collected in 2002 from a location east of the OU-2B boundary (M03-11). Samples collected at this well before and after this sample contained non-detected concentrations with detection limits of 5 and 18 µg/L. Data indicate that methylene chloride is attributed to laboratory contamination and not activities at Building 360.

The PAHs B(a)P), benzo(a)anthracene, and naphthalene were detected in OU-2B groundwater. B(a)P) and benzo(a)anthracene were detected in groundwater across OU-2B, with the maximum concentrations in groundwater collocated with elevated PAHs detected in soil. PAHs do not appear to be related to OU-2B activities because the maximum detected concentrations are located outside of the main work areas, which include buildings, industrial waste lines, sanitary sewer lines, storm sewer lines, and fuel lines. The source of these PAHs is likely related to the fill history of OU-2B.

Naphthalene was detected in groundwater around former Building 430 to the north, east, and south, near the sanitary and storm sewers approximately 175 feet east of Building 162, near the border of Sites 3 and 4 approximately 200 feet west of Building 552, and outside the western wall of Building 360. Naphthalene is naturally occurring in fossil fuels such as petroleum and coal and can also be produced by burning wood products. The presence of naphthalene in groundwater is likely attributed to fueling activities around former Building 430 as well as maintenance, storage, and testing activities in Buildings 162, 360, 372 and former Building 349.

The locations of detected concentrations do not indicate that Building 360 is the source of the methylene chloride contamination. Furthermore, methylene chloride is a common laboratory contaminant and was detected in associated blank samples for 20 of the 31 samples containing detectable methylene chloride concentrations; therefore, the presence of methylene chloride in groundwater samples is likely due to laboratory contamination.

Hexavalent chromium, iron and manganese were detected at elevated concentrations in groundwater. Hexavalent chromium sampling was isolated to groundwater underneath the western portion of Building 360 and three sampling locations collected outside and to the west of the building. Detections were limited to groundwater samples collected underneath the western portion of Building 360. Hexavalent chromium samples collected in 1991 make up 5 of the 6 detections in groundwater at OU-2B. Analytical methods for hexavalent chromium in the early 1990s were not very accurate and the method was still being developed; current laboratory techniques are substantially better and provide a more accurate data set. The sample collected in 2001 contained 190 µg/L of hexavalent chromium and 1,540 µg/L total chromium making hexavalent chromium a small fraction of the total chromium detected. Plating activities within Building 360 could possibly have contributed to the presence of hexavalent chromium in groundwater at OU-2B.

Iron concentrations in groundwater are elevated in the eastern half of OU-2B, with the maximum concentration detected in a sample collected in 1990 along the northwestern side of Building 360. Iron is naturally occurring in soil and its solubility is very low in high pH solutions such as seawater. The elevated detections may be the result of the soil's ability to reduce iron, which may occur in the presence of petroleum hydrocarbons. The reduction of ferric iron to ferrous is caused by a series of chemical and biochemical reactions taking place in an anaerobic environment allowing the iron to go into solution causing higher concentrations in groundwater.

Manganese was detected in groundwater across OU-2B. The most elevated concentrations were detected in samples from 50 to 96 feet bgs at locations apparently collocated with saline water. It is possible that the geochemistry created by the presence of saline water favors manganese accrual in groundwater. Manganese concentrations were generally lower in samples collected from shallower groundwater.

Once the petroleum hydrocarbons are removed from groundwater at OU-2B, oxidizing conditions will likely return, and then iron and manganese in groundwater will form complexes with organic matter, iron, and aluminum in soil and no longer be in solution.

9.2.2 Risk Assessment Conclusions

The following sections discuss HHRA and ERA results from the evaluation of risk from chemicals detected at OU-2B.

