

**COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY (CLEAN II)**  
**Northern and Central California, Nevada, and Utah**  
**Contract Number N62474-94-D-7609**  
**Contract Task Order 011**

**Prepared For**

**DEPARTMENT OF THE NAVY**  
**Mrs. Glenna Clark, Remedial Project Manager**  
**Engineering Field Activity West**  
**Naval Facilities Engineering Command**  
**San Bruno, California**

**PARTIAL SUBMITTAL**

**PARCEL C RISK MANAGEMENT REVIEW**  
**TECHNICAL MEMORANDUM**  
**HUNTERS POINT SHIPYARD**  
**SAN FRANCISCO, CALIFORNIA**

**November 1, 1999**

**Prepared By**

**TETRA TECH EM INC.**  
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**San Francisco, CA 94105**  
**(415) 543-4880**

  
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Jean Michaels, Project Manager



DEPARTMENT OF THE NAVY  
ENGINEERING FIELD ACTIVITY, WEST  
NAVAL FACILITIES ENGINEERING COMMAND  
900 COMMODORE DRIVE  
SAN BRUNO, CALIFORNIA 94068-5006

IN REPLY REFER TO:

5090  
Ser 6223/L0305-1  
01 November 1999

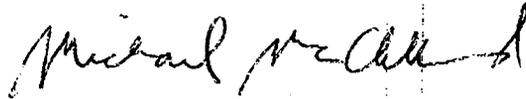
**From:** Commanding Officer, Engineering Field Activity, West, Naval Facilities Engineering Command  
**To:** U.S. Environmental Protection Agency (Attn: Ms. Sheryl Lauth) (3 copies)  
California Department of Toxic Substances Control (Attn: Mr. Chein Kao) (2 copies)  
California Regional Water Quality Control Board (Attn: Mr. Chris Maxwell)  
**Subj:** PARCEL C DRAFT RISK MANAGEMENT TECHNICAL MEMORANDUM, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA  
**Encl:** (1) Parcel C Draft Risk Management Technical Memorandum, Hunters Point Shipyard, San Francisco, CA, dated 01 November 1999

1. In accordance with the Hunters Point Annex Federal Facility Agreement (FFA), enclosure (1) is forwarded for your review.
2. During the October 21, 1999, BRAC Cleanup Team (BCT) meeting, some of the problematic issues associated with the Parcel D Risk Management Technical Memorandum comments received and the probable impact to future parcel submittals were discussed. The Navy received numerous comments on the Parcel D document from both the U.S. Environmental Protection Agency (USEPA) and the Department of Toxic Substances Control (DTSC) and also from non-regulatory interest groups. Concerns raised by the USEPA and the DTSC support fundamentally different opinions regarding the purpose and content of that document. A BCT meeting is scheduled for November 4, 1999, to discuss the Parcel D Risk Management Technical Memorandum. The Navy is optimistic that the BCT can bring to resolution many of the USEPA and DTSC comments and effectively move forward with the completion of the risk management documents for Parcel C and Parcel E.
3. The Navy continues to work on the comments received on Parcel D, the first of three risk management review documents to be submitted. Focusing on the global issues raised on Parcel D can only help facilitate the successful conclusion of the overall risk management review process for Hunters Point. At this time, enclosure (1) includes a majority of the Parcel C sites with the site-specific evaluations and supporting data grouped together. We are completing the remaining site risk evaluations this week and

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will provide them for your review and incorporation into the draft document on November 15, 1999. Pending resolution of the global issues resulting from the Parcel D Risk Management Technical Memorandum, the outstanding sections for Parcel C will be provided to the team for review and then included in the draft final submittal for your concurrence.

4. Please direct any comments or questions to the Remedial Project Manager, Ms. Glenna Clark, Code 6223, at (650) 244-2659.



MICHAEL E. MCCLELLAND  
BRAC Environmental Coordinator  
By direction

Copies to:

City and County of San Francisco, Dept. of Public Health, Bureau of Toxics  
(Attn: Ms Amy Brownell)  
City Attorney's Office (Attn: Ms. Rona Sandler)  
San Francisco Redevelopment Agency (Attn: Mr. Byron Rhett)  
San Francisco Public Utilities Commission (Attn: Ms. Carole Ruwart)  
Sheppard, Mullin, Richter & Hampton (Attn: Mr. Marcos Getchell)  
Tetra Tech EMI (Attn: Mr. Jason Broderson) (w/o encls)  
TechLaw, Inc. (Attn: Mr. Adam Klein)  
SOUTHWESTNAVFACENGCOM (Attn: Mr. Jose Payne)

**PARCEL C RISK MANAGEMENT REVIEW TECHNICAL MEMORANDUM  
PARTIAL SUBMITTAL**

This partial submittal of the Parcel C Risk Management Review Technical Memorandum (RMRTM) consists of a risk management review summary table for all Parcel C sites; a  $10^{-6}$  industrial risk summary table; a figure showing the location of remediation and de minimus areas proposed in the draft final Parcel C feasibility study (FS); and 40 site-specific evaluations and supporting data, organized by Installation Restoration (IR) site. The remaining 30 site-specific evaluations will be submitted on November 15, 1999. The draft final Parcel C RMRTM will be submitted following resolution of global issues raised on the Parcel D RMRTM. This submittal is provided on 3-hole punch paper so that it may be readily inserted into the draft final Parcel C RMRTM.

Each site-specific evaluation contains remediation and de minimus area summaries, the Navy's work sheets, and the appropriate pages of the following supporting data: (1) "COPCs Contributing 100 Percent to  $10^{-6}$  Future Industrial Carcinogenic Risk," (2) "Proposed Action for Soil at [each] IR [site]" from the draft final Parcel C FS, (3) exploratory excavation documentation, and (4) figures for each "IR [site] Soil Results Exceeding Screening Criteria" from the draft final Parcel C remedial investigation.

**RISK MANAGEMENT REVIEW SUMMARY TABLE**

<b>IR Site Number</b>	<b>Remediation or De Minimus Area</b>	<b>City's Proposed Reuse</b>	<b>Consensus</b>	<b>Recommendations</b>	<b>Basis for Recommendations</b>
IR-25	25-1*	Residential	No	<b>EPA, DTSC, City:</b> Action	Excavate 25-1 to remediate presumed source to groundwater
				<b>Navy:</b> No further action	PAHs are artifact of asphalt and PCBs are below 10 mg/kg; soil contamination unrelated to groundwater contamination
	25-2*	Residential	No	<b>EPA, DTSC, City:</b> Action	Excavate 25-2 to remediate presumed source to groundwater
				<b>Navy:</b> Action	Remediate de minimus area at PA25SS04 for lead greater than 1,000 mg/kg; no remediation for Aroclor-1260 because below 10 mg/kg; soil contamination unrelated to groundwater contamination
	25-3*	Residential	No	<b>EPA, DTSC, City:</b> Action	Excavate 25-3 to remediate presumed source to groundwater
				<b>Navy:</b> Action	Remediate de minimus area at IR25MW16A for TCE exceeding 1998 industrial PRG; soil contamination unrelated to groundwater contamination
	25-4*		NA		Remedial area 25-4 is being addressed as part of remedial area 25-1
	DM B3822*	Residential	Yes	<b>EPA, DTSC, City, Navy:</b> No further action, pending results of Parcel B confirmation sampling	Contaminants driving risk may have been removed during remedial action at Parcel B
	DM B3924*	Residential	No	<b>EPA, DTSC, City:</b> Action	Excavate de minimus area B3924 to remediate presumed source to groundwater
				<b>Navy:</b> No further action	Navy does not propose action; contaminants detected below 5 feet bgs
DM B3926	Residential	No	<b>EPA, City, Navy:</b> No further action	No industrial risk drivers; residential risk drivers: nickel concentration is consistent with ambient concentrations and manganese is within risk range	
			<b>DTSC:</b> Undetermined	DTSC wants to review correlation between manganese concentrations and occurrence of chert	
DM B4126	Residential	Yes	<b>EPA, DTSC, City, Navy:</b> No further action	No industrial risk drivers; residential risk drivers: nickel and chromium are consistent with ambient concentrations	
IR-27	DM 9307	Industrial	Yes	<b>EPA, DTSC, City, Navy:</b> No further action	No industrial risk drivers: benzo(a)pyrene is below 1998 industrial PRG

**RISK MANAGEMENT REVIEW SUMMARY TABLE (Continued)**

<b>IR Site Number</b>	<b>Remediation or De Minimus Area</b>	<b>City's Proposed Reuse</b>	<b>Consensus</b>	<b>Recommendations</b>	<b>Basis for Recommendations</b>
IR-28	28-1*	Industrial	No	<b>EPA, DTSC, City:</b> Action	<b>EPA, DTSC:</b> Excavate 28-1 soil located outside building 231; ICs for maintaining integrity of building floor or restrict excavation below building <b>City:</b> Excavate 28-1 soil below and outside of building 231
				<b>Navy:</b> Action	Remediate de minimus areas at PA28B023 for PAHs and IR28B102 for arsenic and PAHs; no further action at remainder of 28-1 because contaminants either occur below 5 feet bgs or do not exceed 1998 industrial PRGs
	28-2*	Residential	No	<b>EPA, DTSC, City:</b> Action	Remediate borings IR28B279 and IR28B280 to 7 feet bgs; no further action for remainder of 28-2 because contaminants are either consistent with ambient concentrations or may be artifacts of asphalt surface cover
				<b>Navy:</b> Action	Remediate borings IR28B279 and IR28B280 to 3 feet bgs; no further action for remainder of 28-2 because contaminants are either consistent with ambient concentrations, do not exceed 1998 industrial PRGs, or occur below 5 feet bgs
	28-3*	Residential	No	<b>EPA, DTSC, City:</b> Action	Remediate boring IR28MW311A to 6 feet bgs
				<b>Navy:</b> Action	Remediate boring IR28MW311A to 2 feet bgs; no further action for remainder of 28-3 because contaminants are either consistent with ambient concentrations, do not exceed 1998 industrial PRGs, or occur below 5 feet bgs
	28-4*	Residential	No	<b>EPA, DTSC, Navy:</b> No further action	No industrial risk drivers
				<b>City:</b> Action	Remediate boring IR28MW299B
	28-5*	Residential	No	<b>EPA, City, Navy:</b> No further action	No industrial risk drivers; residential risk drivers: PAH may be artifact of asphalt surface cover
				<b>DTSC:</b> Undetermined	No industrial risk drivers; residential risk drivers: review correlation between manganese concentrations and occurrence of chert

**RISK MANAGEMENT REVIEW SUMMARY TABLE (Continued)**

<b>IR Site Number</b>	<b>Remediation or De Minimus Area</b>	<b>City's Proposed Reuse</b>	<b>Consensus</b>	<b>Recommendations</b>	<b>Basis for Recommendations</b>
IR-28 (cont)	28-6*	Residential	Yes	EPA, DTSC, City, Navy: No further action	No industrial risk drivers; residential risk drivers: no further action based on low contaminant concentrations and limited extent of contamination
	28-7*	Residential	Yes	EPA, DTSC, City, Navy: No further action	No further action for industrial and residential reuse scenarios: concentrations consistent with ambient concentrations and low contaminant concentrations
	28-8*	Residential	Yes	EPA, DTSC, City, Navy: No further action	No further action for industrial and residential reuse scenarios based on contaminant concentrations consistent with ambient concentrations and low contaminant concentrations
	28-9*	Industrial	No	EPA, City, Navy: No further action	No further action based on arsenic concentrations consistent with ambient concentrations, PAH concentrations below 1998 industrial PRGs, or contaminants occur below 5 feet bgs
				DTSC: Undetermined	No further action for boring IR28B107; recommendation on boring PA28MW52A not determined
	28-10*	Residential	Yes	EPA, DTSC, City, Navy: No further action	No further action for industrial and residential reuse scenarios: concentrations consistent with ambient concentrations and PAH concentrations may be artifact of asphalt surface cover Agreed to add a de minimus area at surface sample PA51SS15 to remediate Aroclor-1260 to a depth of 2 feet bgs (see DM51SS15)
	28-11	Residential	No	EPA, Navy: No further action	No further action for industrial and residential reuse scenarios: arsenic concentrations consistent with ambient concentrations and PAH concentrations within the acceptable risk range
				DTSC, City: Undetermined	Defer recommendation until further evaluation
	28-12*	Industrial	Yes	EPA, DTSC, City, Navy: No further action	No further action based on arsenic concentrations consistent with ambient concentrations and PAH concentrations within the acceptable risk range
	28-13	Residential	No	EPA, DTSC, Navy: No further action	No industrial risk drivers
City: Action				Recommend further characterization for residential reuse scenario	

**RISK MANAGEMENT REVIEW SUMMARY TABLE (Continued)**

<b>IR Site Number</b>	<b>Remediation or De Minimus Area</b>	<b>City's Proposed Reuse</b>	<b>Consensus</b>	<b>Recommendations</b>	<b>Basis for Recommendations</b>
IR-28 (cont)	28-14	Industrial	Yes	EPA, DTSC, City, Navy: No further action	No further action based on arsenic concentrations are consistent with ambient concentrations, PAH and PCB concentrations are below 1998 industrial PRGs
	28-15*	Industrial	Yes	EPA, DTSC, City, Navy: No further action	No further action based on arsenic concentrations are consistent with ambient concentrations, PCB concentrations are below 1998 industrial PRGs
	28-16	Industrial	Yes	EPA, DTSC, City, Navy: No further action	No further action based on PAH and PCB concentrations are below 1998 industrial PRGs
	28-17*	Industrial	Yes	EPA, DTSC, City, Navy: No further action	No further action based on PCB concentrations are below 1998 industrial PRGs
	28-18	Residential	No	EPA, DTSC, City: Action	Remediate boring IR28MW309B
				Navy: No further action	The Navy does not propose action where contaminants are below 5 feet bgs
	28-19*	Industrial	No	EPA, Navy: No further action	The Navy does not propose action where contaminants are below 5 feet bgs
				DTSC, City: Undetermined	Recommend additional characterization data
	28-21	Residential	No	EPA, Navy: No further action	No further action based on arsenic concentrations consistent with ambient concentrations
				DTSC, City: Undetermined	Recommend additional characterization data
	DM 8334*	Residential	Yes	EPA, DTSC, City, Navy: No further action	No industrial risk drivers; residential risk drivers: arsenic concentrations are consistent with ambient concentrations, PCB concentrations are below 1998 industrial PRGs
	DM 9336	Residential	Yes	EPA, DTSC, City, Navy: No further action	No industrial risk drivers; residential risk drivers: arsenic concentrations are consistent with ambient concentrations
	DM 9420	Industrial	No	EPA, Navy: No further action	No further action based on PAH concentrations are below 1998 industrial PRGs
				DTSC, City: Undetermined	Recommend additional characterization data
DM 9434*	Residential	Yes	EPA, DTSC, Navy: No further action	No industrial risk drivers; residential risk drivers: arsenic concentrations are consistent with ambient concentrations	

**RISK MANAGEMENT REVIEW SUMMARY TABLE (Continued)**

<b>IR Site Number</b>	<b>Remediation or De Minimus Area</b>	<b>City's Proposed Reuse</b>	<b>Consensus</b>	<b>Recommendations</b>	<b>Basis for Recommendations</b>
IR-28 (cont)	DM 9532	Residential	Yes	EPA, DTSC, Navy: No further action	No industrial or residential risk drivers, contaminants removed under EE-09
	DM 9618	Industrial	Yes	EPA, DTSC, City, Navy: No further action	No further action based on PAH concentrations are below 1998 industrial PRGs
	DM 9621	Industrial	Yes	EPA, DTSC, City, Navy: No further action	No further action based on PAH concentrations are below 1998 industrial PRGs
	DM 9721	Industrial	Yes	EPA, DTSC, City, Navy: No further action	No further action based on PAH concentrations are below 1998 industrial PRGs
	DM 9819	Industrial	Yes	EPA, DTSC, City, Navy: No further action	No further action based on PAH and PCB concentrations are below 1998 industrial PRGs
	DM 9919	Industrial	Yes	EPA, DTSC, City, Navy: No further action	No further action based on PAH and PCB concentrations are below 1998 industrial PRGs
	DM9824	Industrial	Yes	EPA, DTSC, City, Navy: No further action	No further action based on PAH concentrations are below 1998 industrial PRGs
	DM 9921	Industrial	Yes	EPA, DTSC, City, Navy: No further action	No further action based on PCB concentrations are below 1998 industrial PRGs
	DM 10112	Industrial	Yes	EPA, DTSC, City, Navy: No further action	No further action based on PAH concentrations are below 1998 industrial PRGs
	DM 10204	Industrial	Yes	EPA, DTSC, City, Navy: No further action	No further action based on PAH concentrations are below 1998 industrial PRGs
	DM 10220	Industrial	Yes	EPA, DTSC, City, Navy: No further action	No further action based on arsenic concentrations are consistent with ambient concentrations
	DM 10329	Industrial	Yes	EPA, DTSC, City, Navy: No further action	No further action based on PAH and PCB concentrations are below 1998 industrial PRGs
DM51SS15	Residential	Yes	EPA, DTSC, City, Navy: Action	Remediate soil at PA51SS15	

**RISK MANAGEMENT REVIEW SUMMARY TABLE (Continued)**

<b>IR Site Number</b>	<b>Remediation or De Minimus Area</b>	<b>City's Proposed Reuse</b>	<b>Consensus</b>	<b>Recommendations</b>	<b>Basis for Recommendations</b>
IR-29	29-1*	Residential	Yes	<b>EPA, DTSC, City, Navy: Action</b>	Remediate soil on east side of building 203
	29-2*	Residential	No	<b>EPA, Navy: No further action</b>	No further action based on arsenic concentrations are consistent with ambient concentrations
				<b>DTSC, City: Action</b>	Remediate boring PA29B017
	29-3*	Residential	Yes	<b>EPA, DTSC, City, Navy: No further action</b>	No further action based on PCB concentrations are below 1998 industrial PRGs
	29-4*	Residential	No	<b>EPA, DTSC, Navy: No further action</b>	No further action based on arsenic concentrations are consistent with ambient concentrations and PAH and PCB concentrations are below 1998 industrial PRGs
				<b>City: Action</b>	Remediate boring IR29B046
	29-6*	Residential	No	<b>EPA, Navy: No further action</b>	No further action based on PAH concentrations are within the acceptable risk range
				<b>DTSC, City: Action</b>	Remediate boring IR29B064
29-7*	Residential	Yes	<b>EPA, DTSC, City, Navy: Action</b>	Remediate trench area PA49TA01	
DM 8343*	Residential	Yes	<b>EPA, DTSC, City, Navy: No further action</b>	No further action based on arsenic concentrations are consistent with ambient concentrations	
IR-30	30-1*	Residential	No	<b>EPA, DTSC, Navy: No further action</b>	No further action based on arsenic concentrations are consistent with ambient concentrations and PAH and PCB concentrations are below 1998 industrial PRGs
				<b>City: Action</b>	Remediate boring PA29B030
IR-57	57-1	Industrial	Yes	<b>EPA, DTSC, City, Navy: No further action</b>	No further action based on arsenic concentrations are consistent with ambient concentrations and PAH concentrations are below 1998 industrial PRGs
	DM 8944	Industrial	Yes	<b>EPA, DTSC, City, Navy: No further action</b>	No further action based on PAH concentrations are below 1998 industrial PRGs
	DM 9654	Industrial	Yes	<b>EPA, DTSC, City, Navy: No further action</b>	No further action based on PAH concentrations are below 1998 industrial PRGs

**RISK MANAGEMENT REVIEW SUMMARY TABLE (Continued)**

<b>IR Site Number</b>	<b>Remediation or De Minimus Area</b>	<b>City's Proposed Reuse</b>	<b>Consensus</b>	<b>Recommendations</b>	<b>Basis for Recommendations</b>
IR-58	58-1*	Residential	Yes	EPA, DTSC, City, Navy: No further action	No further action based on contaminants driving risk were removed under EE-11A
	58-2*	Residential	Yes	EPA, DTSC, City, Navy: No further action	No further action based on contaminants driving risk were removed under EE-11B
	58-4*	Residential	Yes	EPA, DTSC, City, Navy: No further action	No industrial risk drivers; residential risk drivers: contaminant concentrations are within the acceptable risk range
	DM 7527*	Residential	Yes	EPA, DTSC, City, Navy: No further action	No industrial risk drivers; residential risk drivers: nickel concentrations are consistent with ambient concentrations
	DM 7727*	Residential	Yes	EPA, DTSC, City, Navy: No further action	No industrial risk drivers; residential risk drivers: nickel concentrations are consistent with ambient concentrations and antimony concentrations are with the acceptable risk range
	DM 7728*	Residential	Yes	EPA, DTSC, City, Navy: No further action	No industrial risk drivers; residential risk drivers: manganese concentrations are consistent with ambient concentrations and chrysene concentrations are below 1998 residential PRGs
	DM 7930*	Residential	Yes	EPA, DTSC, City, Navy: No further action	No industrial risk drivers; residential risk drivers: chromium was detected below 5 feet bgs and manganese may be related to presence of chert
	DM 8025*	Residential	Yes	EPA, DTSC, City, Navy: No further action	No industrial risk drivers; residential risk drivers: manganese concentrations are consistent with ambient concentrations and dieldrin concentrations are below 1998 residential PRGs
	DM 8029*	Residential	Yes	EPA, DTSC, City, Navy: No further action	No further action based on beryllium concentrations are consistent with ambient concentrations
	DM 8127	Residential	No	EPA, Navy: No further action	No industrial risk drivers
				DTSC, City: Action	Remediate surface sample PA58SS05
DM 8130	Residential	No	EPA, City, Navy: No further action	No further action for industrial and residential reuse scenarios based on PAH concentrations are below 1998 PRGs	
			DTSC: Undetermined	Reevaluate benzo(a)pyrene concentrations	

**RISK MANAGEMENT REVIEW SUMMARY TABLE (Continued)**

<b>IR Site Number</b>	<b>Remediation or De Minimus Area</b>	<b>City's Proposed Reuse</b>	<b>Consensus</b>	<b>Recommendations</b>	<b>Basis for Recommendations</b>
IR-58 (cont)	DM 8425	Residential	Yes	EPA, DTSC, City, Navy: No further action	No further action based on arsenic concentrations are consistent with ambient concentrations and PAH concentrations are below 1998 industrial PRGs
IR-64	64-1*	Industrial	No	EPA, Navy: No further action	No further action based on arsenic concentrations are within the acceptable risk range
				DTSC, City: Action	Remediate boring IR64B004

Notes:

- bgs Below ground surface
- City City of San Francisco
- DTSC California Department of Toxic Substances Control
- EPA U.S. Environmental Protection Agency
- IC Institutional control
- IR Installation Restoration
- PAH Polynuclear aromatic hydrocarbon
- PCB Polychlorinated biphenyl
- PRG Preliminary remediation goal

\* Indicates site-specific evaluations included in this partial submittal.