Based on the HHRA, the following chemicals in groundwater are risk drivers:

- 1,1-DCA
- 1,2-DCA
- 1,1-DCE
- 1,2-DCE (total)
- 1,4-Dichlorobenzene
- 1,1,2-TCA
- Antimony
- Arsenic
- Benzo(a)anthracene
- B(a)P
- Benzene
- Bis(2-ethylhexyl)phthalate
- Bromodichloromethane
- Cadmium
- Chloroethane
- Chloroform
- Chromium (hexavalent)
- Iron
- Manganese
- Methylene Chloride
- Naphthalene
- PCE
- TCE
- Thallium
- Vinyl Chloride

Based on the ERA, manganese in groundwater was identified as a risk driver. According to the background comparison, antimony, arsenic, cadmium, and thallium are attributed to background.

9.2.2.1 Human Health Risk Assessment Conclusions

According to reuse plans for Alameda Point, residential, commercial/industrial, and construction worker exposures are the most likely future exposures at OU-2B. Groundwater pathways for the construction worker receptors were not considered complete; therefore, groundwater was not evaluated for this exposure scenario. Human health risk was evaluated for residential and commercial/industrial exposure scenarios only. Inhalation of vapors from groundwater to indoor air was evaluated for the residential and commercial/industrial scenarios. HHRA results for OU-wide groundwater are summarized below.

Groundwater

For the commercial/industrial scenario, only inhalation of vapors from groundwater in indoor air was evaluated. The RME carcinogenic risk for the commercial/industrial scenario is within the risk management range. The HI is 0.2, which is less than the threshold HI of 1 for noncarcinogens.

For the construction worker scenario, only inhalation of vapors in outdoor air was evaluated. The RME carcinogenic risk for the construction worker is within the risk management range. 1,4-dichlorobenzene and TCE are carcinogenic risk drivers. The HI is 0.9, which is less than the threshold HI of 1 for noncarcinogens.

For the residential scenario, carcinogenic risk is above the risk management range. The HI for a child is greater than the threshold HI of 1 for noncarcinogens. Residential groundwater risks are primarily attributed to the following:

- 1,1-DCA
- 1,2-DCA
- 1,1-DCE
- 1,2-DCE (total)
- 1,4-Dichlorobenzene
- 1,1,2-TCA
- Antimony
- Arsenic
- Benzo(a)anthracene
- B(a)P
- Benzene
- Bis(2-ethylhexyl)phthalate
- Bromodichloromethane
- Cadmium
- Chloroethane
- Chloroform
- Chromium (hexavalent)
- Iron
- Manganese
- Methylene Chloride
- Naphthalene
- PCE
- TCE
- Thallium
- Vinyl Chloride

Based on the background comparison, arsenic, cadmium, manganese, and thallium are attributed to background.

Lead in Soil and Groundwater

Lead was selected as a COPC for OU-wide groundwater and was evaluated along with site soil using the LeadSpread model (DTSC 2003). Sections 5.0 through 8.0 summarize the site-specific results based on LeadSpread modeling. Risk is posed by lead in soil and the lead plume at Site 3. Risk is not posed by lead in the OU-wide groundwater plume.

9.2.2.2 Ecological Risk Assessment Conclusions

Because the OU-wide groundwater plume intersects the Seaplane Lagoon, the exposure pathways for marine receptors were considered complete, and a site-specific ERA was conducted for the OU-wide groundwater plume to estimate potential risks to marine receptors. Significant risk to ecological receptors is potentially posed by manganese; however, elevated manganese is likely from saline conditions.

9.2.3 Recommendations

Based on the data and risks discussed above, The OU-wide groundwater plume is recommended for further evaluation in a feasibility study (FS), as defined under CERCLA, to address risks to commercial/industrial receptors and residential receptors under the unrestricted reuse scenario. TCE and vinyl chloride were identified as the primary COCs (exceed the risk management range) and the following chemicals are identified as secondary COCs (within the risk management range):

- 1,1-DCA
- 1,2-DCA
- 1,1-DCE
- 1,2-DCE (total)
- 1,4-Dichlorobenzene
- 1,1,2-TCA
- Benzene
- Benzo(a)anthracene
- B(a)P
- Chromium (hexavalent)
- Iron
- Manganese
- Naphthalene
- PCE

In addition, the following potential data gaps were identified. Because detection limits for non-detected SVOCs and the VOCs 1,1,1-TCA, 1,1,2-TCA, and vinyl chloride in groundwater were elevated, the need for further sampling and analysis of groundwater may be necessary to confirm the concentrations of these chemicals in OU-wide groundwater. Based on quarterly sampling in 2001 and 2002, concentrations of 1,4-dichlorobenzene appear to be increasing over time in the vicinity of MW360-1. The source of this increase in 1,4-dichlorobenzene concentrations is identified as a data gap.