**REEVALUATION OF HUMAN HEALTH RISK AT REMEDIAL AND DE MINIMUS AREAS  
UNDER 10<sup>-6</sup> FUTURE INDUSTRIAL SOIL CLEANUP SCENARIO  
PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA**

IR Site Number	Grid Cell Number	Remediation or De Minimus Area	ELCR/HI Grid Value	Contaminant Risk Driver	Risk /HI Associated with EPC	Sampling Station		Analytical Results				Potential Source	Surface Cover	TPH Concentration (mg/kg)	Notes
						Number	Depth (feet)	Detected Conc. (mg/kg)	1995 PRGs (mg/kg)	1998 PRGs (mg/kg)	HPAL (mg/kg)				
IR-25 <sup>a</sup>	B3822 (AR08)	DM B3822	2E-03 HI=2.2	<b>ELCR</b> Aroclor-1260 Chromium VI <b>HI</b> Zinc	2E-03 2E-07*  2.2	PA46TA10 -- PA46TA10	2.25 -- 2.25	7 -- 810	0.066 0.2 23,000	0.20 0.2 22,000	-- -- 109.86	Fuel line trench	Paved	--	<ul style="list-style-type: none"> <li>EPC for Chromium VI = 0.16 mg/kg (0.3% of total chromium EPC)</li> <li>Exposure area is partially located within Parcel B excavation area—confirmation sample results pending</li> </ul>
	B3824 (AR08)	25-1	6E-04 HI<1	<b>ELCR</b> Aroclor-1260 Benzo(a)pyrene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(k)fluoranthene Tetrachloroethene Benzo(a)anthracene Chrysene 1,4-Dichlorobenzene Trichloroethene Chromium VI <b>Other</b> Nickel Tetrachloroethene Tetrachloroethene 1,2-Dichloroethane 1,2-Dichloroethane 1,4-Dichlorobenzene	5E-04 2E-05 -- 7E-06 6E-06 5E-06 2E-06 2E-06 7E-07 2E-07 4E-07  NE -- -- -- -- --	IR25B013 IR46B013 IR25B013 IR25B013 IR25B013 IR25B013 IR46B013 IR25B013 IR25B013 -- IR46B013 IR25MW15A1 IR25B013 IR25MW15A1 IR25B013 IR25MW15A1	1.25 2.25 1.25 1.25 1.25 1.25 2.25 1.25 1.25 -- 6.25 16.25 11.25 16.25 11.25 16.25	2 0.32 0.21 0.22 0.19 0.9 0.25 0.37 0.16 0.06 -- 300 750 41 16 11 17	0.066 0.061 0.061 0.61 6.1/0.61 <sup>b</sup> 7.0 0.61 24/6.1 <sup>b</sup> 7.4 7.1 30/0.2 <sup>b</sup> 1,500/150 <sup>b</sup> 7.0 7.0 0.44 0.44 7.4	0.20 0.056 0.056 0.56 5.6/0.61 <sup>b</sup> 4.7 0.56 56/6.1 <sup>b</sup> 3.0 2.7 30/0.2 <sup>b</sup> 1,500/150 <sup>b</sup> 4.7 4.7 0.34 0.34 3.0	-- -- -- -- -- -- -- -- -- -- ∞, β -- -- -- -- -- --	PAHs: unknown  <b>Nickel</b> : weathered serpentinite bedrock  <b>Other COPCs</b> : Activities within Building 134 (concrete and solvent dip tanks)	Paved	TRPH = 6,500	<ul style="list-style-type: none"> <li>EPC for Chromium VI = 0.34 mg/kg (0.3% of total chromium EPC)</li> </ul>
	B3924 (AR08)	DM B3924	1E-05 HI<1	<b>ELCR</b> Aroclor-1260 1,2-Dichloroethane Tetrachloroethene <b>Other</b> Vinyl Chloride	1E-05 2E-06 1E-07 --	IR25B012 IR25B012 IR25B012 IR25B012	6.25 6.25 6.25 16.25	0.05 0.03 0.02 26	0.066 0.44 7.0 0.005	0.20 0.34 4.7 0.021	-- -- -- --	Activities within Building 134	Paved	TOG = 3,300	
	B3825 (AR09)	25-1	ELCR = 3E-05 HI = 5.6	<b>ELCR</b> Benzo(k)fluoranthene Benzo(b)fluoranthene Aroclor-1260 Benzo(a)anthracene Chrysene Chrysene <b>ELCR/HI</b> Nickel <b>HI</b> Antimony	1E-05 9E-06 5E-06 4E-06 2E-06 --  1E-07 / 4.3 0.94	PA25SS10 PA25SS10 PA25SS10 PA25SS10 IR25MW11A PA25SS10  IR25MW11A PA25SS10	1.25 1.25 1.25 1.25 1.25 1.25  1.25 1.25	0.34 0.27 0.02 0.42 0.54 0.4  1,300 9.5	6.1/0.61 <sup>b</sup> 0.61 0.066 0.61 24/6.1 <sup>b</sup> 24/6.1 <sup>b</sup>  1,500/150 <sup>b</sup> 30.7	5.6/0.61 <sup>b</sup> 0.56 0.2 0.56 56/6.1 <sup>b</sup> 56/6.1 <sup>b</sup>  1,500/150 <sup>b</sup> 30	-- -- -- -- -- --  ∞ 9.05	PCBs/antimony: activities within Building 134  <b>Nickel</b> : weathered serpentinite bedrock  <b>PAHs</b> : unknown	Paved	TRPH = 8,300	

**REEVALUATION OF HUMAN HEALTH RISK AT REMEDIAL AND DE MINIMUS AREAS  
UNDER 10<sup>-6</sup> FUTURE INDUSTRIAL SOIL CLEANUP SCENARIO  
PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (Continued)**

IR Site Number	Grid Cell Number	Remediation or De Minimus Area	ELCR/HI Grid Value	Contaminant Risk Driver	Risk /HI Associated with EPC	Sampling Station		Analytical Results				Potential Source	Surface Cover	TPH Concentration (mg/kg)	Notes
						Number	Depth (feet)	Detected Conc. (mg/kg)	1995 PRGs (mg/kg)	1998 PRGs (mg/kg)	HPAL (mg/kg)				
IR-25 (cont.)	B3826 (AR09)	25-1	ELCR = 4E-04 HI = 3.0	<u>ELCR</u> Aroclor-1260	4E-04	PA46TA11	2.25	2	0.066	0.20	--	PCBs/zinc: activities within Building 134  Lead/copper: unknown	Paved	--	<ul style="list-style-type: none"> <li>Chromium VI EPC = 0.16 mg/kg (0.3% of total chromium EPC)</li> <li>Exposure area is partially located within Parcel B excavation area—confirmation sample results pending</li> </ul>
				Chromium VI	2E-07*	--	--	30/0.2 <sup>b</sup>	30/0.2 <sup>b</sup>	--					
				<u>HI</u> Zinc	2.2	PA46TA11	2.25	810	23,000	22,000	109.86				
	Copper	0.8	PA46TA11	2.25	130	2,800	2,800	124.31							
				<u>Other</u> Lead	--	PA46TA11	2.25	240	400/130 <sup>b</sup>	400/130 <sup>b</sup>	8.99				
B4124 (AS08)	25-3	ELCR = 2E-04 HI = 12.0	<u>ELCR/HI</u> Trichloroethene	2E-04 / 9.8	IR25MW16A	4.75	47	7	4.7	--	TCE/antimony: activities within Building 134  Chromium: weathered serpentinite bedrock  Pesticides/aluminum: unknown	Paved	TPH-g = 430 TPH-d = 6,100 TPH-mo = 21,000 TRPH = 19,500	<ul style="list-style-type: none"> <li>Chromium VI EPC = 4.1 mg/kg (0.3% of total chromium EPC)</li> </ul>	
			<u>ELCR</u> Chromium VI	4E-06*	--	--	30/0.2 <sup>b</sup>	30/0.2 <sup>b</sup>	--						
			Aldrin	3E-06	IR25MW16A	4.75	0.004	0.026	0.026	--					
			Heptachlor	1E-06	IR25MW16A	4.75	0.004	0.099	0.099	--					
			Gamma-chlordane	5E-07	IR25MW16A	4.75	0.004	0.34 <sup>c</sup>	1.6 <sup>c</sup>	--					
			<u>HI</u> Antimony	1.2	IR25MW16A	4.75	12	30.7	30	9.05					
			Aluminum	0.47	IR25MW16A	9.75	35,000	77,000	75,000	--					
			2-Methylnaphthalene	0.40	IR25MW16A	4.75	56	800 <sup>d</sup>	55 <sup>d</sup>	--					
<u>Other</u> Chromium	NE / 0.023	IR25MW16A	4.75	1,350	210	210	γ								
B4026 (AS09)	25-2	ELCR = 8E-04 HI = 11.0	<u>ELCR</u> Aroclor-1260	8E-04	PA25SS04	0.75	4	0.066	0.2	--	PCBs/copper/zinc: activities within Building 134  Lead/manganese: unknown  PAHs: adjacent subsurface fuel lines	Paved	TPH-d = 3,100 TPH-e = 3,400 TOG = 6,000 TRPH = 1,000 TPH-p = 670	<ul style="list-style-type: none"> <li>Chromium VI EPC = 0.96 mg/kg (EPC calculated from total chromium soil concentration)</li> </ul>	
			Benzo(a)pyrene	7E-06	PA50TA06	7.75	0.12	0.061	0.056	--					
			Benzo(b)fluoranthene	5E-06	PA50TA06	7.75	0.16	0.61	0.56	--					
			Benzo(k)fluoranthene	4E-06	PA50TA06	7.75	0.12	6.1/0.61 <sup>b</sup>	5.6/0.61 <sup>b</sup>	--					
			Benzo(a)anthracene	2E-06	PA50TA06	7.75	0.22	0.61	0.56	--					
			Chromium VI	1E-06*	--	--	--	30/0.2 <sup>b</sup>	30/0.2 <sup>b</sup>	--					
			Chrysene	9E-07	PA50TA06	7.75	0.22	24/6.1 <sup>b</sup>	56/6.1 <sup>b</sup>	--					
			<u>HI</u> Zinc	4.7	PA25SS04	0.75	1,800	23,000	22,000	109.86					
			Copper	2.6	PA25SS04	0.75	490	2,800	2,800	124.31					
			Manganese	1.5	PA50TA06	7.75	3,400	380	3,100	1,431.81					
			Cadmium	0.48	PA25SS04	0.75	3.3	38/9.0 <sup>b</sup>	37/9.0 <sup>b</sup>	3.14					
			Molybdenum	0.45	PA50TA06	7.75	34	380	370	2.68					
			Aluminum	0.32	PA50TA06	7.75	24,000	77,000	75,000	--					
			Barium	0.22	PA50TA06	7.75	670	5,300	5,200	314.36					
			<u>Other</u> Lead	--	PA25SS04	0.75	1,230	400/130 <sup>b</sup>	400/130 <sup>b</sup>	8.99					
			Chromium	NE	PA25SS04	0.75	320	210	210	γ					
			Chromium	NE	PA50TA06	7.75	700	210	210	γ					
B3926 (AR09)	DM B3926	ELCR = 2E-07 HI = 2.0	<u>ELCR</u> Chrysene	2E-07	IR06B038	3.25	0.047	24/6.1 <sup>b</sup>	56/6.1 <sup>b</sup>	--	PAHs: adjacent subsurface fuel lines  Chromium: weathered serpentinite bedrock  Other metals: unknown	Paved	TOG = 2,200	<ul style="list-style-type: none"> <li>Analytical results for Chromium VI were below laboratory detection limit</li> <li>NFA: EPA, City, Navy</li> <li>DTSC waiting for manganese/chert correlation</li> </ul>	
			<u>HI</u> Manganese	1.5	IR06MW41A	1.25	13,200	380	3,100	1431.81					
			Aluminum	0.27	IR06MW41A	5.25	21,000	77,000	75,000	--					
			Barium	0.24	IR06MW41A	1.25	834	5,300	5,200	314.36					
			<u>Other</u> Chromium	NE	IR06B038	5.25	441	210	210	γ					

**REEVALUATION OF HUMAN HEALTH RISK AT REMEDIAL AND DE MINIMUS AREAS  
UNDER 10<sup>-6</sup> FUTURE INDUSTRIAL SOIL CLEANUP SCENARIO  
PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (Continued)**

IR Site Number	Grid Cell Number	Remediation or De Minimus Area	ELCR/HI Grid Value	Contaminant Risk Driver	Risk /HI Associated with EPC	Sampling Station		Analytical Results				Potential Source	Surface Cover	TPH Concentration (mg/kg)	Notes
						Number	Depth (feet)	Detected Conc. (mg/kg)	1995 PRGs (mg/kg)	1998 PRGs (mg/kg)	HPAL (mg/kg)				
IR-25 (cont.)	B4126 (AS09)	DM B4126	ELCR = 2E-07 HI = 7.4	ELCR/HI Nickel	2E-07 / 7.0	IR06MW34A	5.25	2,100	1,500/150 <sup>b</sup>	1,500/150 <sup>b</sup>	∞	Nickel/chromium: weathered serpentinite bedrock  Aluminum: unknown	Paved	--	<ul style="list-style-type: none"> <li>Analytical results for Chromium VI were below laboratory detection limit</li> <li>NFA: EPA, DTSC, City, Navy</li> </ul>
				HI Aluminum	0.37	IR06MW34A	1.25	27,000	77,000	75,000	--				
				Other Chromium	NE	IR06MW34A	5.25	1,800	210	210	γ				
IR-25 (ind.)	AR08 (B208) <sup>c</sup>	25-1 DM B3822	4E-05 HI<1	Aroclor-1260	4E-05	PA46TA10	2.25	7	0.34	1.3	--	PAHs: subsurface fuel lines  PCBs: activities within Building 134	Paved	TRPH = 6,500	
				Aroclor-1260	--	IR25B013	1.25	2	0.34	1.3	--				
				Benzo(a)pyrene	3E-06	IR25B013	1.25	0.21	0.26	0.36	--				
				Benzo(a)pyrene	--	IR46B013	2.25	0.32	0.26	0.36	--				
				Benzo(a)anthracene	2E-07	IR25B013	1.25	0.25	2.6	3.6	--				
				Benzo(k)fluoranthene	2E-07	IR25B013	1.25	0.22	26	36	--				
				Benzo(b)fluoranthene	2E-07	IR25B013	1.25	0.19	2.6	3.6	--				
AR09 (B209) <sup>c</sup>	25-1 DM B3926	1E-05 HI<1	Aroclor-1260	1E-05	PA46TA11	2.25	2	0.34	1.3	--	PAHs: subsurface fuel lines  PCBs: activities within Building 134	Paved	TRPH = 8,300	3926 NFA: EPA, City, Navy	
			Benzo(a)anthracene	4E-07	PA25SS10	1.25	0.42	2.6	3.6	--					
			Benzo(k)fluoranthene	3E-07	PA25SS10	1.25	0.34	26	36	--					
			Benzo(b)fluoranthene	2E-07	PA25SS10	1.25	0.27	2.6	3.6	--					
AS08 (B221) <sup>c</sup>	25-3	5E-06 HI<1	Trichloroethene	5E-06	IR25MW16A	4.75	47	1.7	6.1	--	TCE: activities within Building 134  Chromium: weathered serpentinite bedrock	Paved	TPH-g = 430 TPH-d = 6,100 TPH-mo = 21,000 TRPH = 19,500	<ul style="list-style-type: none"> <li>Chromium VI EPC = 4.1 mg/kg (0.3% of total chromium EPC)</li> </ul>	
			Chromium VI	4E-07*	--	--	--	225	64	--					
				Chromium	--	IR25MW16A	4.75	1,350	1,580	450	γ				
AS09 (B220) <sup>c</sup>	25-2 DM B4126	2E-05 HI<1	Aroclor-1260	2E-05	PA25SS04	0.75	4	0.34	1.3	--	PAHs: subsurface fuel lines  PCBs: activities within Building 134  Lead: unknown	Paved	TPH-d = 3,100	4126 NFA: EPA, City, Navy	
			Benzo(a)pyrene	1E-06	PA50TA06	7.75	0.12	0.26	0.36	--					
			Benzo(a)anthracene	2E-07	PA50TA06	7.75	0.22	2.6	3.6	--					
			Benzo(k)fluoranthene	1E-07	PA50TA06	7.75	0.12	26	36	--					
			Benzo(b)fluoranthene	1E-07	PA50TA06	7.75	0.16	2.6	3.6	--					
			Lead	--	PA25SS04	0.75	1,230	1,000	1,000	8.99					
IR-27	BA03	DM 9307	2E-06	Benzo(a)pyrene	1E-06	PA49TA06	2.25	0.1	0.26	0.36		Paved		NFA: all	
IR-28	BC04	28-1	6E-05	Benzo(a)pyrene	4E-05	PA28B023	2.25	5	0.26	0.36		Paved		<ul style="list-style-type: none"> <li>Remedial Action required on north and east exterior of building only.</li> <li>NFA for soil below building. TtEMI to provide building foundation drawings.</li> </ul>	
				Benzo(a)pyrene	--	IR28B138	4.75	0.1	0.26	0.36					
				Indeno(1,2,3-cd)pyrene	4E-06	PA28B023	2.25	5	2.6	3.6					
				Benzo(b)fluoranthene	4E-06	PA28B023	2.25	4	2.6	3.6					
				Benzo(k)fluoranthene	3E-06	PA28B023	2.25	4	26.1	36					
					Benzo(a)anthracene	2E-06	PA28B023	2.25	2	2.6	3.6				
	BD04	28-1	1E-05	Arsenic	3E-06	IR28B101	6.25	707	2.04	3.0	11.1		Paved	TPH-d = 2,900 TPH-mo = 15,000 TRPH = 14,000	
				Arsenic	--	IR28B102	4.25	26.3	2.04	3.0	11.1				
				Dibenzo(a,h)anthracene	3E-06	IR28B101	6.25	0.5	0.26	0.36					
				Benzo(a)pyrene	2E-06	IR28B131	5.25	10	0.26	0.36					
Benzo(a)pyrene				--	IR28B102	4.25	2	0.26	0.36						
				Benzo(a)pyrene	--	IR28B101	6.25	1	0.26	0.36					
				Benzo(a)pyrene	--	IR28B130	5.25	0.2	0.26	0.36					
				Benzo(a)pyrene	--	IR28B132	5.25	0.2	0.26	0.36					
				Benzo(a)pyrene	--	PA28B053	6.25	0.2	0.26	0.36					
				Indeno(1,2,3-cd)pyrene	1E-06	IR28B101	6.25	1	2.6	3.6					
				Indeno(1,2,3-cd)pyrene	--	IR28B102	4.25	1	2.6	3.6					
				Lead	--	IR28B101	6.25	1,800	1,000	1,000	8.99				

**REEVALUATION OF HUMAN HEALTH RISK AT REMEDIAL AND DE MINIMUS AREAS  
UNDER 10<sup>-6</sup> FUTURE INDUSTRIAL SOIL CLEANUP SCENARIO  
PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (Continued)**

IR Site Number	Grid Cell Number	Remediation or De Minimus Area	ELCR/HI Grid Value	Contaminant Risk Driver	Risk /HI Associated with EPC	Sampling Station		Analytical Results				Potential Source	Surface Cover	TPH Concentration (mg/kg)	Notes
						Number	Depth (feet)	Detected Conc. (mg/kg)	1995 PRGs (mg/kg)	1998 PRGs (mg/kg)	HPAL (mg/kg)				
IR-28 (cont.)	AY10	28-2, 28-4, and 28-5	7E-06	Arsenic	3E-06	IR28B280	0.75	245	2.04	3.0	11.1		Paved	TPH-g = 5,500 TPH-d = 2,900 TRH-mo = 1,200 TRPH = 9,400	28-2 NFA: all outside/remediate sump (AY10) 28-4 Ind. NFA: EPA, DTSC, Navy 28-4 Res. RA: City, DTSC 28-5 Ind-NFA: EPA, DTSC, Navy 28-5 Res-NFA: EPA, City, Navy DTSC needs manganese/chert correlation
				Arsenic	--	IR28MW299B	2.00	14.0	2.04	3.0	11.1				
				Arsenic	--	IR28B280	0.75	11.8	2.04	3.0	11.1				
				Benzo(a)pyrene	2E-06	IR28B301	1.00	0.3	0.26	0.36					
				Benzo(a)pyrene	--	IR28MW299B	2.00	0.2	0.26	0.36					
				Aroclor-1260	1E-06	IR28B279	5.25	270	0.34	1.3					
				Aroclor-1260	--	IR28B279	1.25	14	0.34	1.3					
				Aroclor-1260	--	IR28B280	0.75	0.6	0.34	1.3					
				Aroclor-1260	--	IR28B280	7.75	0.3	0.34	1.3					
	AX10	28-2	3E-06	Benzo(a)pyrene Aroclor-1260	1E-06 6E-07	IR58SS35 IR58SS34	0.25 0.50	0.1 0.1	0.26 0.34	0.36 1.3		Paved	TRPH = 3,800		
	AZ12	28-3	2E-05	Benzo(a)pyrene Benzo(a)pyrene Benzo(a)pyrene Arsenic Benzo(a)anthracene Benzo(b)fluoranthene Benzo(k)fluoranthene	1E-05 -- -- 9E-06 1E-06 1E-06 8E-07	IR28MW311A IR28MW310F IR28B276 IR28MW311A IR28MW311A IR28MW311A IR28MW311A	5.50 5.25 6.25 0.75 5.50 5.50 5.50	1 0.6 0.5 30.1 2 1 0.9	0.26 0.26 0.26 2.04 2.6 2.6 26.1	0.36 0.36 0.36 3.0 3.6 3.6 36.0		Paved		Remedial Action at IR28MW311A only—confirmation samples to define extent of excavation.	
	AZ10	28-5	7E-06	Arsenic	7E-06	IR28B285	0.75	17.5	2.04	3.0	11.1	Paved			
	AY11	28-6	1E-05	Aroclor-1260 Arsenic Benzo(a)pyrene Beryllium Beryllium	3E-06 3E-06 3E-06 5E-07 --	PA28B063 IR28B180 PA28SS82 IR28B178 PA28B063	2.25 6.75 1.25 7.75 6.25	0.6 11.7 0.3 0.95 0.72	0.34 2.04 0.26 1.10 1.10	1.3 3.0 0.36 3,400 3,400	0.71 11.1 0.71	Paved		NFA: all—based on low concentration	
	AZ13	28-7 and 28-8	1E-05	Arsenic Arsenic Benzo(a)pyrene	9E-06 -- 1E-06	IR28MW273F IR28MW273F IR28B237	5.75 9.75 4.75	22.4 15.6 0.1	2.04 2.04 0.26	3.0 3.0 0.36	11.1 11.1	Paved		28-7 NFA: all 28-8 NFA: all	
	BA07	28-9	2E-05	Arsenic Arsenic Benzo(a)pyrene	2E-05 -- 2E-06	PA28MW52A IR28B107 IR28B107	6.75 1.75 1.75	40.0 14.8 0.2	2.04 2.04 0.26	3.0 3.0 0.36	11.1 11.1	Paved	TRPH = 1,200	NFA: EPA, City, Navy Reserve judgment on MW52A: DTSC NFA for IR28B107: DTSC	
	BA11	28-10	1E-05	Arsenic Benzo(a)pyrene	5E-06 4E-06	IR28B291 IR28B291	6.75 0.25	16.9 0.5	2.04 0.26	3.0 0.36	11.1	Paved	TRPH = 1,200	NFA: all Need new DM area at PA51SS15 for Aroclor-1260	
	BB05	28-11	7E-05	Benzo(a)pyrene Arsenic Dibenzo(a,h)anthracene Benzo(a)anthracene Benzo(k)fluoranthene Benzo(b)fluoranthene Indeno(1,2,3-cd)pyrene	4E-05 5E-06 5E-06 5E-06 3E-06 3E-06 3E-06	IR28B135 IR28B135 IR28B135 IR28B135 IR28B135 IR28B135 IR28B135	6.25 6.25 6.25 6.25 6.25 6.25 6.25	5 12.8 1 5 3 3 3	0.26 2.04 0.26 2.6 26.1 2.6 2.6	0.36 3.0 0.36 3.6 36.0 3.6 3.6	11.1	Paved		NFA: EPA, Navy DTSC, City: RA for arsenic and PAH	
	BB06	28-11	2E-05	Arsenic Arsenic Benzo(a)pyrene Aroclor-1260	1E-05 -- 2E-06 1E-06	IR28B106 IR28B105 IR28B106 PA51SS14	2.25 1.75 2.25 2.25	30.3 14.4 0.2 0.3	2.04 2.04 0.26 0.34	3.0 3.0 0.36 1.3	11.1 11.1	Paved			

**REEVALUATION OF HUMAN HEALTH RISK AT REMEDIAL AND DE MINIMUS AREAS  
UNDER 10<sup>-6</sup> FUTURE INDUSTRIAL SOIL CLEANUP SCENARIO  
PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (Continued)**

IR Site Number	Grid Cell Number	Remediation or De Minimus Area	ELCR/HI Grid Value	Contaminant Risk Driver	Risk /HI Associated with EPC	Sampling Station		Analytical Results				Potential Source	Surface Cover	TPH Concentration (mg/kg)	Notes
						Number	Depth (feet)	Detected Conc. (mg/kg)	1995 PRGs (mg/kg)	1998 PRGs (mg/kg)	HPAL (mg/kg)				
IR-28 (cont.)	BC05	28-11	7E-06	Arsenic	3E-06	IR28B104	1.75	13.0	2.04	3.0	11.1		Paved		
				Benzo(a)pyrene	2E-06	IR28B265	6.25	0.4	0.26	0.36					
				Benzo(a)pyrene	--	IR28B265	3.75	0.2	0.26	0.36					
				Benzo(a)pyrene	--	IR28B265	8.75	0.2	0.26	0.36					
				Aroclor-1260	6E-07	PA28B049	2.25	0.1	.034	1.3					
	BC06	28-11	1E-05	Benzo(a)pyrene	8E-06	IR28B264	8.75	1	0.26	0.36			Paved		
				Benzo(a)pyrene	--	IR28B264	3.75	0.4	0.26	0.36					
				Vinyl chloride	1E-06	IR28B090	9.75	0.02	0.01	0.048					
				Benzo(a)anthracene	1E-06	IR28B264	8.75	1	2.6	3.6					
				Benzo(b)fluoranthene	1E-06	IR28B264	8.75	1	2.6	3.6					
	AZ07	28-12	2E-05	Arsenic	9E-06	PA49TA09	4.25	25.0	2.04	3.0	11.1		Paved	TRPH = 1,600	NFA: all, need to address TPH
				Benzo(a)pyrene	5E-06	PA49TA09	4.25	0.6	0.26	0.36					
				Benzo(a)pyrene	--	IR49B025	6.75	0.1	0.26	0.36					
	BA14	28-13	5E-07	NE	NE	NE	NE	NE	NE	NE		Paved	TPH-mo = 2,100	Industrial-NFA: EPA, DTSC, Navy Residential-sampling for characterization	
	BE04	28-14	1E-05	Arsenic	7E-06	IR28B240	1.75	17.0	2.04	3.0	11.1		Paved		28-14 NFA: all DM 10413 NFA: all
Aroclor-1260				3E-06	IR28B240	3.75	0.5	0.34	1.3						
Aroclor-1260				2E-06	IR28B240	3.75	0.3	0.34	1.3						
BE05	28-14 and DM 10413	7E-06	Arsenic	4E-06	IR28B117	1.75	15.5	2.04	3.0	11.1		Paved			
			Arsenic	--	IR28B117	6.25	12.5	2.04	3.0	11.1					
			Aroclor-1260	2E-06	PA51SS13	0.75	0.3	0.34	1.3						
			Benzo(a)pyrene	8E-07	IR28B088	1.75	0.1	0.26	0.36						
BE06	28-15	1E-05	Arsenic	9E-06	IR28B118	1.75	20.3	2.04	3.0	11.1		Paved	TPH-mo = 1,800 TRPH = 4,300	NFA: all	
			Aroclor-1260	1E-06	IR28B118	1.75	0.2	0.34	1.3						
BE07	28-16	6E-06	Benzo(a)pyrene	3E-06	IR28B238	1.25	0.3	0.26	0.36			Paved		NFA: all	
			Aroclor-1260	2E-06	PA51SS11	0.75	0.4	0.34	1.3						
			Aroclor-1260	--	PA51SS12	0.75	0.4	0.34	1.3						
BC11	28-17	3E-06	Aroclor-1260	3E-06	PA51SS18	0.00	0.5	0.34	1.3		Paved		NFA: all		
BB10	28-18	1E-05	Arsenic	1E-05	IRM28W309B	6.00	29.7	2.04	3.0	11.1		Paved		Navy: no action because below 5 feet Regulators: remove or characterize	
			Lead		IR28MW309B	6.00	1,600	1,000	1,000	8.99					
BD06	28-19	2E-05	Arsenic	1E-05	IR28B223	9.75	24.8	2.04	3.0	11.1		Paved	TPH-mo = 1,100 TRPH = 1.340	NFA: EPA, Navy Need more data: DTSC, City	
			Benzo(a)pyrene	2E-06	IR28B223	9.75	0.3	0.26	0.36						
			n-Nitroso-di-n-propylamine	2E-06	IR28B223	9.75	0.5	0.27	0.43						
			Lead		IR28B223	9.75	1,200	1,000	1,000	8.99					
BB14	28-21	9E-06	Arsenic	8E-06	PA28B021	1.75	20.0	2.04	3.0	11.1	Paved		Industrial-NFA: all Residential-NFA: EPA Res: DTSC and City want characterization for Cr		
AX12	DM 8334	6E-06	Arsenic	5E-06	IR28B183	9.75	11.0	2.04	3.0	11.1		Paved		NFA: all	
			Aroclor-1260	1E-06	IR28B183	4.75	0.2	0.34	1.3						
BA08	DM 9420	2E-06	Benzo(a)pyrene	2E-06	IR28B096	6.25	0.2	0.26	0.36		Paved		EPA: NFA—warrants notice in deed DTSC, City: need more data		
BA12	DM 9434	7E-06	Arsenic	6E-06	IR28B198	7.25	15.3	2.04	3.0	11.1	Paved		Residential and Industrial-NFA: all		

**REEVALUATION OF HUMAN HEALTH RISK AT REMEDIAL AND DE MINIMUS AREAS  
UNDER 10<sup>-6</sup> FUTURE INDUSTRIAL SOIL CLEANUP SCENARIO  
PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (Continued)**

IR Site Number	Grid Cell Number	Remediation or De Minimus Area	ELCR/HI Grid Value	Contaminant Risk Driver	Risk /HI Associated with EPC	Sampling Station		Analytical Results				Potential Source	Surface Cover	TPH Concentration (mg/kg)	Notes
						Number	Depth (feet)	Detected Conc. (mg/kg)	1995 PRGs (mg/kg)	1998 PRGs (mg/kg)	HPAL (mg/kg)				
IR-28 (cont.)	BA13	DM 9336	7E-06	Arsenic Arsenic	7E-06 --	IR28B210 IR28MW312F	5.75 0.75	17.7 15.8	2.04 2.04	3.0 3.0	11.1 11.1		Paved		NFA for arsenic; determine correlation between manganese and chert
	BB07	DM 9618	1E-06	Benzo(a)pyrene Benzo(b)fluoranthene Benzo(a)anthracene	8E-07 1E-07 1E-07	PA28MW51A PA28MW51A PA28MW51A	6.75 6.75 6.75	0.1 0.2 0.1	0.26 2.6 2.6	0.36 3.6 3.6			Paved		NFA: all, address TPH
	BB08	DM 9621 and DM 9721	3E-06	Benzo(a)pyrene Benzo(a)pyrene	2E-06 --	IR28B111 IR28B120	1.75 1.75	0.2 0.1	0.26 0.26	0.36 0.36			Paved		NFA: all, review groundwater
	BB12	DM 9532	9E-06	Benzo(a)pyrene Arsenic Aroclor-1260	3E-06 2E-06 8E-07	IR28B243 IR28B243 IR28B243	8.75 8.75 3.75	0.4 11.2 0.2	0.26 2.04 0.34	0.36 3.0 1.3	11.1		Paved	TPH-mo = 19,000 TRPH = 1,590	NFA: all (removed by EE-09)
	BC07	DM 9819 and DM 9919	4E-06	Benzo(a)pyrene Benzo(a)pyrene Aroclor-1260	2E-06 -- 6E-07	IR28B121 IR28B121 IR28B086	6.75 1.75 0.75	0.2 0.1 0.1	0.26 0.26 0.34	0.36 0.36 1.3			Paved	TPH-mo = 1,300 TRPH = 2,270	NFA: all, review TPH and groundwater
	BC08	DM 9921	1E-06	Aroclor-1260	1E-06	IR28B084	4.75	0.3	0.34	1.3			Paved	TPH-d = 4,400 TPH-mo = 2,700 TRPH = 6,580	NFA: all
	BC09	DM 9824	4E-06	Benzo(a)pyrene	3E-06	PA28B079	7.25	0.36	0.26	0.36			Paved		NFA: all
	BD02	DM 10204	1E-06	Benzo(a)pyrene	1E-06	PA49TA10	2.25	0.2	0.26	0.36			Paved	TRPH = 1,500	NFA: all
	BD05	DM 10112	2E-06	Benzo(a)pyrene	1E-06	PA28MW50A	6.25	0.1	0.26	0.36			Paved		NFA: all, review groundwater
	BD08	DM 10220	8E-06	Arsenic Arsenic	7E-06 --	IR28B231 IR28B231	6.75 1.75	17.9 12.1	2.04 2.04	3.0 3.0	11.1 11.1		Paved		NFA: all
	BD11	DM 10329	2E-06	Aroclor-1260 Benzo(a)pyrene	1E-06 7E-07	IR49TA21 IR49TA21	0.00 0.00	0.3 0.08	0.34 0.26	1.3 0.36			Paved		NFA: all
IR-29	AY14	29-1 and 29-2	7E-05	Benzo(a)pyrene Benzo(a)anthracene Benzo(b)fluoranthene Arsenic Arsenic Arsenic Dibenz(a,h)anthracene Benzo(k)fluoranthene Chrysene	4E-05 6E-06 6E-06 6E-06 - - 5E-06 2E-06 1E-06	PA49TA05 PA49TA05 PA49TA05 PA29B017 IR29B054 PA49TA05 PA49TA05 PA49TA05 PA49TA05	3.75 3.75 3.75 2.25 5.25 3.75 3.75 3.75 5.25	5.0 8.0 7.0 23.9 21.7 11.9 0.9 3.0 13.0	0.26 2.6 2.6 2.04 2.04 0.26 26.1 26.1 24	0.36 3.6 3.6 3.0 3.0 0.36 36 36.0 360	11.1 11.1		Paved	TPH-e = 210,000 TPH-p = 1,600 TRPH = 80,000	29-1 Remedial action required on east side of building 203 29-2 NFA: Navy EPA, DTSC, City: redraw 29-2 to incorporate IR29B046 and PA29B017; delete 29-4
	AZ14	29-1	3E-05	Aroclor-1260 Aroclor-1260 Aroclor-1260 Arsenic Benzo(a)pyrene Benzo(a)pyrene Benzo(a)pyrene Benzo(a)pyrene Dibenz(a,h)anthracene Lead	2E-05 - - 3E-06 2E-06 - - - 1E-06	PA29SS37 IR29B073 IR29B075 IR29B072 IR29B073 IR29B072 IR29TA52 IR29B073 IR29B073 PA29SS37	0.00 3.75 1.25 1.75 1.75 1.75 9.75 6.25 1.75 0.00	5.0 2.0 1.0 11.2 1.0 0.6 0.4 0.2 0.3 1,600	0.34 0.34 0.34 2.04 0.26 0.26 0.26 0.26 0.26 1,000	1.3 1.3 1.3 3.0 0.36 0.36 0.36 0.36 0.36 1,000	11.1 8.99	Paved	TPH-mo = 2,200 TRPH = 3,120		
	AZ15	29-1	2E-04	Aroclor-1260 Aroclor-1260 Arsenic Benzo(a)pyrene	2E-04 - 5E-06 1E-06	IR29B074 IR29B074 IR29B074 IR29B074	3.75 6.25 3.75 3.75	39 0.9 11.3 0.1	0.34 0.34 2.04 0.26	1.3 1.3 3.0 0.36	11.1		Paved	TPH-mo = 2,900 TRPH = 2,670	29-1 Remedial action required on east side of building 203

**REEVALUATION OF HUMAN HEALTH RISK AT REMEDIAL AND DE MINIMUS AREAS  
UNDER 10<sup>-6</sup> FUTURE INDUSTRIAL SOIL CLEANUP SCENARIO  
PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (Continued)**

IR Site Number	Grid Cell Number	Remediation or De Minimus Area	ELCR/HI Grid Value	Contaminant Risk Driver	Risk /HI Associated with EPC	Sampling Station		Analytical Results				Potential Source	Surface Cover	TPH Concentration (mg/kg)	Notes
						Number	Depth (feet)	Detected Conc. (mg/kg)	1995 PRGs (mg/kg)	1998 PRGs (mg/kg)	HPAL (mg/kg)				
IR-29 (cont.)	AY15	29-3	1E-05	Aroclor-1254 Aroclor-1260	8E-06 2E-06	PA51SS17 IR51B031	0.00 3.25	1.0 0.3	0.34 0.34	1.3 1.3			Paved		NFA: all
	AX14	29-4	1E-05	Arsenic Benzo(a)pyrene Benzo(a)pyrene Aroclor-1260	7E-06 3E-06 - 2E-06	IR29B046 PA29SS15 PA29SS34 PA29SS15	2.25 1.75 1.25 1.75	16.1 0.4 0.3 0.3	2.04 0.26 0.26 0.34	3.0 0.36 0.36 1.3	11.1		Paved		See 29-2
	BA15	29-6	3E-05	Benzo(a)pyrene Benzo(b)fluoranthene Benzo(a)anthracene Dibenz(a,h)anthracene Indeno(1,2,3-cd)pyrene Benzo(k)fluoranthene	2E-05 3E-06 2E-06 2E-06 9E-07 9E-07	IR29B064 IR29B064 IR29B064 IR29B064 IR29B064 IR29B064	2.25 2.25 2.25 2.25 2.25 2.25	3.0 4.0 3.0 0.3 1.0 1.0	0.26 2.6 2.6 0.26 2.6 26.1	0.36 3.6 3.6 0.36 3.6 36			Paved		NFA: EPA, Navy DM at IR29B064 for PAHs: DTSC, City
	BC15	29-7	5E-06	Arsenic Lead	5E-06	PA49TA01 PA49TA01	3.75 3.75	12.4 1,200	2.04 1,000	3.0 1,000	11.1		Paved	TRPH = 5,500	Remedial action at PA29TA01 for lead
	AX15	DM 8343	1E-06	Arsenic	8E-06	IR50B017A	1.75	21.1	2.04	3.0	11.1		Paved		NFA: all
	IR-30	AV13	30-1	5E-06	Arsenic Arsenic	4E-06 --	IR29B039 IR29B038	5.25 6.75	16.4 12.8	2.04 2.04	3.0 3.0	11.1 11.1		Paved	TRPH = 3,400
AV14		30-1	7E-06	Arsenic Benzo(a)pyrene	3E-06 2E-06	PA29B031 PA29B030	1.75 2.25	24.4 0.2	2.04 0.26	3.0 0.36	11.1		Paved		
AV15		30-1	7E-06	Arsenic	7E-06	IR30B033	5.25	15.8	2.04	3.0	11.1		Paved	TRPH = 4,600	
AW14		30-1	7E-06	Arsenic Arsenic Arsenic Arsenic Arsenic Aroclor-1260 Aroclor-1260	4E-06 -- -- -- -- 2E-06 --	PA30SS09 IR30B029 IR29B080 PA30B012 PA29SS27 PA29SS27 IR30B035	0.75 1.25 6.25 5.25 0.75 0.75 3.75	13.7 13.0 12.7 12.2 11.3 0.4 0.2	2.04 2.04 2.04 2.04 2.04 0.34 0.34	3.0 3.0 3.0 3.0 3.0 1.3 1.3	11.1 11.1 11.1 11.1 11.1		Paved	TPH-mo = 70,000 TRPH = 20,700	
IR-57		AV18	57-1	4E-06	Arsenic Benzo(a)pyrene	3E-06 1E-06	PA57SS14 IR57B026	0.75 1.75	20.9 0.2	2.04 0.26	3.0 0.36	11.1		Paved	TPH-d = 2,600 TPH-mo = 2,100 TRPH = 2,320
	AZ16	8944 (DM)	3E-07	Benzo(a)pyrene	1E-06	PA49TA02	3.75	0.2	0.26	0.36			Paved		NFA: all, ICs
	BB19	9654 (DM)	2E-07	Benzo(a)pyrene	1E-06	PA45TA09	5.45	0.1	0.26	0.36			Paved		NFA: all
IR-58	AV11	58-1 and DM 7930	1E-05	Aroclor-1254 Aroclor-1242	8E-06 6E-06	PA58SS08 PA58SS08	0.00 0.00	2.0 1.0	0.34 0.009	1.3 1.3				TPH-e = 22,000 TPH-p = 130	58-1 Ind NFA: EPA, DTSC, Navy Residential Remediation: City DM7930 NFA: all
	AW10	58-2, 58-4, and DM 8127	7E-07	NE	NE	NE	NE	NE						TPH-e = 5,000	58-2 NFA: EPA, City, Navy (EE-11B) 58-4 NFA: EPA, City, Navy DM8127 Ind-NFA: EPA, DTSC, Navy DM8127 Res- remove: EPA, DTSC, City
	AW11	DM 8130 and DM 8029	3E-06	Benzo(a)pyrene Beryllium	2E-06 9E-07	IR28B257 IR58B018	0.75 1.75	0.3 1.1	0.26 1.10	0.36 3,400	0.71			TPH-mo = 4,400 TRPH = 6,400	DM8130 NFA: all DM8029 NFA: all
	AX09	DM 8425	5E-07	Arsenic Benzo(a)pyrene	6E-06 1E-06	IR58B011 IR58B011	6.75 6.75	14.2 0.2	2.04 0.26	3.0 0.36	11.1				NFA: all

**REEVALUATION OF HUMAN HEALTH RISK AT REMEDIAL AND DE MINIMUS AREAS  
UNDER 10<sup>-6</sup> FUTURE INDUSTRIAL SOIL CLEANUP SCENARIO  
PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (Continued)**

IR Site Number	Grid Cell Number	Remediation or De Minimus Area	ELCR/HI Grid Value	Contaminant Risk Driver	Risk /HI Associated with EPC	Sampling Station		Analytical Results				Potential Source	Surface Cover	TPH Concentration (mg/kg)	Notes
						Number	Depth (feet)	Detected Conc. (mg/kg)	1995 PRGs (mg/kg)	1998 PRGs (mg/kg)	HPAL (mg/kg)				
IR-58 (cont.)	AU10	DM 7527												Check Ni and Cr regression lines NFA if Ni and Cr consistent with ambient	
	AV10	DM 7727 and DM 7728	5E-08	NE	NE	NE	NE	NE					TPH-mo = 1,900 TRPH = 2,300	DM7727 Check Ni and Cr regression lines NFA if Ni and Cr consistent with ambient DM7728 NFA: all	
	AW09	DM 8025	NC	NE	NE	NE	NE	NE						NFA: EPA, DTSC, Navy	
IR-63	AV13	30-1	5E-06	Arsenic	4E-06	IR29B039	5.25	16.4	2.04	3.0	11.1	Paved	TRPH = 3,400		
				Arsenic	--	IR29B038	6.75	12.8	2.04	3.0	11.1				
				Benzo(a)pyrene	5E-07	IR29B077	0.75	0.06	0.26	0.36					
IR-64	AY07	64-1	2E-05	Arsenic	2E-05	IR64B004	0.75	52.6	2.04	3.0	11.1	Paved		NFA: EPA, Navy De minimus area: DTSC, City	

Notes:

- a Grid cells and data represent future residential scenario; grid cell in parentheses represent industrial grid cell associated with residential grid cell
- b California-modified PRG
- c PRG for total chlordane
- d PRG for total naphthalene
- e Grid cell in parentheses represent the grid cell number associated with the Parcel B risk assessment
- ∞ Reported concentration exceeds sample-specific HPAL based on nickel-magnesium regression, but is below sample-specific HPAL based on nickel-cobalt regression.
- β Reported concentration exceeds sample-specific HPAL based on nickel-magnesium and nickel-cobalt regression
- γ Reported concentration exceeds sample-specific HPAL based on chromium-magnesium regression
- \* Cancer risk derived from surrogate Chromium VI EPC
- Conc. Concentration
- DM De minimus
- ELCR Excess lifetime cancer risk
- EPC Exposure point concentration
- IR Installation restoration
- mg/kg Milligram per kilogram
- NC Not calculated
- NE Not evaluated
- PRG Preliminary remediation goal
- TPH Total petroleum hydrocarbons
- TPH-d Total petroleum hydrocarbons as diesel
- TPH-e Total petroleum hydrocarbons as extractable, unknown hydrocarbons
- TPH-mo Total petroleum hydrocarbons as motor oil
- TPH-p Total petroleum hydrocarbons as purgeable, unknown hydrocarbons
- TRPH Total recoverable petroleum hydrocarbons



- LEGEND:**
- RI SAMPLING LOCATIONS**
- SOIL BORING
  - SOIL BORING (WITH HYDROPUNCH OR GRAB GROUNDWATER SAMPLE COLLECTED)
  - A-AQUIFER MONITORING WELL
  - EMCON A-AQUIFER MONITORING WELL
  - B-AQUIFER MONITORING WELL
  - BEDROCK MONITORING WELL
  - PIEZOMETER
  - SUMP SAMPLE
  - REFUSAL BORE HOLE
  - SURFACE OR NEAR SURFACE SOIL SAMPLE
  - SANDBLAST MATERIAL
  - TEST PIT: SYMBOL DOES NOT REPRESENT TRUE LENGTH OF TEST PIT
  - STORM DRAIN
  - CATCH BASIN SEDIMENT SAMPLE
  - FLOOD CONTROL STRUCTURE SEDIMENT SAMPLE
  - SANITARY SEWER
  - ASBESTOS SAMPLE
  - AIR FLUX CHAMBER
  - FLOOR SCRAPE SAMPLE
  - HAND AUGER
  - WIPE SAMPLE
  - FLOOR VAULT
  - FLOOR DRAIN
  - UNDERGROUND STORAGE TANK IN HPS TANK PROGRAM
- EXISTING BUILDING
  - LOCATION OF FORMER BUILDING
- PARCEL C BOUNDARY
  - EXTENDED IR SITE BOUNDARY
  - FACILITY BOUNDARY
  - MIXED USE: RETAIL/GALLERY, ARTISAN STUDIO, ARTIST LIVE/WORK, WAREHOUSE, HOTEL/CONFERENCE

ESTIMATED BOUNDARIES OF SOIL REMEDIATION AREAS EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ELCR OF  $1 \times 10^{-4}$  AND/OR THE CHILD TOTAL SEGREGATED HI IS GREATER THAN OR EQUAL TO 1.0). FUTURE INDUSTRIAL CARCINOGENIC RISK IS GREATER THAN OR EQUAL TO  $1 \times 10^{-4}$ .