Antimony, arsenic, cadmium, and thallium were identified as risk drivers for OU-wide groundwater but are not recommended as COCs for further evaluation in the FS because these metals are attributed to background.

Bis(2-ethylhexyl)phthalate, bromodichloromethane, chloroform, chloroethane, and methylene chloride were also identified as risk drivers, but it was determined that they are not a significant concern and are not recommended as COCs.

An evaluation of TPH in groundwater also was conducted based on the TPH Strategy for Alameda Point. On the basis of this evaluation, further action is recommended for OU-2B groundwater for TPH and TPH-associated constituents. Corrective action is currently being conducted under the Navy's TPH program to address groundwater contamination at Site 11 (known as CAA 11).

FIGURES

FINAL OPERABLE UNIT 2B
REMEDIAL INVESTIGATION REPORT
SITES 3, 4, 11, AND 21

DATED 05 AUGUST 2005

Alameda Point
Department of the Navy, BRAC PMO West, San Diego, California

FIGURE 9-1
OU-2B FEATURES

Operable Unit 2B
Remedial Investigation Report

SITE 3

SITE 4

SITE 21

SITE 11

SITE 17

SITE 19

SITE 22

SITE 13

A

A'

B

B'

A''

SAMPLING LOCATION

- Direct-Push
- Excavation
- Hand Auger
- Manhole/Storm Drain
- Monitoring Well
- Piezometer
- Soil Boring
- Soil Gas
- Surface Location

CROSS SECTIONS

CERCLA SITE

BUILDING

- Present
- Removed

OPERABLE UNIT 2B

LAND COVER

Notes:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
EBS = Environmental Baseline Survey
TPH = Total Petroleum Hydrocarbon