DE MINIMUS CLEANUP AREA EXCEEDING SOIL CLEANUP GOAL SCENARIO 2 (AREAS WITHIN BOUNDARIES EXCEED FUTURE INDUSTRIAL ELCR OF  $1 \times 10^{-4}$  AND/OR THE CHILD TOTAL SEGREGATED HI IS GREATER THAN OR EQUAL TO 1.0). ITALICIZED NUMBERS IN PARENTHESES DESIGNATE THE DE MINIMUS CLEANUP AREA.

LEAD EPC FOR EXPOSURE AREA EXCEEDS 1,000 mg/kg

NOTE: REMEDIATION AREAS AND DE MINIMUS CLEANUP AREAS IN AREAS PROPOSED FOR MIXED REUSE WILL BE RETAINED UNDER SOIL CLEANUP GOAL SCENARIOS 1 AND 2.



DEPARTMENT OF THE NAVY  
 HUNTERS POINT SHIPYARD  
 NAVAL FACILITIES ENGINEERING COMMAND  
 SAN FRANCISCO, CALIFORNIA

**FIGURE 3-3b**  
 LOCATIONS OF SOIL REMEDIATION AREAS AND DEMINIMUS CLEANUP AREAS SOIL CLEANUP GOAL SCENARIO 2 PARCEL C FEASIBILITY STUDY

**IR - 25**

## SITE IR-25: REMEDIAL AREA 25-1 (GRID CELLS AR08 AND AR09)

### Operational History and Site Characterization

Remedial area 25-1 is located at the western portion of Building 134. Building 134 was used by the Navy for offices, machine shop activities (including parts cleaning), and as the Quality and Reliability Assurance industrial laboratory. Since base closure in 1974, Building 134 has been used by the Cal Marine Works Machine Shop, and most recently, the Odaco Refrigeration Machine Shop and Storage. These two tenants may have used Building 134 for general storage and marine refrigeration. A large, concrete dip tank labeled "chlorinated materials" is built into the foundation of the building and drains to a sump that is partly inside and partly outside the building. The contents of the dip tank and sump were removed, and the dip tank and sump were cleaned between 1993 and 1995.

Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City of San Francisco (the City) is proposing that the area be zoned for mixed use, and desires that the area be cleaned up to residential reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 25-1 is a 70- by 120-foot area located in grid cells AR08 and AR09. Under an industrial reuse scenario, grid cell AR08 has an estimated excess lifetime cancer risk (ELCR) of  $4 \times 10^{-5}$ , a hazard index (HI) of less than 1, and no lead concentrations above 1,000

Remedial Area 25-1 Industrial Scenario Risk Drivers			
Area Risk Driver	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Aroclor-1260	2 at 2.25 feet	$1 \times 10^{-5}$	N/A
Benzo(a)pyrene	0.32 at 2.25 feet	$3 \times 10^{-6}$	N/A
Benzo(a)anthracene	0.42 at 1.25 feet	$4 \times 10^{-7}$	N/A
Benzo(k)fluoranthene	0.34 at 1.25 feet	$3 \times 10^{-7}$	N/A
Benzo(b)fluoranthene	0.27 at 1.25 feet	$2 \times 10^{-7}$	N/A

milligrams per kilogram (mg/kg). Under an industrial reuse scenario, grid cell AR09 has an ELCR of  $1 \times 10^{-5}$ , an HI of less than 1, and no lead concentrations above 1,000 mg/kg. Because the ELCRs for the grid cells are greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cells AR08 and AR09. Chemicals driving risk, (Aroclor-1260, benzo[a]pyrene, benzo[a]anthracene, benzo[k]fluoranthene, and benzo[b]fluoranthene) were

detected in surface location PA25SS10, test pit PA46TA11, and borings IR25B013 and IR46B013; concentrations of the chemicals driving risk are bounded spatially. Surrounding borings include IR10B006, IR06MW45A, IR25MW16A, IR46MW41A, IR06MW40A, and IR06MW44A. With the exception of Aroclor-1260, chemicals driving risk in soil were not detected in groundwater beneath this remedial area.

### **Risk Management Factors**

Concentrations of polynuclear aromatic hydrocarbons (PAH) detected in remedial area 25-1 may be artifacts from overlying asphalt; PAH concentrations at remedial area 25-1 do not exceed the 1998 U.S. Environmental Protection Agency (EPA) industrial preliminary remediation goals (PRG). Aroclor-1260 exceeds its 1998 industrial PRG (1.3 mg/kg) but does not exceed EPA's recommended cleanup level of 10 mg/kg at IR25B013 and PA46TA11. Soil at PA46TA11 was excavated as part of the remedial action for Parcel B during removal of the underlying fuel lines.

### **Groundwater Issues**

At remedial area 25-1, groundwater is at approximately 7 feet below ground surface (bgs). Based on physical and chemical properties, the chemicals driving risk in soils are relatively immobile and are not considered a potential source of groundwater contamination. Groundwater underlying remedial area 25-1 is part of a remedial unit (RU-6) identified in Parcel C. Chemicals driving groundwater risk in RU-6 are volatile organic compounds, and are unrelated to chemicals driving risk in soil.

### **Other Information**

Petroleum hydrocarbons were not detected at depths of 5 feet bgs or less at remedial area 25-1. A fuel line and soil at location PA46TA11 were removed in 1999 as part of the remedial action for Parcel B.

#### **Conclusion:**

A conclusion was not reached for this area, and the following recommendations were made:

- ✓ The Navy recommends no further action because PAHs and PCBs present in soil do not exceed current regulatory limits.
- ✓ EPA, California Department of Toxic Substances Control (DTSC) and the City recommend that soil in remedial area 25-1 be excavated as part of a source removal for groundwater at RU-6.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-25	AR08 and AR09	25-1

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Grid cell AR08 ELCR = $4 \times 10^{-5}$ and grid cell AR09 ELCR = $1 \times 10^{-5}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with these grid cells because contamination is bounded within the grid cells.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	The chemicals driving risk, Aroclor-1260, benzo(a)pyrene, benzo(a)anthracene, benzo(k)fluoranthene, and benzo(b)fluoranthene, were detected above the screening criteria in IR25B013, PA25SS10, and PA46TA11, and are bounded spatially. Surrounding borings include: IR10B006, IR06MW45A, IR25MW16A, IR06MW41A, IR06MW40A, and IR06MW44A.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. Chemicals detected in groundwater include volatile organic compounds that are unrelated to chemicals driving risk in soil.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	Yes for Aroclor-1260, no for PAHs. The source of Aroclor-1260 may be related to industrial operations performed in Building 134.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes for PAHs. PAHs at the site are likely artifacts of overlying asphalt.
Based on the above information, is the site adequately characterized?	The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the driver chemicals PAHs, beryllium, or polychlorinated biphenyls (PCB)?	Yes. Aroclor-1260, benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, and benzo(k)fluoranthene.
Are the PAHs (if any) the result of asphalt or charcoal?	Yes. The PAHs are likely artifacts of the overlying asphalt.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	Yes.
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	No.
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	No.
Based on the above information, is further evaluation required?	Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	No.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• Total petroleum hydrocarbons (TPH) as gasoline (TPH-gasoline) > 100 parts per million (ppm)?	No.
• TPH as diesel (TPH-diesel) > 1,000 ppm?	No.
• TPH as motor oil (TPH-motor oil) > 1,000 ppm?	No.
• Total recoverable petroleum hydrocarbons (TRPH) > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as underground storage tank (UST) removal?	Yes. The fuel lines and soil at PA46TA11 were removed in 1999 during the remedial action at Parcel B.
– Does this correspond with the distribution of the chemicals?	Yes. The detection of Aroclor-1260 at PA46TA11 corresponds with the location of the fuel lines.
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	No.
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The Navy recommends no further action because PAHs and PCBs present in soil do not exceed current regulatory limits.

EPA, DTSC and the City recommend that soil in remedial area 25-1 be excavated as part of a source removal for groundwater at RU-6.

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## SITE IR-25: REMEDIAL AREA 25-2 (GRID CELL AS09)

### Operational History and Site Characterization

Remedial area 25-2 is located along the southern portion of IR-25, and includes areas adjacent to, and underlying, Building 134. Building 134 was used by the Navy for offices, machine shop activities (including parts cleaning), and as the Quality and Reliability Assurance industrial laboratory. Since base closure in 1974, Building 134 has been used by the Cal Marine Works Machine Shop, and most recently, the Odaco Refrigeration Machine Shop and Storage. These two tenants may have used Building 134 for general storage and marine refrigeration. A large, concrete dip tank labeled “chlorinated materials” is built into the foundation of the building and drains to a sump that is partly inside and partly outside the building. The contents of the dip tank and sump were removed, and the dip tank and sump were cleaned between 1993 and 1995.

Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that the area be zoned for mixed use, and desires that the area be cleaned up to residential reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 25-2 is a 40- by 55-foot area located in industrial grid cell AS09. Under an industrial reuse scenario, grid cell AS09 has an estimated ELCR of  $2 \times 10^{-5}$  and an HI

Remedial Area 25-2 Industrial Scenario Risk Drivers			
Area Risk Driver	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Aroclor-1260	4 at 0.75 feet	$2 \times 10^{-5}$	N/A
Lead	1,230 at 0.75 feet	N/A	N/A

of less than 1, and one lead concentrations above 1,000 mg/kg. Because the ELCR for the grid cell is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell AS09. Chemicals driving risk (Aroclor-1260 and lead) were detected at concentrations above the screening criteria in surface location PA25SS04; these chemical concentrations are bounded spatially. Surrounding borings include IR25MW11A, IR25MW16A, IR06MW34A, IR06B033, and IR06B038. Chemicals driving risk in soil were not detected in groundwater beneath this remedial area.

### **Risk Management Factors**

Aroclor-1260 and lead concentrations exceed the 1998 EPA industrial PRG (1.3 and 1,000 mg/kg, respectively). Aroclor-1260 concentrations do not exceed EPA's recommended cleanup goal of 10 mg/kg.

### **Groundwater Issues**

At remedial area 25-2, groundwater is at approximately 7 feet bgs. Based on physical and chemical properties, the chemicals driving risk in soils are relatively immobile and are not considered a source of groundwater contamination. Groundwater underlying remedial area 25-2 is not part of groundwater remedial units identified in Parcel C. The agencies believe that soil in this remedial area contributes to contaminants at RU-6; however, RU-6 does not underlie this remedial area.

### **Other Information**

Petroleum hydrocarbons were not detected at depths of 5 feet bgs or less at remedial area 25-2. No removal actions or exploratory excavations were conducted at remedial area 25-2.

#### **Conclusion:**

A conclusion was not reached for this area, and the following recommendations were made:

- ✓ The Navy recommends that one de minimus area at PA25SS04 be remediated to remove soil containing lead.
- ✓ EPA, DTSC, and the City recommend that soil in remedial area 25-2 be excavated as part of a source removal for groundwater RU-6.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-25	AS09	25-2

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Grid cell AS09 ELCR = $2 \times 10^{-5}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	The chemicals driving risk, Aroclor-1260 and lead, were detected above the screening criteria in PA25SS04, and are bounded spatially. Surrounding borings include IR25MW11A, IR25MW16A, IR06MW34A, IR06B033, and IR06B038.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	N/A
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	Yes. The source of Aroclor-1260 and lead may be related to industrial operations performed in Building 134.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	N/A
Based on the above information, is the site adequately characterized?	The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the "driver chemicals" be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. Aroclor-1260 is present at the site.
Are the PAHs (if any) the result of asphalt or charcoal?	N/A
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA's level of concern)?	Yes.
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC's level of concern)?	No.
Are there other "driver chemicals" besides PAHs, beryllium, or PCBs?	No.
Based on the above information, is further evaluation required?	Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the "driver chemicals" indicate a potential to contaminate groundwater?	No.
Do site-specific conditions mitigate the exposure or risk associated with the "driver chemicals"?	No.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	Yes.
• Human health risks?	Yes.
– Individual risk?	Yes.
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	
• CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The Navy recommends that one de minimus area at PA25SS04 be remediated to remove soil containing lead.

EPA, DTSC and the City recommend that soil in remedial area 25-1 be excavated as part of a source removal for groundwater at RU-6.

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## SITE IR-25: REMEDIAL AREA 25-3 (GRID CELL AS08)

### Operational History and Site Characterization

Remedial area 25-3 is located in the central portion of Building 134. Building 134 was used by the Navy for offices, machine shop activities (including parts cleaning), and as the Quality and Reliability Assurance industrial laboratory. Since base closure in 1974, Building 134 has been used by the Cal Marine Works Machine Shop, and most recently, the Odaco Refrigeration Machine Shop and Storage. These two tenants may have used Building 134 for general storage and marine refrigeration. A large, concrete dip tank labeled "chlorinated materials" is built into the foundation of the building and drains to a sump that is partly inside and partly outside the building. The contents of the dip tank and sump were removed, and the dip tank and sump were cleaned between 1993 and 1995.

Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that the area be zoned for mixed use, and desires that the area be cleaned up to residential reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 25-3 is a 30- by 40-foot area located in grid cell AS08. Under an industrial reuse scenario, grid cell AS08 has an estimated ELCR of  $5 \times 10^{-6}$  and an HI

Remedial Area 25-3 Industrial Risk Driver			
Area Risk Driver	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Trichloroethene	47 at 4.75 feet bgs	$5 \times 10^{-6}$	N/A

of less than 1, and no lead concentrations above 1,000 mg/kg. Because the ELCR for the grid cell is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell AS08. The chemical driving risk (trichloroethene) was detected in boring IR25MW16A. The concentration of the chemical driving risk is bounded spatially. Surrounding borings include IR06MW45A, IR06MW42A, PA50TA06, and IR25MW11A. The chemical driving risk was not detected in groundwater beneath this remedial area.

### **Risk Management Factors**

The trichloroethene concentration exceeded the 1998 EPA industrial PRG (6.1 mg/kg).

### **Groundwater Issues**

At remedial area 25-3, groundwater is at approximately 7 feet bgs. Groundwater underlying remedial area 25-3 is not part of groundwater remedial units identified in Parcel C. The agencies believe that soil in this remedial area contributes to contaminants at RU-6; however, RU-6 does not underlie this remedial area.

### **Other Information**

TPH-gasoline was detected at a concentration of 430 mg/kg in soil collected at 4.75 feet bgs from IR25MW16A. TPH-diesel was detected in this same boring at a concentration of 6,100 mg/kg, and TPH-motor oil was detected at a concentration of 21,000 mg/kg. No removal actions or exploratory excavations were conducted at remedial area 25-3.

#### **Conclusion:**

A conclusion was not reached for this area, and the following recommendations were made:

- ✓ The Navy recommends that one de minimus area at IR25MW16A be remediate to remove soil containing trichloroethene.
- ✓ EPA, DTSC, and the City recommend that soil in remedial area 25-3 be excavated as part of a source for groundwater RU-6.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-25	AS08	25-3

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Grid cell AS08 ELCR = $5 \times 10^{-6}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	The chemical driving risk, trichloroethene, was detected in IR25MW16A, and are bounded spatially. Surrounding borings include IR06MW45A, IR06MW42A, PA50TA06, and IR25MW11A.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	Yes. Chemicals detected in groundwater are consistent with chemicals driving risk in soil.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	Yes. The source of trichloroethene may be related to industrial operations performed in Building 134.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	N/A
Based on the above information, is the site adequately characterized?	The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the driver chemicals PAHs, beryllium, or PCBs?	No.
Are the PAHs (if any) the result of asphalt or charcoal?	N/A
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	Yes. Trichloroethene was detected at a concentration above its 1998 EPA PRG.
Based on the above information, is further evaluation required?	Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	Yes. The physical and chemical properties of trichloroethene indicate a potential to migrate to groundwater.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	No.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	Yes, 430 ppm at 4.75 feet
• TPH-diesel > 1,000 ppm?	Yes, 6,100 ppm at 4.75 feet
• TPH-motor oil > 1,000 ppm?	Yes, 21,000 ppm at 4.75 feet
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	Yes.
• Human health risks?	Yes.
– Individual risk?	Yes.
– Cumulative risks?	No.
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	
• CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The Navy recommends that one de minimus area at IR25MW16A be remediate to remove soil containing trichloroethene.

EPA, DTSC, and the City recommend that soil in remedial area 25-3 be excavated as part of a source for groundwater

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## SITE IR-25: DE MINIMUS AREA B3822 (GRID CELL AR08)

### Operational History and Site Characterization

De minimus area B3822 is located in the northwest corner of IR-25 near Building 134. A fuel line formerly ran beneath this area; the fuel line and contaminated soil associated with the fuel line were removed in 1999 during remedial activities at Parcel B, which is adjacent to IR-25. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that the area be zoned for mixed use, and desires that the area be cleaned up to residential reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

De minimus area B3822 is an 8- by 8-foot area located in grid cell AR08. Under an industrial reuse scenario, the grid cell AR08 has an estimated ELCR of  $4 \times 10^{-5}$  and an HI of less

De Minimus Area B3822 Industrial Risk Driver			
Area Risk Driver	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Aroclor-1260	7 at 2.25 feet bgs	$4 \times 10^{-5}$	NA

than 1, and no lead concentrations above 1,000 mg/kg. Because the ELCR for the grid cell is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell AR08. The only chemical driving risk (Aroclor-1260) was detected above the screening criterion in test pit PA46TA10, and the concentration of this chemical is bounded spatially. Surrounding borings include IR25MW17A, PA46TA04, and IR10B006. Chemicals driving risk were not detected in groundwater beneath this de minimus area.

### Risk Management Factors

The presence of Aroclor-1260 is likely the result of a leak of waste oil that was pumped through the fuel line that ran through this area. The Aroclor-1260 concentration detected at a depth of 2.25 feet bgs at test pit PA46TA10 exceeded the 1998 EPA PRG (1.3 mg/kg). Fuel lines and soil adjacent to, and possibly including, test pit PA46TA10 were removed in 1999 as part of the Parcel B remedial action. Confirmation sample results will be reviewed to determine if chemicals driving risk in soil have been removed.

## **Groundwater Issues**

At de minimus area B3822, groundwater is at approximately 7 feet bgs. Groundwater underlying de minimus area B3822 is not part of groundwater remedial units identified in Parcel C. Based on physical and chemical properties, chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination.

## **Other Information**

Petroleum hydrocarbons were not detected at de minimus area B3822. The fuel line and soil in this de minimus area were removed in 1999 as part of the remedial action at Parcel B.

### **Conclusion:**

A conclusion was not reached for this area, and the following recommendation was made:

- ✓ The confirmation sampling soil data for the Parcel B remedial action will be reviewed when it becomes available. EPA, DTSC, the City, and the Navy agreed that if the data indicate that chemicals driving risk have been removed from the site, no further action will be necessary.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimis Area Number
IR-25	AR08	DM B3822

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Grid cell AR08 ELCR = $4 \times 10^{-5}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes. Sampling was conducted in the vicinity of the fuel lines.
Are elevated "driver chemicals" bounded spatially?	The chemical driving risk, Aroclor-1260, was detected above the screening criterion in test pit PA46TA10, and is bounded spatially. Surrounding borings include IR25MW17A, PA46TA04, and IR10B006.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. Chemicals detected in groundwater beneath this de minimus area so not exceed current screening criteria.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	Yes. Aroclor-1260, detected at a concentration of 7 mg/kg at 2.25 feet bgs, was likely present in waste oil transported through the fuel line at this location.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	N/A
Based on the above information, is the site adequately characterized?	The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. Aroclor-1260 is a PCB.
Are the PAHs (if any) the result of asphalt or charcoal?	N/A
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	Yes.
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	No.
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	No.
Based on the above information, is further evaluation required?	Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	No.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	The fuel lines and soil at the de minimus area was removed in 1999 during the remedial action at Parcel B.
– Does this correspond with the distribution of the chemicals?	The distribution of the chemical corresponds with the location of the fuel lines.
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	N/A

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The Parcel B remedial action confirmation sampling data for this area will be reviewed when it becomes available. If the data indicate that chemicals driving risk have been removed from the site, no further action will be required for de minimus area B3822. De minimus area B3822 will be reevaluated if Parcel B data indicate that chemicals driving risk have not been removed.

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## **SITE IR-25: DE MINIMUS AREA B3924 (GRID CELL AR08)**

### **Operational History and Site Characterization**

De minimus area B3924 is located in the western portion of Building 134; this de minimus area is located within remedial area 25-1, which was evaluated separately. Building 134 was used by the Navy for offices, machine shop activities (including parts cleaning), and as the Quality and Reliability Assurance industrial laboratory. Since base closure in 1974, Building 134 has been used by the Cal Marine Works Machine Shop, and most recently, the Odaco Refrigeration Machine Shop and Storage. These two tenants may have used Building 134 for general storage and marine refrigeration. A large, concrete dip tank labeled "chlorinated materials" is built into the foundation of the building and drains to a sump that is partly inside and partly outside the building. The contents of the dip tank and sump were removed, and the dip tank and sump were cleaned between 1993 and 1995. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that the area be zoned for mixed use, and desires that the area be cleaned up to residential reuse standards. Based on a review of the data, the area is adequately characterized.