50 0 50 100 Feet

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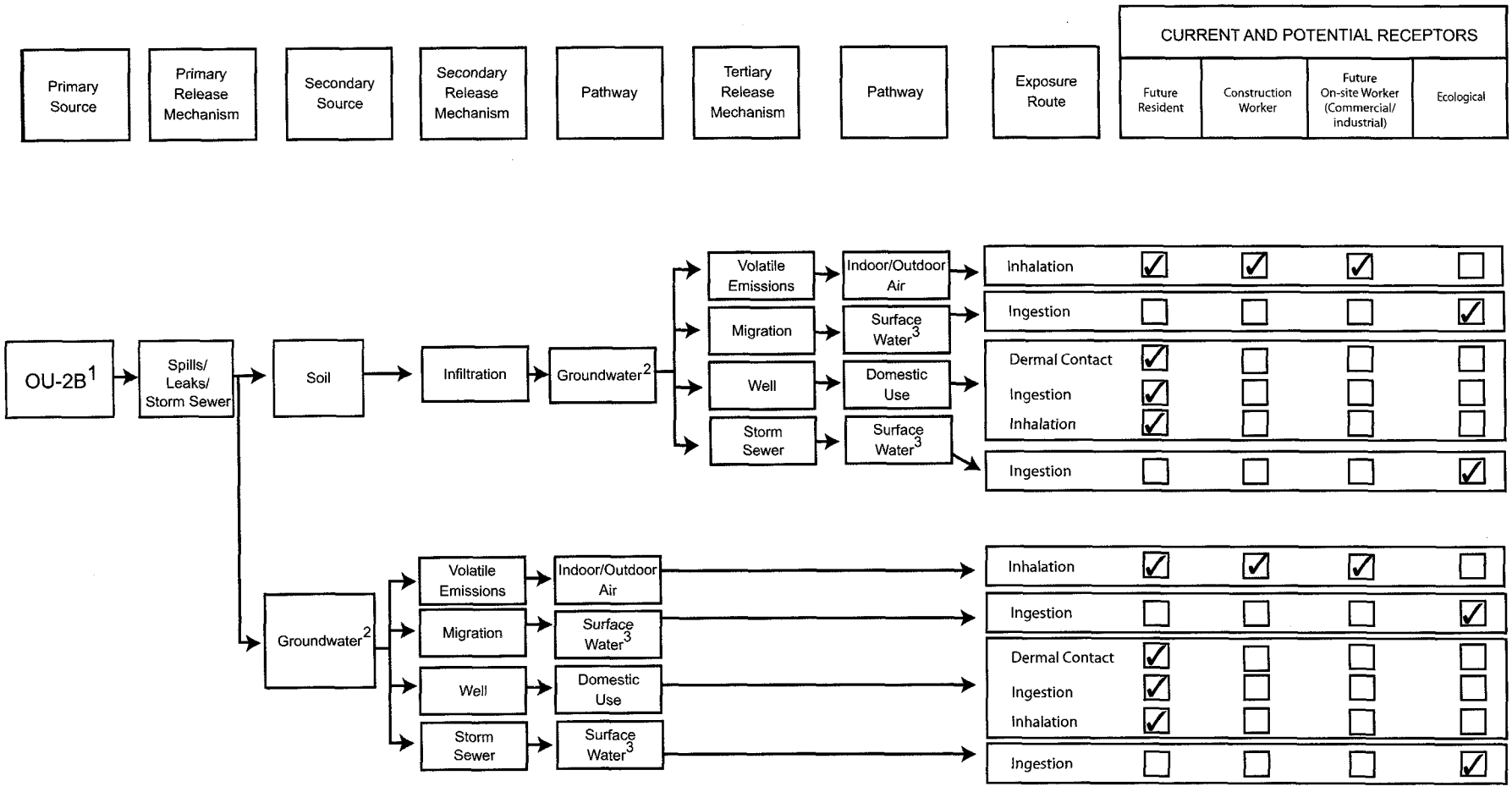
FIGURE 9-2
OU-2B GROUNDWATER SAMPLING LOCATIONS FOR THE CERCLA, EBS AND TPH INVESTIGATIONS AND PLAN VIEW OF CROSS SECTIONS
Operable Unit 2B
Remedial Investigation Report



☑ Potentially complete pathway, exposure quantified

1 Buildings 114, 162, 398, and 113, 163A, 360, 372, and 414. Former Structure 430; landscaped open areas around Site 3; ASTs 37A through D, 360A through E and 372; USTs 97-A through 97-E, 163, 372-2, 14-1 through 14-6, 37-1 through 37-4, 162-1, 162-2, 398-1, and 398-2; and OWSs-163, -360, -372A, -372B, -414, 14A through E, and -162; and associated fuel lines and storm sewer

2 USTs 97-A through 97-E, 163, 372-1, 14-1 through 14-6, 37-1 through 37-4, 162-1, 162-2, 398-1, and 398-2; and OWSs-163, -360, -372A, -372B, -414, 14A through E, and -162; and associated fuel lines and storm sewer lines

3 Seaplane Lagoon

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FIGURE 9-3
OU-WIDE GROUNDWATER CONCEPTUAL SITE MODEL
Operable Unit 2B
Remedial Investigation Report

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FIGURE 9-4
OU-WIDE SAMPLING LOCATIONS FOR SVOCs IN GROUNDWATER

Operable Unit 2B
Remedial Investigation Report

SAMPLING LOCATION

- Locations analyzed for VOCs in soil

ABOVEGROUND STORAGE TANK (AST)

- Present
- Removed

UNDERGROUND STORAGE TANK (UST)

- Present
- Removed

GENERATOR ACCUMULATION POINT (GAP)

SOLID WASTE MANAGEMENT UNIT (SWMU)

CATCH BASIN

MANHOLE

OIL-WATER SEPARATOR (OWS)

FENCE

FUEL LINE

SANITARY SEWER LINE

STORM SEWER LINE

CORRECTIVE ACTION AREA (CAA)

CERCLA SITE BOUNDARY

OU-2B BOUNDARY

ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL BOUNDARY AND NUMBER

LAND COVER

BUILDING

- Present
- Removed

Note:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
Buildings 360A through D could not be located and are not included on this figure.

50 0 50 100 Feet

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FIGURE 9-5
OU-WIDE SAMPLING LOCATIONS FOR VOCs IN GROUNDWATER

Operable Unit 2B
Remedial Investigation Report

SAMPLING LOCATION

- Location analyzed for metals in groundwater

ABOVEGROUND STORAGE TANK (AST)

- Present
- Removed

UNDERGROUND STORAGE TANK (UST)

- Present
- Removed
- GENERATOR ACCUMULATION POINT (GAP)
- SOLID WASTE MANAGEMENT UNIT (SWMU)
- CATCH BASIN
- MANHOLE
- OIL-WATER SEPARATOR (OWS)
- FENCE
- FUEL LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- CORRECTIVE ACTION AREA (CAA)
- CERCLA SITE BOUNDARY
- OU-2B BOUNDARY
- # ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL BOUNDARY AND NUMBER
- LAND COVER

BUILDING

- Present
- Removed

Note:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
Buildings 360A through D could not be located and are not included on this figure.

50 0 50 100 Feet

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FIGURE 9-6
OU-WIDE SAMPLING LOCATIONS FOR METALS IN GROUNDWATER

Operable Unit 2B
Remedial Investigation Report

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SITE 6

SITE 3

SITE 21

SITE 11

SITE 17

SITE 4

SITE 19

SITE 13

SITE 22

FORMER FUEL LINE CAA B

CAA-3A

CAA-3B

CAA-3C

CAA-11A

CAA-11B

CAA-4A

CAA-4B

CAA-4C

CAA-13

W. TRIDENT AVENUE

W. SEAPLANE LAGOON

W. ATLANTIC AVENUE

ORION STREET

HANCOCK STREET

MAIN ST.

PERRY POINT

SKYHAWK STREET

SILO AIR CLEANERS

ELECTRICAL LINE TRANSFORMERS

SAMPLING LOCATION

- Location analyzed for PAHs in groundwater

ABOVEGROUND STORAGE TANK (AST)

- Present
- Removed

UNDERGROUND STORAGE TANK (UST)

- Present
- Removed
- GENERATOR ACCUMULATION POINT (GAP)
- SOLID WASTE MANAGEMENT UNIT (SWMU)
- CATCH BASIN
- MANHOLE
- OIL-WATER SEPARATOR (OWS)
- FENCE
- FUEL LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- CORRECTIVE ACTION AREA (CAA)
- CERCLA SITE BOUNDARY
- OU-2B BOUNDARY
- # ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL BOUNDARY AND NUMBER
- LAND COVER

BUILDING

- Present
- Removed

Note:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
Buildings 360A through D could not be located and are not included on this figure.

N

50 0 50 100 Feet

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FIGURE 9-7
OU-WIDE SAMPLING LOCATIONS FOR PAHs IN GROUNDWATER

Operable Unit 2B
Remedial Investigation Report

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SAMPLING LOCATION
- Location analyzed for TPH in groundwater

ABOVEGROUND STORAGE TANK (AST)
- Present
- Removed

UNDERGROUND STORAGE TANK (UST)
- Present
- Removed
- GENERATOR ACCUMULATION POINT (GAP)
- SOLID WASTE MANAGEMENT UNIT (SWMU)
- CATCH BASIN
- MANHOLE
- OIL-WATER SEPARATOR (OWS)
- FENCE
- FUEL LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- INDUSTRIAL WASTE LINE
- CORRECTIVE ACTION AREA (CAA)
- CERCLA SITE BOUNDARY
- OU-2B BOUNDARY
- # ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL BOUNDARY AND NUMBER
- LAND COVER

BUILDING
- Present
- Removed

Note:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
Buildings 360A through D could not be located and are not included on this figure.