### **Data Evaluation and Risk Assessment**

De minimus area B3924 is an 8- by 8-foot area located in grid cell AR08. No chemicals driving risk were identified at de minimus area B3924 under an industrial reuse scenario, because (1) the ELCR for the area was less than  $1 \times 10^{-6}$ , (2) the HI did not exceed 1, and (3) the soil lead concentrations were less than 1,000 mg/kg. De minimus area B3924 was originally identified because three chemicals (Aroclor-1260; 1,2-dichloroethane; and tetrachloroethene) present at the site may pose a risk under a residential reuse scenario. However, because the Navy proposes to remediate Parcel C to industrial reuse standards, de minimus area B3924 is not proposed for remediation. The chemical 1,2-dichloroethane, which is a chemical driving risk under a residential reuse scenario, was detected in groundwater underlying this de minimus area.

### **Risk Management Factors**

No chemicals driving risk are present at de minimus area B3924 under an industrial reuse scenario. Chemicals driving risk under a residential reuse scenario are Aroclor-1260; 1,2-dichloroethane; and tetrachloroethene. These chemicals were detected at a depth of 6.25 feet bgs in boring IR25B012. The

depth at which these chemicals were detected is below 5 feet bgs and, as a result, is not within the Navy's planned remediation area.

### **Groundwater Issues**

At de minimus area B3924, groundwater is at approximately 7 feet bgs. Groundwater underlying de minimus area B3924 is part of a remedial unit (RU-6) identified in Parcel C. Chemicals driving groundwater risk in RU-6 are volatile organic compounds, and may be related to chemicals driving residential risk in soil at this de minimus area.

### **Other Information**

Petroleum hydrocarbons were not detected at de minimus area B3924. No removal actions or exploratory excavations were conducted at the site.

### **Conclusion:**

A conclusion was not reached for this area, and the following recommendations were made:

- ✓ The Navy recommends no further action for soil because no chemicals driving risk under an industrial reuse scenario are present in soil and because chemicals driving risk under a residential reuse scenario are below the Navy's planned depth of remediation.
- ✓ EPA, DTSC, and the City recommend that soil in de minimus area B3924 be excavated as part of a source removal for groundwater at RU-6.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-25	AR08	DM B3924

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Grid cell AR08 ELCR = $4 \times 10^{-5}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	No driver chemicals are present under the industrial reuse scenario at this de minimus area. Driver chemicals under a residential reuse scenario are present.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	Yes. 1,2-Dichloroethane, a driver chemical under a residential reuse scenario, was detected in groundwater.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	N/A
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	N/A
Based on the above information, is the site adequately characterized?	The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	N/A
Are the driver chemicals PAHs, beryllium, or PCBs?	N/A
Are the PAHs (if any) the result of asphalt or charcoal?	N/A
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	N/A
Based on the above information, is further evaluation required?	Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	N/A
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	N/A

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	No.
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	Yes.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The Navy recommends no further action because no chemicals driving risk under the industrial reuse scenario are present. In addition, contaminants driving the residential risk were detected below 5 feet bgs.

EPA, DTSC and the City recommend that soil in de minimus area B3924 be excavated as part of a source removal for groundwater at RU-6.

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## **SITE IR-25: DE MINIMUS AREA B3926 (GRID CELL AR09)**

### **Operational History and Site Characterization**

De minimus area B3926 is located in the southwest corner of IR-25 near Building 134. Building 134 was used by the Navy for offices, machine shop activities (including parts cleaning), and as the Quality and Reliability Assurance industrial laboratory. Since base closure in 1974, Building 134 has been used by the Cal Marine Works Machine Shop, and most recently, the Odaco Refrigeration Machine Shop and Storage. These two tenants may have used Building 134 for general storage and marine refrigeration. A large, concrete dip tank labeled "chlorinated materials" is built into the foundation of the building and drains to a sump that is partly inside and partly outside the building. The contents of the dip tank and sump were removed, and the dip tank and sump were cleaned between 1993 and 1995.

Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that the area be zoned for mixed use, and desires that the area be cleaned up to residential reuse standards. Based on a review of the data, the area is adequately characterized.

### **Data Evaluation and Risk Assessment**

De minimus area B3926 is an 8- by 8-foot area around monitoring well boring IR06MW41A, and is located in grid cell AR09. No chemicals driving risk were identified at de minimus area B3926 under an industrial reuse scenario, because (1) the estimated ELCR for the area was less than  $1 \times 10^{-6}$ , (2) the HI did not exceed 1, and (3) the soil lead concentrations were less than 1,000 mg/kg. De minimus area B3926 was originally identified because the chemicals (nickel and manganese) present at the site may pose a risk under the residential reuse scenario. However, because the Navy proposes to remediate Parcel C to industrial reuse standards, no remedy is needed for de minimus area B3926. Chemicals driving risk were not detected in groundwater beneath this de minimus area.

### **Risk Management Factors**

Under an industrial reuse scenario, no potentially unacceptable risk is identified for de minimus area B3926. Under the residential reuse scenario, nickel was detected only at concentrations consistent with ambient concentrations and manganese was detected at a concentration exceeding the 1998 industrial PRG, but was considered to be due to naturally-occurring levels in chert in the sample.

### **Groundwater Issues**

At de minimus area B3926, groundwater is at approximately 7 feet bgs. Groundwater underlying de minimus area B3926 is not part of groundwater remedial units identified in Parcel C.

### **Other Information**

Petroleum hydrocarbons were not detected at de minimus area B3926. No removal actions were conducted in this area.

#### **Conclusion:**

A conclusion was not reached for this area, and the following recommendations were made:

- ✓ EPA, the City, and the Navy concluded that CERCLA remedial action is not required for de minimus area B3926 under both the industrial and residential reuse scenarios.
- ✓ DTSC will review data to determine correlation between manganese concentrations and occurrence of chert before rendering a conclusion.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-25	AR09	DM B3926

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	No, under an industrial reuse scenario. Yes, under a residential scenario. Grid cell AR09 residential ELCR = $1 \times 10^{-5}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	No chemicals driving risk are present at this de minimus area.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No chemicals driving risk were detected in groundwater beneath this de minimus area.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	N/A
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	N/A
Based on the above information, is the site adequately characterized?	The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	N/A
Are the driver chemicals PAHs, beryllium, or PCBs?	N/A
Are the PAHs (if any) the result of asphalt or charcoal?	N/A
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	N/A
Based on the above information, is further evaluation required?	Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	N/A
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	N/A

**OTHER INFORMATION**

Has TPH been Detected over a Screening Criterion?	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	N/A

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

No chemicals driving risk under an industrial reuse scenario are present at this de minimus area.

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## **SITE IR-25: DE MINIMUS AREA B4126 (GRID CELL AS09)**

### **Operational History and Site Characterization**

De minimus area B4126 is located along the southern boundary of IR-25 near Building 134. Building 134 was used by the Navy for offices, machine shop activities (including parts cleaning), and as the Quality and Reliability Assurance industrial laboratory. Since base closure in 1974, Building 134 has been used by the Cal Marine Works Machine Shop, and most recently, the Odaco Refrigeration Machine Shop and Storage. These two tenants may have used Building 134 for general storage and marine refrigeration. A large, concrete dip tank labeled "chlorinated materials" is built into the foundation of the building and drains to a sump that is partly inside and partly outside the building. The contents of the dip tank and sump were removed, and the dip tank and sump were cleaned between 1993 and 1995.

Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that the area be zoned for mixed use, and desires that the area be cleaned up to residential reuse standards. Based on a review of the data, the area is adequately characterized.

### **Data Evaluation and Risk Assessment**

De minimus area B4126 is an 8- by 8-foot area around monitoring well boring IR06MW34A, and is located in grid cell AS09. No chemicals driving risk were identified at de minimus area B4126 under an industrial reuse scenario, because (1) the estimated ELCR for the area was less than  $1 \times 10^{-6}$ , (2) the HI did not exceed 1, and (3) the soil lead concentrations were less than 1,000 mg/kg. De minimus area B4126 was originally identified because the ELCR for two chemicals (nickel and chromium) exceeded  $1 \times 10^{-6}$  under the residential reuse scenario. However, nickel and chromium were detected only at concentrations that are consistent with ambient concentrations. Additionally, because the Navy proposes to remediate Parcel C to industrial reuse standards, no remedy is needed for de minimus area B4126. Chemicals driving risk were not detected in groundwater beneath this de minimus area.

### **Risk Management Factors**

Under an industrial reuse scenario, no potentially unacceptable risk is identified for de minimus area B4126.

### **Groundwater Issues**

At de minimus area B4126, groundwater is at approximately 7 feet bgs. Groundwater underlying de minimus area B4126 is not part of groundwater remedial units identified in Parcel C.

### **Other Information**

Petroleum hydrocarbons were not detected at de minimus area B4126. No removal actions were conducted in this area.

### **Conclusion:**

- ✓ EPA, DTSC, the City, and the Navy concluded that CERCLA remedial action is not required for de minimus area B4126 under either industrial or residential reuse scenarios.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-25	AS08	DM B4126

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	No, under an industrial reuse scenario. Yes, under a residential scenario. Grid cell AS08 residential ELCR = $5 \times 10^{-6}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	No driver chemicals were detected in this de minimus area.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No driver chemicals were detected in groundwater beneath this de minimus area.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	N/A
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	N/A
Based on the above information, is the site adequately characterized?	The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	N/A
Are the driver chemicals PAHs, beryllium, or PCBs?	N/A
Are the PAHs (if any) the result of asphalt or charcoal?	N/A
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	N/A
Based on the above information, is further evaluation required?	Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	N/A
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	N/A

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	N/A

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

No chemicals driving risk under an industrial reuse scenario are present at this de minimus area.

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**SOIL SUMMARY TABLE**  
**FUTURE INDUSTRIAL CARCINOGENIC RISK, NONCARCINOGENIC HAZARD, AND LEAD LEVEL OF CONCERN**  
**HUNTERS POINT SHIPYARD, PARCEL C**

IR Site	Industrial Exposure Area <sup>a,b</sup>	Total ELCR <sup>c</sup>	Total Segregated HI <sup>d</sup>	COPC Contributing Significantly to the Total ELCR, Total HI, or Lead <sup>e</sup>	EPC <sup>f</sup> (mg/kg)	Significant Sampling Location Information <sup>g</sup>		
						Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-25 (IR-06) <sup>h</sup>	AR09 (B3726, B3825, B3826, B3827, B3926, B3927)	1 × 10 <sup>-5</sup> (2 × 10 <sup>-7</sup> )	<1	Aroclor-1260 (1 × 10 <sup>-5</sup> )	2.0	PA46TA11	2.25	2
IR-25 (IR24) <sup>h</sup>	AR08 (B3723, B3724, B3822, B3824, B3924)	4 × 10 <sup>-5</sup> (9 × 10 <sup>-7</sup> )	<1	Aroclor-1260 (4 × 10 <sup>-5</sup> ) Aroclor-1260 Benzo(a)pyrene (3 × 10 <sup>-6</sup> ) Benzo(a)pyrene	7.0 --- 0.32 ---	PA46TA10 IR25B013 IR25B013 IR46B013	2.25 1.25 1.25 2.25	7.0 2.0 0.21 0.32 #
IR-25 (IR-20, IR-24) <sup>h</sup>	AS08 (B4022, B4124)	5 × 10 <sup>-6</sup> (3 × 10 <sup>-7</sup> )	<1	Trichloroethene (5 × 10 <sup>-6</sup> )	47	IR25MW16A	4.75	47 #
IR-25 (IR-06) <sup>h</sup>	AS09 (B4026, B4027, B4126, B4127, B4226, B4227)	2 × 10 <sup>-5</sup> (4 × 10 <sup>-7</sup> )	<1	Aroclor-1260 (2 × 10 <sup>-5</sup> ) Benzo(a)pyrene (1 × 10 <sup>-6</sup> ) Lead	3.8 0.12 8.3	PA25SS04 PA50TA06 PA25SS04	0.75 7.75 0.75	4.0 0.12 1,230
IR-25	AT09 (B4326)	NE (NE)	<1	NA	NA	NA	NA	NA

Notes:

COPC Chemical of potential concern  
 ELCR Excess lifetime cancer risk  
 EPC Exposure point concentration  
 HI Hazard index

IR Installation restoration  
 mg/kg Milligrams per kilogram  
 NA Not applicable  
 NE Not estimated because carcinogenic COPCs were not identified.

**SOIL SUMMARY TABLE**  
**FUTURE INDUSTRIAL CARCINOGENIC RISK, NONCARCINOGENIC HAZARD, AND LEAD LEVEL OF CONCERN**  
**HUNTERS POINT SHIPYARD, PARCEL C (Continued)**

Notes (Continued):

- a The exposure area presented is based on a 0.5-acre exposure area.
- b The exposure area presented in parentheses is the associated exposure area for the residential scenario based on a 2,500-square foot exposure area. The total ELCRs for the residential scenario can be found in Table N.5-6 (of the Parcel B remedial investigation [RI], Appendix N) and the total HIs for the residential scenario can be found in Table N.5-7 (of the Parcel B RI, Appendix N).
- c The total ELCR presented is for the reasonable maximum exposure (RME) case. The value presented in parentheses is for the average exposure case. The total ELCR evaluates the ingestion of, dermal contact with, and inhalation of volatile organic compounds and particulate emissions from the soil pathway of exposure.
- d The total HIs for the industrial scenario can be found in Table N-I-1 of Attachment N-1 (Parcel B RI report, Appendix N).
- e Only the COPC-specific ELCRs for COPCs contributing about 90% of the total ELCRs that exceed  $1 \times 10^{-6}$ ; COPCs contributing a risk exceeding  $1 \times 10^{-6}$  under the RME case; and lead exceeding 1,000 mg/kg are listed.
- f The value presented is the EPC assumed for the COPCs contributing significantly to the total ELCR under the RME case.
- g If the total COPC-specific total ELCR exceeding  $1 \times 10^{-6}$  can be attributed to one or several sample locations, the sampling location, depth, and concentration are listed.
- h The number presented in parentheses is another IR site with which the subject industrial exposure area is associated.
- # The detected concentration exceeds the industrial soil U.S. Environmental Protection Agency Region IX preliminary remediation goal.

TABLE D-2h

**ACTION REQUIRED FOR SOIL AT IR-25  
HUNTERS POINT SHIPYARD, PARCEL B FEASIBILITY STUDY  
(Page 1 of 7)**

Exposure Area	RAO Criteria Exceeded	Risk Assessment Findings	Site Characterization Findings	Action Required
Remediation Area 25-1				
B3824	ELCR = $6 \times 10^{-4}$ TRPH = 6,500 mg/kg	The total ELCR is largely the result of potential exposure to Aroclor 1260, PAHs, and tetrachloroethene (PCE) in soil boring IR25B013 at 1.25 feet bgs and PAHs in soil boring IR46B013 at 2.25 feet bgs.	<p>With the exception of PAHs, COPCs detected in soil within exposure area B3824 are likely associated with past activities at Building 134. Exposure area B3824 includes a concrete dip tank and sump from which sludge samples for source characterization were collected. Aroclor 1260 was detected at a concentration of 2,400 <math>\mu\text{g}/\text{kg}</math> in boring IR25B013 at 1.25 bgs, but was not detected in any other soil samples within exposure area B3824. Aroclor 1260 was found at elevated concentrations in source characterization samples. Aroclor 1260 was also detected in one of three groundwater samples collected from monitoring well IR25MW15A1 (screened from 5 to 20 feet bgs) and in five of five groundwater samples collected from monitoring well IR25MW15A2 (screened from 17 to 30 feet bgs); concentrations detected ranged from 2 to 11 <math>\mu\text{g}/\text{L}</math>.</p> <p>PCE was detected at 860 <math>\mu\text{g}/\text{kg}</math> at 1.25 feet bgs in soil boring IR25B013. Much higher PCE concentrations were measured in soil samples collected deeper than 10 feet bgs and PCE was also found at high concentrations in groundwater samples collected from monitoring wells IR25MW15A1 and IR25MW15A2. These results suggest a subsurface release of PCE, possibly from the chlorinated solvent dip tank built into the foundation of Building 134.</p> <p>TRPH (6,500 mg/kg) was detected above the screening level in soil collected at 2.25 feet bgs from boring IR46B013, but was not found at elevated concentrations in other soil samples collected from 0 to 10 feet bgs. Petroleum compounds (TPH-g, TPH-d, TPH-mo, and TRPH) were found at elevated concentrations in groundwater samples collected from monitoring wells IR25MW15A1 and IR25MW15A2 and in a grab groundwater sample collected from soil boring IR25B013. Subsurface fuel distribution lines (IR-46) located near Building 134 are the most likely source of deeper petroleum contamination.</p>	<p>Remediation of soil along the northwest side of Building 134 is required to a depth of approximately 5 feet bgs. This action will address soil contamination likely associated with past activities at Building 134 and will also address TRPH contamination in shallow soils.</p> <p>This area would require remediation under all six cleanup goal scenarios.</p>

TABLE D-2h (Continued)

ACTION REQUIRED FOR SOIL AT IR-25  
 HUNTERS POINT SHIPYARD, PARCEL B FEASIBILITY STUDY  
 (Page 2 of 7)

Exposure Area	RAO Criteria Exceeded	Risk Assessment Findings	Site Characterization Findings	Action Required
Remediation Area 25-2				
B4026	ELCR = $8 \times 10^4$ HI = 11 Lead = 1,230 mg/kg TPH-d = 3,100 mg/kg	The total ELCR is largely a result of potential exposure to Aroclor 1260 in surface soil sample PA25SS04 at 0.75 feet bgs. PAHs found at 7.75 feet bgs in test pit PA50TA06 contribute to ELCR to a lesser extent. The total HI is largely the result of copper (2.6) and zinc (4.6) detected in surface soil sample PA25SS04 at 0.75 feet bgs, and manganese (1.5) detected in test pit PA50TA06 at 7.75 feet bgs. Lead was detected at a maximum concentration of 1,230 mg/kg in surface soil sample PA25SS04 at 0.75 feet bgs.	<p>Test pits PA50TA06 and PA46TA03 and surface soil sample PA25SS04 were collected along the southwest side of Building 134. Aroclor 1260 was detected at a concentration of 3,800 <math>\mu\text{g}/\text{kg}</math> at 0.75 feet bgs in soil sample PA25SS04 but was not detected in either test pit. Copper (485 mg/kg) and zinc (1,770 mg/kg) were also found at elevated concentrations at 0.75 feet bgs in soil sample PA25SS04. Both metals and Aroclor 1260 were found at elevated concentrations in source characterization samples (sludge and floor scrapings) collected from Building 134 and are likely related to site activities.</p> <p>Lead was detected at 1,230 mg/kg at 0.75 feet bgs in soil sample PA25SS04, and manganese was detected at 3,360 mg/kg at 7.75 feet bgs in test pit PA50TA06. Neither metal was found at elevated concentrations in source characterization samples from Building 134 and their source is unknown.</p> <p>PAHs were found at 7.75 feet bgs in test pit PA50TA06 and also at 6.75 feet bgs in test pit PA46TA03. TPH-d was also found above the screening level at both locations. Subsurface fuel distribution lines (IR-46) near Building 134 are the most likely source of PAH and petroleum contamination.</p>	Remediation of soil along the southwest side of Building 134 is required to a depth of approximately 9 feet. This action will address shallow soils contaminated with Aroclor 1260, zinc, copper, and lead, and deeper soils contaminated with PAHs, manganese, and petroleum compounds. This area would require full remediation under cleanup goal scenarios 1, 2, and 3; and 50 percent of the area would require remediation under cleanup goal scenarios 4 and 5.

TABLE D-2h (Continued)

**ACTION REQUIRED FOR SOIL AT IR-25  
HUNTERS POINT SHIPYARD, PARCEL B FEASIBILITY STUDY**  
(Page 3 of 7)

Exposure Area	RAO Criteria Exceeded	Risk Assessment Findings	Site Characterization Findings	Action Required
<b>Remediation Area 25-3</b>				
B4124	ELCR = $2 \times 10^{-4}$ HI = 12 TPH-g = 430 mg/kg TPH-d = 6,100 mg/kg TPH-mo = 21,000 mg/kg TRPH = 19,500 mg/kg	The total ELCR is largely a result of potential exposure to trichloroethene at 4.75 feet bgs in soil boring IR25MW16A. Aldrin and heptachlor at 4.75 feet bgs in soil boring IR25MW16A also contribute to the ELCR, but at a much lower level. Chromium VI also contributes to the ELCR at a much lower level. The total HI is largely a result of potential exposure to trichloroethene (9.8) and antimony (1.2) at 4.75 feet bgs in soil boring IR25MW16A and aluminum (0.47) at 9.75 feet bgs in the same boring. Trichloroethene and aluminum affect the same target organ; both antimony and aluminum also affect a different target organ.	<p>Soil boring IR25MW16A was collected below the floor near the center of Building 134. Trichloroethene was detected at a concentration of 47,000 <math>\mu\text{g}/\text{kg}</math> at 4.75 feet bgs in this boring, but not at lower depths. Trichloroethene was detected in source characterization samples (liquids collected from the sump and dip tank) and appears to be related to site activities. Aldrin and heptachlor were detected only at 4.75 feet bgs in boring IR25MW16A; concentrations of both pesticides were 4 <math>\mu\text{g}/\text{kg}</math>. Pesticides were not detected in source characterization samples, and the sources of aldrin and heptachlor are unknown. Antimony (12 mg/kg) was detected above its HPAL only at 4.75 feet bgs in boring IR25MW16A. Antimony was detected at an elevated concentration in a floor scrape sample from Building 134 and may be related to site activities.</p> <p>TPH-d, TPH-d, TPH-mo, and TRPH were all detected above screening levels at 4.75 feet bgs in boring IR25MW16A; however, concentrations were much lower at other depths in this boring. Ethylbenzene, naphthalene, and several other PAHs that could be associated with petroleum contamination were also detected at 4.75 feet bgs in boring IR25MW16A but not at lower depths.</p> <p>Monitoring well IR25MW16A (screened from 5 to 20 feet bgs) was sampled on five different dates in 1994 and 1995. Trichloroethene was detected in all groundwater samples analyzed for VOCs; the maximum concentration was 86 <math>\mu\text{g}/\text{L}</math>, above the U.S. EPA Region IX PRG for tap water. Antimony was not detected in groundwater samples. Petroleum compounds (TPH-g and TPH-mo) were detected above screening levels in two samples. Aroclor 1260 was also detected in groundwater at low concentrations (1 <math>\mu\text{g}/\text{L}</math>) during one sampling event.</p>	Remediation of soil with elevated trichloroethene and antimony is required to a depth of approximately 6 feet bgs. This action will also address soil with elevated concentrations of petroleum-related compounds. Although contaminated soil lies below the floor of Building 134, analytical results suggest that the soil is serving as a source of groundwater contamination. This area would require remediation under cleanup goal scenarios 1, 2, 3, and 4.