50 0 50 100 Feet

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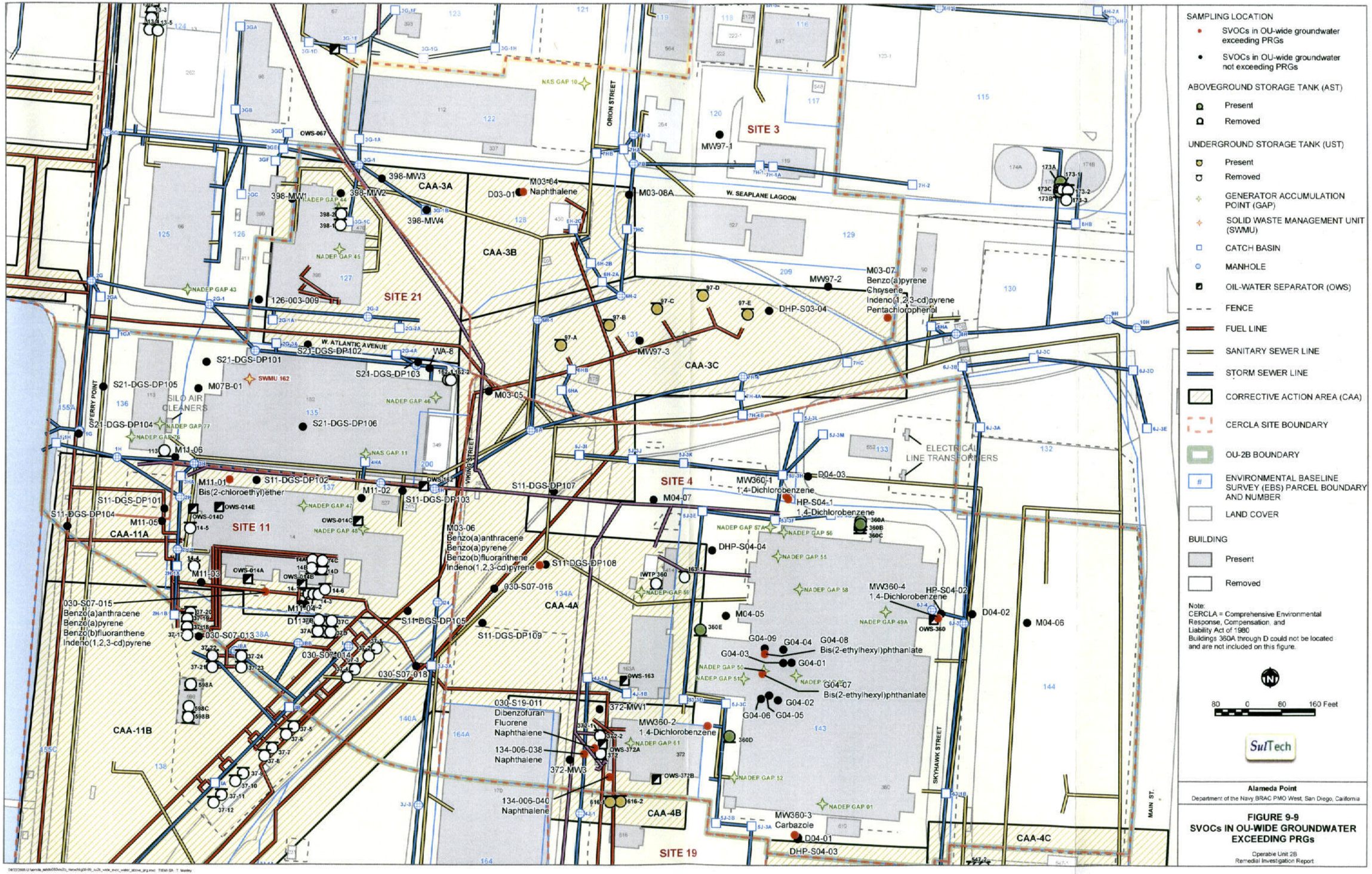
FIGURE 9-8
OU-WIDE SAMPLING LOCATIONS FOR TPH IN GROUNDWATER

Operable Unit 2B
Remedial Investigation Report



SAMPLING LOCATION

- SVOCs in OU-wide groundwater exceeding PRGs
- SVOCs in OU-wide groundwater not exceeding PRGs

ABOVEGROUND STORAGE TANK (AST)

- Present
- Removed

UNDERGROUND STORAGE TANK (UST)

- Present
- Removed
- GENERATOR ACCUMULATION POINT (GAP)
- SOLID WASTE MANAGEMENT UNIT (SWMU)
- CATCH BASIN
- MANHOLE
- OIL-WATER SEPARATOR (OWS)
- FENCE
- FUEL LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- CORRECTIVE ACTION AREA (CAA)
- CERCLA SITE BOUNDARY
- OU-2B BOUNDARY
- # ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL BOUNDARY AND NUMBER
- LAND COVER

BUILDING

- Present
- Removed

Note:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
Buildings 360A through D could not be located and are not included on this figure.

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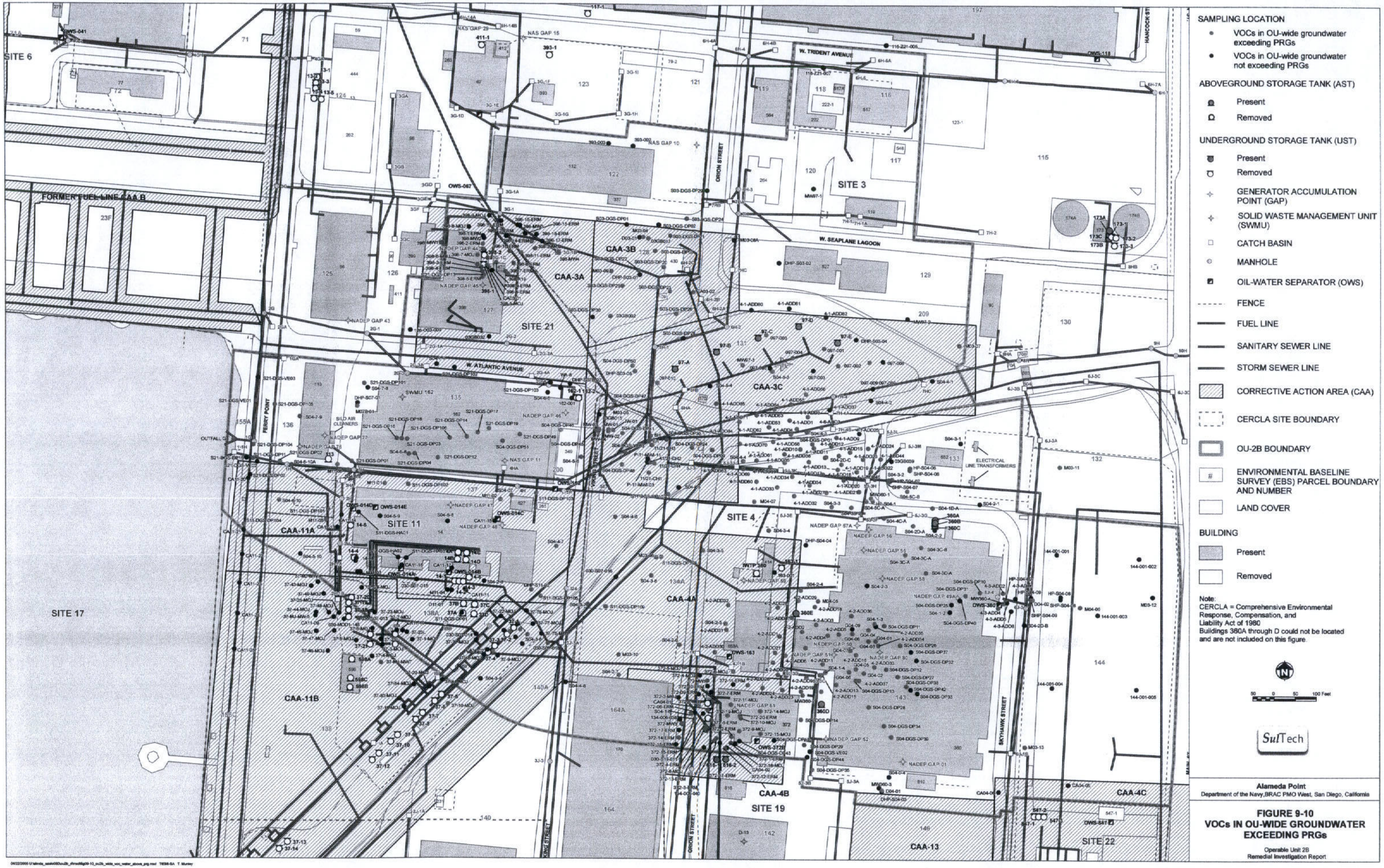
FIGURE 9-9
SVOCs IN OU-WIDE GROUNDWATER EXCEEDING PRGs