TABLE D-2h (Continued)

ACTION REQUIRED FOR SOIL AT IR-25  
 HUNTERS POINT SHIPYARD, PARCEL B FEASIBILITY STUDY  
 (Page 4 of 7)

Exposure Area	RAO Criteria Exceeded	Risk Assessment Findings	Site Characterization Findings	Action Required
<b>Remediation Area 25-4</b>				
B3825	ELCR = $3 \times 10^{-5}$ HI = 5.6 TRPH = 8,300 mg/kg	The total ELCR is largely the result of potential exposure to PAHs and Aroclor 1260 at 1.25 feet bgs in soil sample location PA25SS10. The total HI is largely the result of potential exposure to nickel (4.3) in soil boring IR25MW11A at 1.25 feet bgs; antimony (0.94) in soil sample PA25SS10 at 1.25 feet bgs; and aluminum (0.28) in soil boring IR25MW11A at 6.25 feet bgs. All three metals affect similar target organs.	<p>Aroclor 1260 was detected at a lower concentration (22 <math>\mu\text{g}/\text{kg}</math>) in exposure area B3825 than in adjacent exposure areas (B3824 and B3826). However, Aroclor 1260 was found in source characterization samples collected in Building 134 and appears to be related to past activities. Aroclor 1260 was detected only at 1.25 feet bgs and was not found at greater depths. Carcinogenic PAHs were found at concentrations up to 540 <math>\mu\text{g}/\text{kg}</math> in soil samples collected at 1.25 feet bgs at locations IR25MW11A and PA25SS10. Source characterization samples (sludge and floor scrapings) collected from Building 134 do not provide any direct evidence that PAHs were associated with past activities.</p> <p>The sources of nickel (1,310 mg/kg) and aluminum (20,000 mg/kg) detected at location IR25MW11A are unknown; neither metal was detected at elevated concentrations in source characterization samples from Building 134. Antimony (10 mg/kg), which was detected at location PA25SS10, was also detected in a floor scrape sample from Building 134 and may be site related.</p> <p>TRPH (8,300 mg/kg) was detected above the screening level at 1.25 bgs in soil boring IR25MW11A. Much higher concentrations of TPH-d (19,000 mg/kg) and TRPH (21,000 mg/kg) were detected at 11.25 feet bgs in the same boring. Groundwater samples collected from monitoring well IR25MW11A (screened from 5 to 20 feet bgs) also contained elevated concentrations of TPH-g, TPH-d, TPH-mo, and TRPH. Subsurface fuel distribution lines (IR-46) located near Building 134 are the most likely source of deeper petroleum contamination.</p>	Confirmatory sampling should be conducted to determine whether Aroclor 1260 and other site-related contaminants are present at levels of concern. If the results of confirmatory sampling are positive, remediation of this exposure area should be conducted in a manner consistent with the other exposure areas in Remediation Area 25-1. If confirmatory sampling results do not indicate the need for remediation, TRPH contamination in shallow soil should be addressed in the petroleum corrective action plan. This area would require remediation under cleanup goal scenarios 1, 2, 3, 4, and 5.
B3826	ELCR = $4 \times 10^{-4}$ HI = 3.0 Lead = 237 mg/kg	The total ELCR is a result of potential exposure to Aroclor 1260 in test pit PA46TA11 at 2.25 feet bgs. The total HI is largely a result of potential exposure to zinc in test pit PA46TA11 at 2.25 feet bgs. Lead was detected at a maximum concentration of 237 mg/kg in test pit PA46TA11 at 2.25 feet bgs.	Test pit PA46TA11 was excavated near the westernmost corner of Building 134 to investigate potential contamination from subsurface fuel distribution lines. Aroclor 1260 was detected at a concentration of 2,000 $\mu\text{g}/\text{kg}$ at 2.25 feet bgs in the test pit; zinc was detected above its HPAAL at a concentration of 808 mg/kg. Both Aroclor 1260 and zinc were found at elevated concentrations in source characterization samples collected within Building 134 and appear to be related to activities conducted in the building. Lead was not detected at high concentrations in source characterization samples, and its source is unknown.	Remediation of soil with elevated Aroclor 1260, zinc, and lead concentrations is required to a depth of about 5 feet bgs. This area would require remediation under cleanup goal scenarios 1, 2, 3, 4, and 5.

TABLE D-2h (Continued)

ACTION REQUIRED FOR SOIL AT IR-25  
 HUNTERS POINT SHIPYARD, PARCEL B FEASIBILITY STUDY  
 (Page 5 of 7)

Exposure Area	RAO Criteria Exceeded	Risk Assessment Findings	Site Characterization Findings	Action Required
<b>Deminimus Cleanup Areas</b>				
B3822	ELCR = $2 \times 10^{-3}$ HI = 2.2	The total ELCR is a result of potential exposure to Aroclor 1260 at test pit PA46TA10 at 2.25 feet bgs. The total HI is a result of potential exposure to zinc at test pit PA46TA10 at 2.25 feet bgs.	<p>Test pit PA46TA10 was excavated to investigate IR-46, Fuel Distribution Lines. The test pit is within IR-25, approximately 30 feet from the northern corner of Building 134 (Machine Shop). Aroclor 1260 was detected in soil from the test pit at a concentration of 7,000 <math>\mu\text{g}/\text{kg}</math>. Zinc was detected above its HPAL at a concentration of 811 <math>\text{mg}/\text{kg}</math>. Aroclor 1260 and zinc were found at elevated concentrations in source characterization samples (sludge samples and a floor scrape sample) collected within Building 134. Both COPCs appear to be related to activities conducted in the building.</p> <p>Groundwater samples were collected from monitoring well IR25MW17A within exposure area B3822 in June, July, and August 1994 and in June 1995. This well is screened in the A-aquifer from 5 to 20 feet bgs. Aroclor 1260 and zinc were not found at elevated concentrations in groundwater samples.</p>	Remediation of soil along the northwest side of Building 134 is required to a depth of approximately 5 feet bgs. This action is required to address soil contamination likely associated with past activities at Building 134. This area would require remediation under cleanup goal scenarios 1, 2, 3, 4, and 5.
B3924	ELCR = $1 \times 10^{-3}$	The total ELCR is largely a result of potential exposure to Aroclor 1260 at 6.25 feet bgs in soil boring IR25B012 and (to a lesser extent) 1,2-dichloroethane at 6.25 feet bgs in the same boring.	<p>Aroclor 1260 was detected at 6.25 feet bgs in boring IR25B012 at a concentration of 46 <math>\mu\text{g}/\text{kg}</math>, but was not detected at other depths in the same boring. Aroclor 1260 was detected in source characterization samples collected from Building 134. The maximum concentration of 1,2-dichloroethane (27 <math>\mu\text{g}/\text{kg}</math>) was also detected at 6.25 feet bgs in boring IR25B012. 1,2-dichloroethane is likely related to past activities involving the large concrete dip tank which is built into the foundation of Building 134 near exposure area B3924 and previously contained chlorinated materials.</p> <p>Two grab groundwater samples collected from boring IR25B012 in 1993 contained 150 <math>\mu\text{g}/\text{L}</math> of 1,2-dichloroethane as well as several other VOCs. TPH-g (up to 410 <math>\mu\text{g}/\text{L}</math>) and TPH-d (up to 1,800 <math>\mu\text{g}/\text{L}</math>) were also detected in grab groundwater samples. Based on the relatively low concentrations of 1,2-dichloroethane and petroleum hydrocarbons detected in soil, it is unlikely that contaminated soil is serving as a continuing source of groundwater contamination.</p>	Confirmatory sampling should be conducted to determine whether elevated levels of Aroclor 1260 and 1,2-dichloroethane are present. This area would require remediation under cleanup goal scenarios 1 and 2.

TABLE D-2h (Continued)

ACTION REQUIRED FOR SOIL AT IR-25  
HUNTERS POINT SHIPYARD, PARCEL B FEASIBILITY STUDY  
(Page 6 of 7)

Exposure Area	RAO Criteria Exceeded	Risk Assessment Findings	Site Characterization Findings	Action Required
B3926	HI = 2.0	The total HI is the result of potential exposure to manganese (1.5) at 1.25 feet bgs in soil boring IR06MW41A and aluminum (0.27) at 5.25 feet bgs in the same boring. Manganese and aluminum affect similar target organs.	The sources of manganese and aluminum in exposure area B3926 are not known. Neither metal was detected at elevated concentrations in source characterization samples collected from Building 134. Manganese was found above its HPAL only at 1.25 feet bgs in boring IR06MW41A; concentrations were much lower at other depths in this boring and in boring IR06B038.  Monitoring well IR06MW41A was sampled on four dates between 1990 and 1992. Manganese concentrations in all samples exceeded the U.S. EPA Region IX PRG for tap water. Samples collected from the well in 1993 and 1994 were not analyzed for manganese.	Confirmatory sampling should be conducted to determine elevated concentrations of manganese are present in soil and whether soil manganese is contributing to groundwater contamination. In addition, confirmatory sampling should be conducted to determine whether Aroclor 1260 is present. Exposure area B3926 lies between two exposure areas (B3826 and B4026) with elevated Aroclor 1260 soil concentrations. This area would require remediation under cleanup goal scenarios 1, 2, and 3.
B4126	HI = 7.4	The total HI is largely the result of potential exposure to nickel (7.0) at 5.25 feet bgs and aluminum (0.37) at 1.25 feet bgs in soil boring IR06MW34A. Nickel and aluminum affect the same target organ.	Nickel (2,130 mg/kg at 5.25 feet bgs) and aluminum (27,300 mg/kg at 1.25 feet bgs) were detected in soil boring IR06MW34A, collected below Lockwood Street along the southwest side of Building 134. Neither metal appears to be related to activities associated with IR-25. Aluminum was not detected in source characterization samples collected in Building 134. Nickel was detected in sludge and floor scrape samples from Building 134, but at concentrations below the levels measured in soil. Neither nickel or aluminum was detected at concentrations above U.S. EPA Region IX PRGs for tap water in groundwater samples from monitoring well IR06MW34A.	Confirmatory sampling should be conducted to determine whether nickel is present at concentrations above its HPAL. This area would require remediation under cleanup goal scenarios 1, 2, and 3.

Notes:

- bgs Below ground surface
- COPC Chemical of potential concern
- ELCR Excess lifetime cancer risk
- HI Hazard index
- HPAL Hunters Point ambient level
- µg/kg Micrograms per kilogram
- µg/L Micrograms per liter
- mg/kg Milligrams per kilogram
- PCE Tetrachloroethene
- PRG Preliminary remediation goal

TABLE D-2h (Continued)

ACTION REQUIRED FOR SOIL AT IR-25  
HUNTERS POINT SHIPYARD, PARCEL B FEASIBILITY STUDY  
(Page 7 of 7)

RAO Remedial action objective  
TPH-d Total petroleum hydrocarbons—diesel  
TPH-g Total petroleum hydrocarbons—gasoline  
TPH-mo Total petroleum hydrocarbons—motor oil  
TRPH Total recoverable petroleum hydrocarbons

- a The contribution of chromium VI to the ELCR is based on an estimated soil concentration. Soil samples collected from exposure area B4124 were not analyzed for chromium VI. The chromium VI concentration was estimated based on the ratio of chromium VI to chromium III concentrations in samples where both forms of chromium were analyzed. Details of the estimation procedure are described in the Human Health Risk Assessment for Parcel B.



**B3824 - IR25B013**

COPC	DEPTH	CONC.
AROCLOR-1260	1.25	2
BENZO(A)PYRENE	1.25	0.21
BENZO(B)FLUORANTHENE	1.25	0.22
BENZO(K)FLUORANTHENE	1.25	0.19
TETRACHLOROETHENE	1.25	0.9
BENZO(A)ANTHRACENE	1.25	0.25

**B3822 - PA46TA10**

COPC	DEPTH	CONC.
AROCLOR-1260	2.25	7.0
ZINC	2.25	810

**B3824 - IR46B013**

COPC	DEPTH	CONC.
BENZO(A)PYRENE	2.25	0.32
CHRYSENE	2.25	0.37

**B3924 - IR25B012**

COPC	DEPTH	CONC.
AROCLOR-1260	6.25	0.05
1,2-DICHLOROETHENE	6.25	0.03

**B3825 - IR25MW11A**

COPC	DEPTH	CONC.
CHRYSENE	1.25	0.54
NICKEL	1.25	1,300
NICKEL	6.25	470
ALUMINUM	6.25	20,000

**B3825 - PA25SS10**

COPC	DEPTH	CONC.
BENZO(K)FLUORANTHENE	1.25	0.34
BENZO(B)FLUORANTHENE	1.25	0.27
AROCLOR-1260	1.25	0.02
BENZO(A)ANTHRACENE	1.25	0.42
CHRYSENE	1.25	0.40
NICKEL	1.25	470
ANTIMONY	1.25	10

**B3826 - PA46TA11**

COPC	DEPTH	CONC.
AROCLOR-1260	2.25	2.0
ZINC	2.25	810
LEAD	2.25	237

**B3926 - IR06MW41A**

COPC	DEPTH	CONC.
MANGANESE	1.25	13,200
ALUMINUM	5.25	21,000

**B4026 - PA25SS04**

COPC	DEPTH	CONC.
AROCLOR-1260	0.75	4
COPPER	0.75	490
ZINC	0.75	1,800
LEAD	0.75	1,230

**B4026 - PA50TA06**

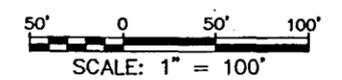
COPC	DEPTH	CONC.
BENZO(A)PYRENE	7.75	0.12
BENZO(B)FLUORANTHENE	7.75	0.16
BENZO(K)FLUORANTHENE	7.75	0.12
BENZO(A)ANTHRACENE	7.75	0.22
ALUMINUM	7.75	24,000
MANGANESE	7.75	3,400

**B4126 - IR06MW34A**

COPC	DEPTH	CONC.
NICKEL	1.25	1,200
NICKEL	5.25	2,100
ALUMINUM	1.25	27,000

**B4124 - IR25MW16A**

COPC	DEPTH	CONC.
TRICHLOROETHENE	4.75	47
ALDRIN	4.75	0.004
HEPTACHLOR	4.75	0.004
ANTIMONY	4.75	12
ALUMINUM	9.75	35,000

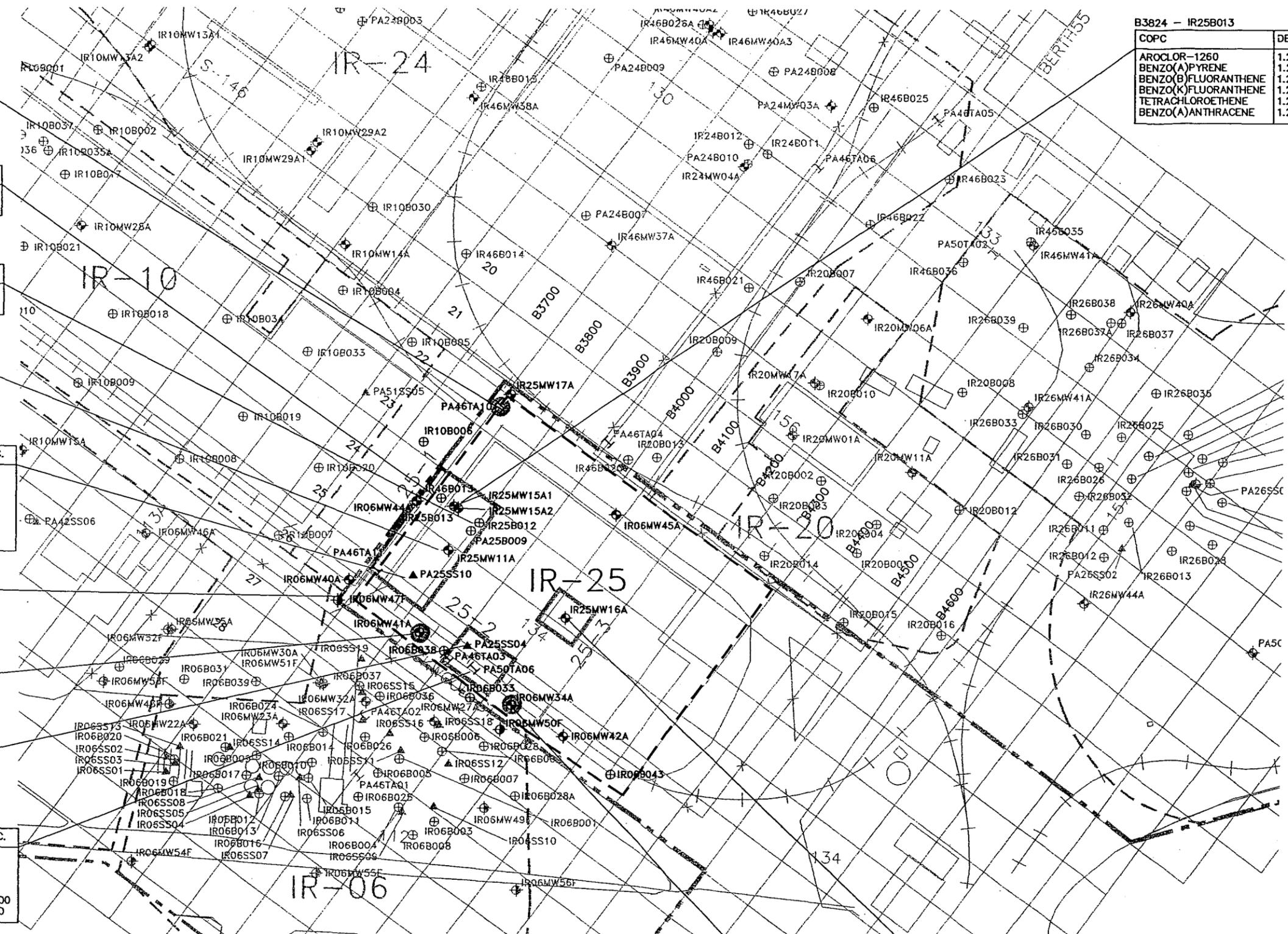


**EXPLANATION**

- ▲ SURFACE SOIL SAMPLE LOCATION
- ⊕ BORING SAMPLE LOCATION
- ⊕ MONITORING WELL LOCATION
- ⊕ MONITORING WELL LOCATION
- ⊕ BEDROCK WATER-BEARING ZONE
- ⊕ TRENCH AREA SAMPLE LOCATION

- 25-2 □ REMEDIATION AREA BOUNDARY
  - DE MINIMUS AREA LOCATION
  - PARCEL C BOUNDARY
  - EXTENDED SITE BOUNDARY
  - 2,500-SQUARE FOOT EXPOSURE AREA BOUNDARY
- DEPTH IN FEET  
COPC = CHEMICAL OF POTENTIAL CONCERN  
CONC = CONCENTRATION (mg/kg)

**NOTE**  
1. UNDER CLEANUP GOAL SCENARIO 1 AND 2, REMEDIATION AREAS AT IR-25 WILL BE CLEANED UP TO CLEANUP GOAL SCENARIO 3 (RESIDENTIAL 10<sup>-6</sup>) BECAUSE IR-25 IS PROPOSED FOR MIXED REUSE.



DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND  
**ENGINEERING FIELD ACTIVITY WEST**  
HUNTERS POINT SHIPYARD  
SAN FRANCISCO, CALIFORNIA

**FIGURE D-7**  
**IR-25, LOCATIONS OF SOIL REMEDIATION AREAS AND DE MINIMUS CLEANUP AREAS**  
**SOIL GOAL SCENARIO 3**  
**PARCEL C FEASIBILITY STUDY**

**IR – 25, IR - 27**

**SITE IR-27: DE MINIMUS AREA 9307 (GRID CELL BA03)**

**Operational History and Site Characterization**

De minimus area 9307 is located in the northwest corner of IR-27 near Building 205. Building 205 was formerly used as a boiler house for steam generation and a pump house for Dry Dock 2. Underground storage tanks (UST) HPA-06 and S-214 were formerly present at IR-27; these USTs were used to store water and fuel oil, respectively, and were both closed in place in 1993. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City of San Francisco (City) is proposing that the area be zoned for cultural and institutional reuse, and desires that the area be cleaned up to industrial reuse standards. Based on a review of the data, the area is adequately characterized.

**Data Evaluation and Risk Assessment**

De minimus area 9307 is an 8- by 8-foot area located in grid cell BA03. Under an industrial reuse scenario, grid cell BA03

<b>De Minimus Area 9307 Industrial Scenario Risk Driver</b>			
<b>Area Risk Drivers</b>	<b>Maximum Detection (mg/kg)</b>	<b>Associated Risk</b>	<b>Associated HI</b>
Benzo(a)pyrene	0.1 at 2.25 feet	$1 \times 10^{-6}$	< 1

has an estimated excess lifetime cancer risk (ELCR) of  $2 \times 10^{-6}$  and a hazard index (HI) of less than 1, and it has no lead concentrations above 1,000 milligrams per kilogram (mg/kg). Because the estimated ELCR for grid cell BA03 exceeded  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BA03. The chemical driving risk, benzo(a)pyrene, was detected at a concentration above screening criteria in test pit PA49TA06.

**Risk Management Factors**

Although the test pit excavation was to evaluate a potential leaking fuel line, no evidence of a fuel lead was found and the detection of benzo(a)pyrene in de minimus area 9307 is considered an artifact of the overlying asphalt surface. The benzo(a)pyrene concentration did not exceed the 1998 U.S. Environmental Protection Agency (EPA) industrial preliminary remediation goal (PRG) (0.36 mg/kg) at test pit PA49TA06.

### **Groundwater Issues**

At de minimus area 9307, groundwater is at approximately 8 feet bgs. Groundwater underlying de minimus area 9307 is not part of groundwater remedial units identified in Parcel C.

### **Other Information**

Petroleum hydrocarbons were not detected at de minimus area 9307. No removal actions were conducted in this area.