Operable Unit 2B
Remedial Investigation Report



SAMPLING LOCATION
VOCs in OU-wide groundwater exceeding PRGs
VOCs in OU-wide groundwater not exceeding PRGs
ABOVEGROUND STORAGE TANK (AST)
Present
Removed
UNDERGROUND STORAGE TANK (UST)
Present
Removed
GENERATOR ACCUMULATION POINT (GAP)
SOLID WASTE MANAGEMENT UNIT (SWMU)
CATCH BASIN
MANHOLE
OIL-WATER SEPARATOR (OWS)
FENCE
FUEL LINE
SANITARY SEWER LINE
STORM SEWER LINE
CORRECTIVE ACTION AREA (CAA)
CERCLA SITE BOUNDARY
OU-2B BOUNDARY
ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL BOUNDARY AND NUMBER
LAND COVER
BUILDING
Present
Removed
Note:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
Buildings 360A through D could not be located and are not included on this figure.
50 0 50 100 Feet
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FIGURE 9-10
VOCs IN OU-WIDE GROUNDWATER EXCEEDING PRGs
Operable Unit 2B
Remedial Investigation Report
SITE 6
SITE 3
SITE 21
SITE 11
SITE 4
SITE 17
SITE 19
SITE 22
CAA-3A
CAA-3B
CAA-3C
CAA-4A
CAA-4B
CAA-4C
CAA-11A
CAA-11B
CAA-13
FORMER FUEL LINE CAA B
W. TRIDENT AVENUE
W. SEAPLANE LAGOON
W. ATLANTIC AVENUE
ORION STREET
SKYHAWK STREET
FERRY POINT
HANCOCK ST

SAMPLING LOCATION

- Metals in OU-wide groundwater exceeding PRGs
- Metals in OU-wide groundwater not exceeding PRGs

ABOVEGROUND STORAGE TANK (AST)

- Present
- Removed

UNDERGROUND STORAGE TANK (UST)

- Present
- Removed
- GENERATOR ACCUMULATION POINT (GAP)
- SOLID WASTE MANAGEMENT UNIT (SWMU)
- CATCH BASIN
- MANHOLE
- OIL-WATER SEPARATOR (OWS)
- FENCE
- FUEL LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- CORRECTIVE ACTION AREA (CAA)
- CERCLA SITE BOUNDARY
- OU-2B BOUNDARY
- ENVIRONMENTAL BASELINE SURVEY (EBS) PARCEL BOUNDARY AND NUMBER
- LAND COVER

BUILDING

- Present
- Removed

Note:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
Buildings 360A through D could not be located and are not included on this figure.

N

50 0 50 100 Feet

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FIGURE 9-11
METALS IN OU-WIDE GROUNDWATER EXCEEDING PRGs

Operable Unit 2B
Remedial Investigation Report

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Continue

SAMPLING LOCATION

- Direct-Push
- Excavation
- Monitoring Well
- Soil Boring
- Surface Location
- CATCH BASIN
- MANHOLE
- FUEL LINE
- INDUSTRIAL WASTE LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- CERCLA SITE BOUNDARY
- OU-2B BOUNDARY

BUILDING

- Present
- Removed

LAND COVER

WATER

Notes:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980

100 0 100 200 Feet

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FIGURE 9-12
MAXIMUM CONCENTRATIONS IN GROUNDWATER OF CHEMICALS USED AT OU-2B
Operable Unit 2B
Remedial Investigation Report

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