#### **Conclusion:**

- ✓ The Base Realignment and Closure Act of 1990 (BRAC) Cleanup Team (BCT) and the City concluded that Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedial action is not required for de minimus area 9307.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-27	BA03	DM 9307

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Grid cell BA03 ELCR = $2 \times 10^{-6}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. Samples were collected from 2.25 feet bgs; no evidence of staining was present in trench.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No groundwater samples were collected in IR-27.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes. Benzo(a)pyrene is considered an artifact of the overlying asphalt surface.
Based on the above information, is the site adequately characterized?	The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the "driver chemicals" be considered the results of fill material or variability in ambient levels? Explain.	N/A
Are the driver chemicals PAHs, beryllium, or polychlorinated biphenyls (PCB)?	Yes. Benzo(a)pyrene, a PAH, is the driver chemical.
Are the PAHs (if any) the result of asphalt or charcoal?	PAHs are considered an artifact of asphalt.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA's level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC's level of concern)?	N/A
Are there other "driver chemicals" besides PAHs, beryllium, or PCBs?	N/A
Based on the above information, is further evaluation required?	Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the "driver chemicals" indicate a potential to contaminate groundwater?	N/A
Do site-specific conditions mitigate the exposure or risk associated with the "driver chemicals"?	N/A

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• Total petroleum hydrocarbons (TPH) as gasoline > 100 parts per million (ppm)?	No.
• TPH as diesel > 1,000 ppm?	No.
• TPH as motor oil > 1,000 ppm?	No.
• Total recoverable petroleum hydrocarbons > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	No.
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	N/A

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City concluded that CERCLA remedial action is not required for de minimus area 9307.

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**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-27	BA03 (093007)	2E-06 (2E-07)	Benzo(a)pyrene (1E-06)	0.14	PA49TA06	2.25	0.1	
			Benzo(b)fluoranthene (2E-07)	0.21	PA49TA06	2.25	0.2	
			Benzo(a)anthracene (1E-07)	0.12	PA49TA06	2.25	0.1	
			Benzo(k)fluoranthene (7E-08)	0.078	PA49TA06	2.25	0.08	
			Indeno(1,2,3-cd)pyrene (6E-08)	0.075	PA49TA06	2.25	0.08	
			Chrysene (1E-08)	0.15	PA49TA06	2.25	0.2	
IR-27	BB03 (095006, 097006)	9E-07 (1E-07)	Benzo(a)pyrene (7E-07)	0.088	PA49TA07	1.75	0.09	
			Benzo(b)fluoranthene (1E-07)	0.13	PA49TA07	1.75	0.1	
			Benzo(a)anthracene (7E-08)	0.089	PA49TA07	1.75	0.09	
			Chrysene (8E-09)	0.097	PA49TA07	1.75	0.1	
			Cadmium (4E-09)	4.4	PA49TA07	1.75	4.4	α
			Cadmium	--	IR27B004	6.25	1.8	
IR-28 (IR-58)	AW11 (080029, 081030, 081031)	3E-06 (2E-07)	Benzo(a)pyrene (2E-06)	0.26	IR28B257	0.75	0.3	
			Beryllium (9E-07)	1.1	IR58B018	1.75	1.1	α
			Cadmium (3E-09)	3.8	IR58B018	6.25	4.6	α
			Cadmium	--	IR58B018	1.75	3.8	α
			Cadmium	--	IR28B257	0.75	3.3	α
			Cadmium	--	IR28B257	5.25	1.2	
IR-28 (IR-29, IR-58)	AW12 (081032, 081034, 082034)	NC	NE	NE	NE	NE	NE	

(Continued)

SOIL SUMMARY TABLE  
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS  
PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

HI Hazard Index  
EPC Exposure point concentration

mg/kg Milligram per kilogram

NC Not calculated. No noncarcinogenic COPCs were identified in this exposure area; therefore, a total HI and total segregated HI was not calculated exposure area.

NE Not evaluated

a The number presented in parenthesis is another IR site with which the subject industrial exposure area is associated.

b The exposure area presented is based on a 0.5-acre exposure area.

c The exposure area presented in parentheses is the associated exposure area for the residential scenario based on a 2500-square foot exposure area. The total residential scenario can be found in Table N.5.9.

d The total HI and total segregated HI presented is for the RME case. The value presented in parentheses is for the average exposure case. The total segregated HI evaluates the ingestion of, dermal contact with, and inhalation of VOCs and particulate emissions from soil, and ingestion of pathway exposure.

e Only the COPC-specific HIs for COPCs contributing about 90% of the HIs that exceed 1 or COPCs contributing a HI exceeding 1 under the RME

f The value presented is the EPC assumed for the COPCs contributing significantly to the total HI under the RME case.

g If the total COPC-specific total segregated HI exceeding 1 can be attributed to one or several sample locations, the sampling location, depth, and are listed.

h Chromium VI was not speciated; therefore, for all IR-sites, a surrogate chromium VI value was calculated assuming 0.99 percent of the total chromium value (see Attachment N-C).

i The central nervous system is the primary system affected by the indicated chemical, generally at the lowest dose levels.

j Blood, including the hematopoietic system, is the primary of critical system affected by the indicated chemical, generally at the lowest dose levels.

k Examples of non-specific toxicity include decreased organ weights and decreased weight gain, effects not limited to a few organs or systems.

l The kidney is the primary organ affected by the indicated chemical, generally at the lowest dose levels.

m The gastrointestinal system is the primary or critical system affected by the indicated chemical, generally at the lowest dose levels.

n The cardiovascular system is the primary or critical system affected by the indicated chemical, generally at the lowest dose levels.

o The skin is the primary or critical organ affected by the indicated chemical, generally at the lowest dose levels.

p The liver is the primary or critical organ affected by the indicated chemical, generally at the lowest dose levels.

q The peripheral nervous system (PNS) is the primary or critical system affected by the indicated chemical, generally at the lowest dose levels.

\* The detected concentration exceeds the residential soil U.S. EPA Region IX Preliminary Remediation Goal (PRG).

α The detected concentration exceeds the Hunters Point Ambient Level (HPAL).

**TABLE D-3a  
 PROPOSED ACTION FOR SOIL AT IR-27  
 SOIL CLEANUP GOAL SCENARIO 2  
 PARCEL C FEASIBILITY STUDY  
 HUNTERS POINT SHIPYARD - SAN FRANCISCO, CALIFORNIA**

Exposure Area <sup>a</sup>	Soil Cleanup Goal Criteria Exceeded <sup>b</sup>	Risk Assessment Findings	Site Characterization Findings	Proposed Action <sup>c</sup>
<b>De Minimus Areas</b>				
BA03 (093007)	ELCR = $2 \times 10^{-6}$	The ELCR is largely due to potential exposure to PAHs in test pit PA49TA06 at 2.25 feet bgs.	PAHs were detected at a concentration of 0.1 mg/kg. Samples were not analyzed for pesticides and PCBs.  The source of PAHs may be associated with leakage from a fuel line.	Confirmation sampling should be performed and if necessary remediate soil to a depth of 4 feet bgs.

Notes:

- bgs Below ground surface
- COPC Chemical of potential concern
- ELCR Excess lifetime cancer risk
- EPC Exposure point concentration
- HI Hazard index
- HPAL Hunters Point Ambient Level
- mg/kg Milligrams per kilogram
- PAH Polyaromatic hydrocarbon
- PCB Polychlorinated biphenyl
- TOG Total oil and grease
- TRPH Total recoverable petroleum hydrocarbon

- a The first number corresponds to the industrial exposure area. The number in parenthesis corresponds to the residential exposure area.
- b The noncarcinogenic screening criterion used is the maximum child total segregated HI for a target organ.
- c The criterion used for assessing remediation actions is discussed in Appendix D.

**IR - 28**

## SITE IR-28: REMEDIAL AREA 28-1 (GRID CELLS BC04 AND BD04)

### Operational History and Site Characterization

Remedial area 28-1 is located at the northeastern end of Building 231 and includes the former locations of three underground storage tanks (UST). Operations conducted in Building 231 included machining and fabrication. UST HPA-10 was a 6,500-gallon tank used to store fuel oil; it was removed in 1993. UST HPA-16 was a 7,200-gallon tank used to store water; it was closed in place in 1993. UST HPA-17 was a 1,700-gallon tank used to store diesel; it was removed in 1993. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City of San Francisco (the City) is proposing that the area be zoned for open space, which include educational and cultural areas, and desires that the area be cleaned up to industrial standards. Biased sampling was conducted in the suspected source area (the former UST locations). Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 28-1 is a 135- by 165-foot area located in grid cells BC04 and BD04. Under an industrial reuse scenario, grid cell BC04 has an estimated excess lifetime cancer risk (ELCR) of  $6 \times 10^{-5}$  and a hazard index (HI) of less than 1, and it has no lead concentrations above 1,000 milligrams per kilogram (mg/kg). Grid cell BD04 has an

<b>Remedial Area 28-1 Industrial Scenario Risk Drivers</b>			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Arsenic	707 at 6.25 feet	$3 \times 10^{-6}$	< 1
Benzo(a)pyrene	10 at 5.25 feet	$2 \times 10^{-6}$	< 1
Benzo(b)fluoranthene	4 at 2.25 feet	$4 \times 10^{-6}$	< 1
Benzo(k)fluoranthene	4 at 2.25 feet	$3 \times 10^{-6}$	< 1
Benzo(a)anthracene	2 at 2.25 feet	$2 \times 10^{-6}$	< 1
Dibenz(a,h)anthracene	0.5 at 6.25 feet	$3 \times 10^{-6}$	< 1
Indeno(1,2,3-cd)pyrene	5 at 2.25 feet	$4 \times 10^{-6}$	< 1
Lead	1,800 at 6.25 feet	N/A	N/A

estimated ELCR of  $1 \times 10^{-5}$ , an HI of less than 1, and one lead detection above 1,000 mg/kg. Because these ELCRs exceed  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cells BC04 and BD04. Chemicals driving risk (arsenic, lead, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene) were detected at concentrations above screening criteria in borings PA28B023, IR28B101, IR28B102, and IR28B131. These chemicals are bounded spatially; surrounding borings

include IR28B137, IR28B138, IR28B139, IR28MW140F, IR28MW124A, IR28MW269A, IR28B132, PA28SS24, PA28FS46, PA28B053, IR28B266, IR28B263, and IR28B130. Chemicals driving risk in groundwater at the site are copper, mercury, and zinc.

### **Risk Management Factors**

Some of the chemicals driving risk may be the result of spills from the former USTs. Benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene concentrations exceed 1998 U.S. Environmental Protection Agency (EPA) industrial preliminary remediation goals (PRG) (0.36, 3.6, and 3.6 mg/kg, respectively) at boring PA28B023. The arsenic concentration exceeded the Hunters Point ambient level (HPAL) (11.1 mg/kg), and dibenz(a,h)anthracene and benzo(a)pyrene concentrations exceeded the 1998 PRGs (0.36 and 0.36 mg/kg, respectively) at boring IR28B101; the depth at which these contaminants were detected at boring IR28B101 exceeds 5 feet below ground surface (bgs) and is therefore not within the Navy's planned remediation area. The arsenic concentration exceeded the HPAL (11.1 mg/kg) and the benzo(a)pyrene concentration exceeded the 1998 PRG (0.36 mg/kg) at boring IR28B102. The benzo(a)pyrene concentration exceeded the 1998 PRG at boring IR28B131, and the lead concentration exceeded the screening criterion (1,000 mg/kg) in boring IR28B101; the depth at which benzo(a)pyrene and lead were detected at borings IR28B131 and IR28B101 exceeds 5 feet bgs and is therefore not within the Navy's planned remediation area. Polynuclear aromatic hydrocarbons (PAH) were also detected in borings PA28B023, PA28B053, IR28B138, IR28B101, IR28B102, IR28B130, and IR28B132; however, their concentrations did not exceed the 1998 PRGs.

### **Groundwater Issues**

At remedial area 28-1, groundwater is at approximately 7 feet bgs. Groundwater underlying remedial area 28-1 is part of groundwater remedial unit (RU) 1 (RU-1); chemicals driving risk in groundwater at RU-1 are unrelated to chemicals driving risk in soil. Based on physical and chemical properties, the chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination.

### **Other Information**

Total petroleum hydrocarbons (TPH) as diesel (TPH-diesel) was detected at a maximum concentration of 2,900 mg/kg, and TPH as motor oil (TPH-motor oil) was detected at a maximum concentration of 15,000 mg/kg in soil. No removal actions or exploratory excavations occurred in this area. Two USTs were removed in 1993, and one UST was closed in place.

**Conclusions:**

Conclusions were not reached for this area, and the following recommendations were made:

- ✓ EPA and DTSC recommend remedial action on the northern and eastern sides of Building 231, in the footprint of the existing remedial area 28-1, and that institutional controls be implemented to maintain the integrity of the building floor and/or restrict excavation of the soil below the building.
- ✓ The City recommends remedial action for the entire existing remedial area 28-1, including soil below the building floor.
- ✓ The Navy recommends that de minimus areas be remediated to depths up to 5 feet bgs at boring PA28B023 for PAHs and boring IR28B102 for arsenic and benzo(a)pyrene.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BC04, BD04	RA 28-1

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BC04 ELCR = $6 \times 10^{-5}$ and grid cell BD04 ELCR = $1 \times 10^{-5}$ ; therefore, further evaluation was necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with these grid cells because contamination is bounded within the grid cells.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes. Samples were collected from the suspected source location of the former UST areas.
Are elevated "driver chemicals" bounded spatially?	Yes. Driver chemicals (arsenic, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, dibenz[a,h]anthracene, indeno[1,2,3-cd]pyrene, and lead) were detected above screening criteria in borings PA28B023, IR28B101, IR28B102, and IR28B131, and are bounded spatially. Surrounding borings include: IR28B137, IR28B138, IR28B139, IR28MW140F, IR28MW124A, IR28MW269A, IR28B132, PA28SS24, PA28FS46, PA28B053, IR28B266, IR28B263, and IR28B130.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. Driver chemicals in groundwater are copper, mercury, and zinc, and are not consistent with soil chemicals.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	Yes. Benzo(a)pyrene, detected at a concentration of 10 mg/kg at 5.25 feet bgs, and other PAHs are consistent with potential spills from USTs that stored fuel oil.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	No. Arsenic was detected at a concentration of 707 mg/kg at 6.25 feet bgs. This concentration is not consistent with variations in ambient concentrations; however, it is present at a depth greater than the Navy's planned area of remediation.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

## FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA

Can the "driver chemicals" be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. PAHs are driver chemicals.
Are the PAHs (if any) the result of asphalt or charcoal?	No. The concentrations of benzo(a)pyrene are consistent with assumed fuel oil spills from USTs.
Are beryllium concentrations (if any) less than the EPA PRG?	No.
Are PCBs concentrations (if any) less than 10 mg/kg (EPA's level of concern)?	No.
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC's level of concern)?	No.
Are there other "driver chemicals" besides PAHs, beryllium, or PCBs?	Yes. In addition to arsenic and benzo(a)pyrene, lead is also a driver chemical.
Based on the above information, is further evaluation required?	No. Further evaluation is not required.

## PROTECTIVENESS

Do the physical and chemical properties of the "driver chemicals" indicate a potential to contaminate groundwater?	No. The potential to contaminate groundwater is low.
Do site-specific conditions mitigate the exposure or risk associated with the "driver chemicals"?	Yes. Driver chemicals were detected beneath a concrete building floor that would mitigate exposure to the chemicals.

## OTHER INFORMATION

Has TPH been Detected over a Screening Criterion?	
• TPH as gasoline (TPH-gas) > 100 parts per million (ppm)?	No.
• TPH-diesel > 1,000 ppm?	2,900 ppm
• TPH-motor oil > 1,000 ppm?	15,000 ppm
• Total recoverable petroleum hydrocarbons (TRPH) > 1,000 ppm?	14,000 ppm
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	Two USTs (HPA-10 and HPA-17) were removed and one UST (HPA-16) was closed in place.
– Does this correspond with the distribution of the chemicals?	Yes. The distribution of chemicals corresponds with the location of the USTs.
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	Yes.
• Human health risks?	Yes.
– Individual risk?	Yes.
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	Yes.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedial action required in addition to land-use restrictions.	
• CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• Implement institutional controls in addition to land-use restrictions.	X (See notes below)

**NOTES:**

EPA and DTSC recommend remedial action on the northern and eastern sides of Building 231 in the footprint of the existing remedial area 28-1 and that institutional controls be required to maintain the integrity of the building floor and/or restrict excavation of the soil below the building.

The City recommends remedial action for the entire existing remedial area 28-1, including soil below the building floor.

The Navy recommends that de minimus areas be remediated up to 5 feet bgs at borings PA28B023 for PAHs and IR28B102 for arsenic and benzo(a)pyrene.

## SITE IR-28: REMEDIAL AREA 28-2 (GRID CELLS AX10 AND AY10)

### Operational History and Site Characterization

Remedial area 28-2 is located in the northwestern portion of Building 251 and includes the former locations of two USTs. Building 251 was used for tool storage and industrial painting activities. Overhead cranes and hoists, and some equipment stored on pallets, are located in remedial area 28-2. UST S-219 was a 1,000-gallon tank that contained waste solvent and/or gasoline and diesel; the UST was removed in 1993. UST S-251 was a 1,000-gallon tank used to store solvent; the UST was removed in 1991. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for mixed use, and desires that the area be cleaned up to residential standards. Biased sampling was conducted in the vicinity of sumps, solvent dip tanks, and former solvent and/or petroleum-containing USTs. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 28-2 is a 160-by 90-foot area located in grid cells AX10 and AY10. Under an industrial reuse scenario, grid cell AX10 has an estimated ELCR of  $3 \times 10^{-6}$

Remedial Area 28-2 Industrial Scenario Risk Drivers			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Aroclor-1260	270 at 5.25 feet	$1 \times 10^{-6}$	< 1
Arsenic	245 at 0.75 feet	$3 \times 10^{-6}$	< 1
Benzo(a)pyrene	0.1 at 0.25 feet	$1 \times 10^{-6}$	< 1

and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Grid cell AY10 has an estimated ELCR of  $7 \times 10^{-6}$ , an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCRs for AX10 and AY10 are greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and determined not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cells AX10 and AY10. The chemicals driving risk (Aroclor-1260, arsenic, and benzo[a]pyrene) were detected in borings and surface samples (IR28B279, IR28B280, IR58SS34, and IR58SS35) and are bounded spatially. Surrounding borings and surface samples include IR58B030, IR58B028, IR58MW33B, IR28B282, IR28B283, IR28B301, IR28B302, IR28B278, IR28B277, IR58SS36, IR58B023, and PA58SS04. Chemicals driving risk in groundwater at remedial area 28-2 are Aroclor-1260 and vinyl chloride.

### **Risk Management Factors**

Concentrations of the chemicals driving risk may be associated with tool and equipment storage, former USTs, and industrial painting operations. Aroclor-1260 concentrations exceeded the 1998 EPA PRG (1.3 mg/kg) in boring IR28B279. The arsenic concentration in boring IR28B280 exceeded the HPAL (11.1 mg/kg), and is not consistent with variations in ambient concentrations. Additional concentrations of Aroclor-1260 were detected in boring IR28B280 and surface sample IR58SS34; these concentrations did not exceed the 1998 PRG. Benzo(a)pyrene detected in boring IR58SS35 did not exceed its 1998 PRG (0.36 mg/kg).

### **Groundwater Issues**

At remedial area 28-2, groundwater is located at approximately 6 to 8 feet bgs. Groundwater underlying this area is part of groundwater RU-2. Based on physical and chemical properties, the chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination. The chemicals driving risk in groundwater at remedial area 28-2 were detected in monitoring well IR28MW31A and are unrelated to chemicals driving risk in soil at borings IR28B279 and IR28B280.

### **Other Information**

TPH-gasoline was detected at a maximum concentration of 5,500 mg/kg, TPH-diesel was detected at a maximum concentration of 2,900 mg/kg, TPH-motor oil was detected at a maximum concentration of 1,200 mg/kg, and TRPH was detected at a maximum concentration of 9,400 mg/kg. No removal actions or exploratory excavations occurred in this area. One UST was removed in 1991 and one in 1993.

**Conclusions:**

A conclusion was not reached but the following recommendations were made:

- ✓ The Base Realignment and Closure (BRAC) Cleanup Team (BCT) and the City recommend that no CERCLA response action is required for soil outside of Building 251.
- ✓ EPA, DTSC, and the City recommend that soil excavation to 7 feet bgs at IR28B280 and IR28B279, located inside Building 251, is necessary. Confirmation sampling will be conducted to verify removal of all chemicals driving risk.
- ✓ The Navy recommends that soil excavation up to 5 feet bgs at IR28B208 and IR28B279 is necessary.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	AX10, AY10	RA 28-2

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? If the answer to any of the above is yes, further evaluation is required.	Yes. Grid cell AX10 ELCR = $3 \times 10^{-6}$ and grid cell AY10 ELCR = $7 \times 10^{-6}$ ; therefore, further evaluation was necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes. Sampling was conducted in the suspected source area.
Are elevated "driver chemicals" bounded spatially?	Yes. Driver chemicals (arsenic, Aroclor-1260, and benzo[a]pyrene) were detected in IR28B279, IR28B280, IR58SS34, and IR58SS35.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. Driver chemicals in groundwater (Aroclor-1260 and vinyl chloride) were not detected in the vicinity of the soil driver chemicals.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	Yes. Driver chemicals may be associated with tool and equipment storage, industrial painting operations, or the former USTs.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes. Benzo(a)pyrene may be considered an artifact of overlying asphalt.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS, AND CHANGED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the “driver chemicals” PAHs, beryllium, or PCBs?	Yes. Benzo(a)pyrene and Aroclor-1260.
Are the PAHs (if any) the result of asphalt or charcoal?	The benzo(a)pyrene concentration may be considered an artifact of the overlying asphalt.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCB concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	No.
Are PCB concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	No.
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	Yes. Arsenic.
Based on the above information, is further evaluation required?	No further evaluation is required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No. The potential to contaminate groundwater is low.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	Yes. The driver chemicals were detected beneath a concrete building floor that would mitigate exposure to the chemicals.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	5,500 ppm
• TPH-diesel > 1,000 ppm?	2,900 ppm
• TPH-motor oil > 1,000 ppm?	1,200 ppm
• TRPH > 1,000 ppm?	9,400 ppm
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (CONTINUED)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	Yes.
– Does this correspond with the distribution of the chemicals?	Yes.
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	Yes.
• Human health risks?	Yes.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	Yes.

**ACTION REQUIRED**

<b>Based on the above information, what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City recommend that no CERCLA response action is required for soil outside of Building 251.

EPA, DTSC, and the City recommend that soil excavation to 7 feet bgs at IR28B280 and IR28B279 is necessary. Confirmation sampling will be conducted to verify removal of all chemicals driving risk.

The Navy recommends that soil excavation up to 5 feet bgs at IR28B280 and IR28B279 is necessary.

## SITE IR-28: REMEDIAL AREA 28-3 (GRID CELL AZ12)

### Operational History and Site Characterization

Remedial area 28-3 is located just west of Building 271, and south of Building 281. Operations conducted in Building 271 included painting, sandblasting, and curing. The building may also have been a photo lab. Building 281 was likely used for production of defense-related equipment. A paint room in Building 281 contained five steel dip tanks and several grate-covered concrete sumps. UST HPA-07, located west of remedial area 28-3, was a 500-gallon tank used to store waste oil; this tank was removed in 1993. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for research and development, and desires that the area be cleaned up to residential standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 28-3 is located in grid cell AZ12. Under an industrial reuse scenario, grid cell AZ12 has an estimated ELCR of  $2 \times 10^{-5}$ , an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR is greater than  $1 \times 10^{-6}$ ,

Remedial Area 28-3 Industrial Scenario Risk Drivers			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Arsenic	30.1 at 0.75 feet	$9 \times 10^{-6}$	< 1
Benzo(a)pyrene	1 at 5.5 feet	$1 \times 10^{-5}$	< 1
Benzo(a)anthracene	2 at 5.5 feet	$1 \times 10^{-6}$	< 1
Benzo(b)fluoranthene	1 at 5.5 feet	$1 \times 10^{-6}$	< 1
Benzo(k)fluoranthene	0.9 at 5.5 feet	$8 \times 10^{-7}$	< 1

further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell AZ12. Concentrations of the chemicals driving risk (arsenic, benzo[a]pyrene, benzo[a]anthracene, benzo[b]fluoranthene, and benzo[k]fluoranthene) were detected in boring IR28B276 and monitoring wells IR28MW311A and IR28MW310F, and are bounded spatially. Surrounding borings include IR28B207, IR28B209, IR28B205, IR28B206, PA28B071, and IR28B225. Chemicals driving risk were not detected in groundwater underlying remedial area 28-3; however, groundwater RU-4 is just west of the site.

## **Risk Management Factors**

The source of some of the chemicals driving risk may be the result of leakage from former waste oil UST HPA-07 and/or leakage from sumps located in the painting and stripping area in the southwestern portion of Building 281. The concentration of benzo(a)pyrene detected at a depth of 6.25 feet bgs in boring IR28B276 exceeded its 1998 PRG (0.36 mg/kg). Arsenic and benzo(a)pyrene concentrations exceeded the HPAL (11.1 mg/kg) and 1998 PRG (0.36 mg/kg), respectively, in monitoring well IR28MW311A; the arsenic concentration was detected at a depth of 0.75 foot bgs and the benzo(a)pyrene concentration was detected at a depth of 5.5 feet bgs. The concentration of benzo(a)pyrene detected at a depth of 5.25 feet bgs in monitoring well IR28MW310F exceeded its 1998 PRG (0.36 mg/kg). Additional concentrations of PAHs were detected in monitoring well IR28MW311A; however, they did not exceed the 1998 EPA PRGs. With the exception of arsenic, all chemicals driving risk at remedial area 28-3 were detected at depths greater than 5 feet bgs and are therefore not within the Navy's planned remediation area.

## **Groundwater Issues**

At remedial area 28-3, groundwater is located at approximately 7 to 8 feet bgs. Based on physical and chemical properties, chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination. Groundwater underlying remedial area 28-3 is not part of the groundwater remedial units identified in Parcel C.

## **Other Information**

No removal actions, or exploratory excavations occurred in this area. UST HPA-07, located west of remedial area 28-3, was removed in 1993.

### **Conclusions:**

Conclusions were not reached for this area and the following recommendations were made:

- ✓ EPA, DTSC, and the City recommend that soil excavation to a depth of 6 feet bgs at IR28MW311A is necessary to remove arsenic and benzo(a)pyrene.
- ✓ The Navy recommends that soil excavation to 2 feet bgs at IR28MW311A is necessary to remove arsenic.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	AZ12	RA 28-3

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? If the answer to any of the above is yes, further evaluation is required.	Yes. Grid cell AZ07 ELCR = $2 \times 10^{-5}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes. Sampling was conducted in the suspected source areas.
Are elevated "driver chemicals" bounded spatially?	Yes. Driver chemicals (arsenic, benzo[a]pyrene, benzo[a]anthracene, benzo[b]fluoranthene, and benzo[k]fluoranthene) were detected in IR28B276, IR28MW311A, and IR28MW310F. Surrounding borings include IR28B205, IR28B206, IR28B207, IR28B209, IR28B225, and PA28B071.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	Yes. Driver chemicals may be the result of leakage from former USTs.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes. The arsenic concentration is within two times the HPAL and is consistent with ambient conditions.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS, AND CHANGED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	Yes. The arsenic concentration is consistent with ambient concentrations.
Are the “driver chemicals” PAHs, beryllium, or PCBs?	Yes. Benzo(a)pyrene.
Are the PAHs (if any) the result of asphalt or charcoal?	No.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCB concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCB concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	Yes. Arsenic.
Based on the above information, is further evaluation required?	No further evaluation is required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No. The potential to contaminate groundwater is low.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	No.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (CONTINUED)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No previous exploratory excavations.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information, what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	
• CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

EPA, DTSC, and the City recommend that soil excavation to a depth of 6 feet bgs at IR28MW311A is necessary to remove arsenic and benzo(a)pyrene.

The Navy recommends that soil excavation to 2 feet bgs at IR28MW311A is necessary to remove arsenic.

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## SITE IR-28: REMEDIAL AREA 28-4 (GRID CELL AY10)

### Operational History and Site Characterization

Remedial area 28-4 is located in the south-central area of Building 251. Building 251 was used for tool storage and industrial painting activities. Overhead cranes and hoists, and some equipment stored on pallets, are located in remedial area 28-4. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for research and development, and desires that the area be cleaned up to residential reuse standards. Biased sampling was conducted in the vicinity of a sump located in Building 251. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 28-4 is a 40- by 40-foot area located in industrial grid cell AY10. Under an industrial reuse scenario, grid cell AY10 has an estimated

Remedial Area 28-4 Industrial Scenario Risk Drivers			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Arsenic	14.0 at 2.0 feet	$3 \times 10^{-6}$	< 1
Benzo(a)pyrene	0.2 at 2.0 feet	$2 \times 10^{-6}$	< 1

ELCR of  $7 \times 10^{-6}$ , an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR for the grid cell is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Grid cell AX10 was reviewed and found to include similar contaminants as AY10; therefore, data from grid cell AX10 was also reviewed as part of the grid cell AY10 evaluation. Chemicals driving risk, arsenic and benzo(a)pyrene, were detected in monitoring well IR28MW299B, and are bounded spatially. Surrounding borings include IR28B281, IR28B283, IR28B285, IR28B187, IR28B180, IR28B178, and IR28B278. Arsenic was detected in groundwater, but at a concentration consistent with ambient concentrations.

### Risk Management Factors

Arsenic was detected at a depth of 2 feet bgs at a concentration of 14.0 mg/kg, which is consistent with ambient concentrations established for Hunters Point (11.1 mg/kg). Benzo(a)pyrene was detected at a depth of 2 feet bgs at a concentration of 0.2 mg/kg, which does not exceed the 1998 EPA PRG (0.36 mg/kg). Benzo(a)pyrene is considered to be an artifact of the overlying asphalt.

### **Groundwater Issues**

At remedial area 28-4, groundwater is located at approximately 7 feet bgs. Based on physical and chemical properties, the chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination. Groundwater underlying this area is not part of the groundwater remedial units identified in Parcel C.

### **Other Information**

No removal actions, UST removals or closures, or exploratory excavations occurred in this area.

### **Conclusion:**

- ✓ The BCT and the City concluded that no CERCLA remedial action is required at remedial area 28-4 to meet an industrial reuse scenario.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

<b>IR Site Number</b>	<b>Risk Grid Cell Number</b>	<b>Remediation or De Minimus Area Number</b>
IR-28	AY10	RA 28-4

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? If the answer to any of the above is yes, further evaluation is required.	Yes. Grid cell AY10 ELCR = $7 \times 10^{-6}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	Yes. Grid cell AX10 was found to include similar contaminants and was evaluated in combination with grid cell AY10.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes. Sampling was conducted in the vicinity of a Building 251 sump.
Are elevated "driver chemicals" bounded spatially?	Yes. Driver chemicals, arsenic and benzo(a)pyrene, were detected in monitoring well IR28MW299B. Surrounding borings include IR28B281, IR28B283, IR28B285, IR28B187, IR28B180, IR28B178, and IR28B278.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	Yes. However, arsenic detected in the groundwater was consistent with ambient concentrations.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No. Building 251 was used for tool storage and industrial painting activities.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes. Arsenic detected at shallow depths at a concentration of 14 mg/kg is consistent with ambient concentrations. Benzo(a)pyrene detected at 2 feet bgs did not exceed the 1998 industrial EPA PRG (0.36 mg/kg) and is considered an artifact of the overlying asphalt surface.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS, AND CHANGED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	Yes. Arsenic concentrations are consistent with ambient concentrations.
Are the “driver chemicals” PAHs, beryllium, or PCBs?	Yes. Benzo(a)pyrene.
Are the PAHs (if any) the result of asphalt or charcoal?	Yes. The benzo(a)pyrene concentrations were considered to be an artifact of the overlying asphalt.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCB concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCB concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	Yes. Arsenic.
Based on the above information, is further evaluation required?	No.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No. The potential to contaminate groundwater is low.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	Yes. The driver chemicals were detected beneath a concrete floor that would mitigate exposure to the chemicals.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No
• Human health risks?	No
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	Yes

**ACTION REQUIRED**

<b>Based on the above information, what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City concluded that no CERCLA response action is required for remedial area 28-4.

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## SITE IR-28: REMEDIAL AREA 28-5 (GRID CELLS AY10 AND AZ10)

### Operational History and Site Characterization

Remedial area 28-5 is located in the eastern end of Building 251. The central interior of Building 251 housed overhead cranes and hoists, and some equipment stored on pallets. The eastern third of Building 251 is used for storage and office space. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for research and development, and desires that the area be cleaned up to residential standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 28-5 is a 100- by 85-foot area located in grid cells AY10 and AZ10. Under an industrial reuse scenario, grid cell AY10 has an estimated ELCR of  $7 \times 10^{-6}$ , an HI of less than 1,

Remedial Area 28-5 Industrial Scenario Risk Drivers			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Arsenic	17.5 at 0.75 feet	$7 \times 10^{-6}$	< 1
Benzo(a)pyrene	0.3 at 1.00 foot	$2 \times 10^{-6}$	< 1

and it has no lead concentrations above 1,000 mg/kg. Grid cell AZ10 has an estimated ELCR of  $7 \times 10^{-6}$ , an HI of less than 1, and it has no lead concentrations greater than 1,000 mg/kg. Because the ELCR for grid cells AY10 and AZ10 is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and determined not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cells AY10 and AZ10. Chemicals driving risk (arsenic and benzo[a]pyrene) were detected in borings IR28B285 and IR28B301, respectively, and are bounded vertically. Arsenic was detected in groundwater, but at a concentration consistent with ambient concentrations.

### Risk Management Factors

Arsenic was detected at a depth of 0.75 foot bgs at a concentration of 17.5 mg/kg, which is consistent with the ambient concentration established for Hunters Point (11.1 mg/kg). Benzo(a)pyrene was detected at a depth of 1 foot bgs at a concentration of 0.3 mg/kg, which did not exceed the 1998 EPA PRG (0.36 mg/kg); benzo(a)pyrene was considered to be an artifact of the overlying asphalt.

**Groundwater Issues.**

At remedial area 28-5, groundwater is located at approximately 7 feet bgs. Based on physical and chemical properties, the chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination. Groundwater underlying this area is not part of the groundwater remedial units identified in Parcel C.

**Other Information**

No removal actions, UST removals or closures, or exploratory excavations occurred in this area.

**Conclusion:**

- ✓ The BCT and the City concluded that no CERCLA remedial action is required at remedial area 28-5 to meet an industrial reuse scenario.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	AY10, AZ10	RA 28-5

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? If the answer to any of the above is yes, further evaluation is required.	Yes. Grid cell AY10 ELCR = $7 \times 10^{-6}$ and grid cell AZ10 ELCR = $7 \times 10^{-6}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with these grid cells because contamination is bounded within the grid cells.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. Driver chemicals, arsenic and benzo(a)pyrene, were detected in borings IR28B285 and IR28B301 and are bounded vertically.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	Yes. However, arsenic concentrations detected in the groundwater are consistent with ambient concentrations.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No. Building 251 was used as storage and office space.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Arsenic was detected at shallow depths and is consistent with ambient concentrations. Benzo(a)pyrene was 0.3 mg/kg, which did not exceed the 1998 industrial EPA PRG (0.36 mg/kg); benzo(a)pyrene is considered an artifact of overlying asphalt.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND CHANGED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	Yes. Arsenic concentrations are consistent with ambient concentrations.
Are the “driver chemicals” PAHs, beryllium, or PCBs?	Yes. Benzo(a)pyrene.
Are the PAHs (if any) the result of asphalt or charcoal?	Yes. The benzo(a)pyrene concentration was considered to be an artifact of the overlying asphalt.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCB concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCB concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	Yes. Arsenic.
Based on the above information, is further evaluation required?	No further evaluation is required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No. The potential to contaminate groundwater is low.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	Yes. The driver chemicals were detected beneath a concrete building floor that would mitigate exposure to the chemicals.

**OTHER INFORMATION**

Has TPH been Detected over a Screening Criterion?	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (CONTINUED)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	Yes.

**ACTION REQUIRED**

<b>Based on the above information, what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City concluded that no CERCLA remedial action is required at remedial area 28-5 to meet an industrial reuse scenario.

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## SITE IR-28: REMEDIAL AREA 28-6 (GRID CELL AY11)

### Operational History and Site Characterization

Remedial area 28-6 is located in the southeast end of Building 258. Building 258 was a pipe manufacturing facility that used acids, bases, and solvents in its operations. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for research and development, and desires that the area be cleaned up to residential reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 28-6 is a 50- by 30-foot area located in grid cell AY11. Under an industrial reuse scenario, grid cell AY11 has an estimated ELCR of  $1 \times 10^{-5}$ , an HI of less than 1, and it has no lead

Remedial Area 28-6 Industrial Scenario Risk Drivers			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Aroclor-1260	0.6 at 2.25 feet	$3 \times 10^{-6}$	< 1
Benzo(a)pyrene	0.3 at 1.25 feet	$3 \times 10^{-6}$	< 1
Beryllium	0.72 at 6.25 feet	$5 \times 10^{-7}$	< 1

concentrations above 1,000 mg/kg. Because the ELCR for grid cell AY11 is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and determined not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell AY11. Chemicals driving risk (Aroclor-1260, benzo[a]pyrene, and beryllium) were detected in boring PA28B063 and surface sample PA28SS82, and are bounded spatially. Surrounding borings include PA28B062, IR28B178, IR28B180, IR28B181, and IR28B179. Chemicals driving risk were not detected in groundwater underlying remedial area 28-6.

### Risk Management Factors

Concentrations of the chemicals driving risk may be the result of spills from the former pipe manufacturing operations. Aroclor-1260 and beryllium were detected in boring PA28B063, but at concentrations that did not exceed the 1998 EPA PRGs (1.3 and 3,400 mg/kg, respectively). Benzo(a)pyrene was detected in surface sample PA28SS82, but at a concentration that did not exceed the 1998 EPA PRG (0.36 mg/kg); benzo(a)pyrene is considered an artifact of overlying asphalt.

### **Groundwater Issues**

At remedial area 28-6, groundwater is located between approximately 6 and 8 feet bgs. Based on physical and chemical properties, the chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination. Groundwater underlying remedial area 28-6 is not part of the groundwater remedial units identified in Parcel C.

### **Other Information**

No removal actions, UST removals or closures, or exploratory excavations occurred in this area.

#### **Conclusion:**

- ✓ The BCT and the City concluded that no CERCLA remedial action is required at remedial area 28-6.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	AY11	RA 28-6

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? If the answer to any of the above is yes, further evaluation is required.	Yes. Grid cell AY11 ELCR = $1 \times 10^{-5}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with these grid cells because contamination is bounded within the grid cells.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes. Contamination in Building 258 may have been associated with spills from the former pipe manufacturing operations.
Are elevated "driver chemicals" bounded spatially?	Yes. Driver chemicals, beryllium, Aroclor-1260, and benzo(a)pyrene, were detected in boring PA28B063 and surface sample PA28SS82. Surrounding borings include PA28B062, IR28B178, IR28B180, IR28B181, and IR28B179.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. Driver chemicals were not found in the groundwater.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No. Concentrations of Aroclor-1260, beryllium, and benzo(a)pyrene are not consistent with the former pipe manufacturing activities.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes. Concentrations of Aroclor-1260, beryllium, and benzo(a)pyrene detected did not exceed the 1998 EPA PRGs (1.3 mg/kg, 3.400 mg/kg, and 0.36 mg/kg, respectively). Benzo(a)pyrene is considered an artifact of overlying asphalt.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS, AND CHANGED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the “driver chemicals” PAHs, beryllium, or PCBs?	Yes. Benzo(a)pyrene, a PAH, Aroclor-1260, a PCB, and beryllium are driver chemicals.
Are the PAHs (if any) the result of asphalt or charcoal?	No.
Are beryllium concentrations (if any) less than the EPA PRG?	Yes.
Are PCB concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	Yes.
Are PCB concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	Yes.
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	No.
Based on the above information, is further evaluation required?	No further evaluation is required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No. The potential to contaminate groundwater is low.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	Yes. The driver chemicals were detected beneath a concrete building floor that would mitigate exposure to the chemicals.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (CONTINUED)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	Yes.

**ACTION REQUIRED**

<b>Based on the above information, what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

EPA, DTSC, and the Navy agreed that no CERCLA response action is required for remedial area 28-6.

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## SITE IR-28: REMEDIAL AREA 28-7 (GRID CELL AZ13)

### Operational History and Site Characterization

Remedial area 28-7 is located within Building 272. Building 272 was used for shipping rigging and metal casting. Solvents were used in the building to clean chain hoists. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for research and development, and desires that the area be cleaned up to residential reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 28-7 is a 45 by 45-foot area located in grid cell AZ13. Under an industrial reuse scenario, grid cell AZ13 has an estimated ELCR of

Remedial Area 28-7 Industrial Scenario Risk Driver			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Benzo(a)pyrene	0.1 at 4.75 feet	$1 \times 10^{-6}$	< 1

$1 \times 10^{-5}$ , an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR for grid cell AZ13 is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and determined not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell AZ13. The chemical driving risk, benzo(a)pyrene, was detected in boring IR28B237, and is bounded vertically. Benzo(a)pyrene was not detected in groundwater at the site.

### Risk Management Factors

The source of benzo(a)pyrene may be the result of activities conducted in Building 272.

Benzo(a)pyrene was detected in boring IR28B237, but at a concentration that did not exceed the 1998 EPA PRG (0.36 mg/kg).

### Groundwater Issues

At remedial area 28-7, groundwater is located approximately between 7 and 8 feet bgs. Based on physical and chemical properties, chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination. Groundwater underlying remedial area 28-7 is not part of the groundwater remedial units identified in Parcel C.

**Other Information**

No removal actions, UST removals or closures, or exploratory excavations occurred in this area.

**Conclusion:**

- ✓ The BCT and the City concluded that no CERCLA response action is required at remedial area 28-7.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	AZ13	RA 28-7

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell AZ13 residential ELCR = $1 \times 10^{-5}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cells.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes. Concentrations of the chemical driving risk may be associated with Building 272 activities.
Are elevated "driver chemicals" bounded spatially?	Yes. The driver chemical, benzo(a)pyrene, was detected in boring IR28B237.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. The driver chemical was not detected in the groundwater.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	Yes. Building 272 was used for shipping, rigging, and metal casting. Solvents were used during cleaning operations for chain hoists.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	No.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the driver chemicals PAHs, beryllium, or PCBs?	Benzo(a)pyrene, a PAH, is the driver chemical.
Are the PAHs (if any) the result of asphalt or charcoal?	No.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	No.
Based on the above information, is further evaluation required?	No.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No. The potential to contaminate groundwater is low.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	Yes. The driver chemicals were detected beneath a concrete building floor that would mitigate exposure to the chemicals.

**OTHER INFORMATION**

Has TPH been Detected over a Screening Criterion?	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No previous exploratory excavations.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	Yes.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City agree that no CERCLA response action is required at remedial area 28-7.

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## SITE IR-28: REMEDIAL AREA 28-8 (GRID CELL AZ13)

### Operational History and Site Characterization

Remedial area 28-8 is located within Building 272. Building 272 was used for shipping rigging and metal casting. Solvents were used in the building to clean chain hoists. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for research and development, and desires that the area be cleaned up to residential reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 28-8 is a 45- by 45-foot area located in grid cell AZ13. Under an industrial reuse scenario, grid cell AZ13 has an

Remedial Area 28-8 Industrial Scenario Risk Driver			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Arsenic	22.4 at 5.75 feet	$9 \times 10^{-6}$	< 1

estimated ELCR of  $1 \times 10^{-5}$ , an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and determined not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell AZ13. The chemical driving risk, arsenic, was detected in monitoring well boring IR28MW273F, and is bounded vertically. Arsenic was not detected in the groundwater.

### Risk Management Factors

Concentrations of the risk driver reflect site conditions and do not appear to be associated with site contamination. Arsenic was detected at depths of 5.75 and 9.75 feet bgs at concentrations of 22.4 and 15.6 mg/kg, respectively. These concentrations are consistent with ambient concentrations established for Hunters Point (11.1 mg/kg). The depths at which arsenic was detected at this site exceed 5 feet bgs and are therefore not within the Navy's planned remediation area.

### Groundwater Issues

At remedial area 28-8, groundwater is located approximately between 7 and 8 feet bgs. Based on physical and chemical properties, the chemical driving risk in soil is relatively immobile and is not

considered a source of groundwater contamination. Groundwater underlying remedial area 28-8 is not part of the groundwater remedial units identified in Parcel C.

**Other Information**

No removal actions, UST removals or closures, or exploratory excavations occurred in this area.

**Conclusion:**

✓ The BCT and the City concluded that no CERCLA response action is required at remedial area 28-8.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	AZ13	RA 28-8

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell AZ13 residential ELCR = $1 \times 10^{-5}$ ; therefore, further evaluation was necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cells.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes. Building 272 was used for shipping rigging and metal casting. Solvents were used during cleaning operations for chain hoists.
Are elevated "driver chemicals" bounded spatially?	Yes. The driver chemical, arsenic, was detected in boring IR28MW273F.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. The driver chemical was not detected in the groundwater.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes. Detected arsenic concentrations were 22.4 mg/kg and 15.6 mg/kg. These concentrations are consistent with the HPAL (11.1 mg/kg).
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	Yes. Arsenic concentrations are consistent with ambient concentrations.
Are the driver chemicals PAHs, beryllium, or PCBs?	No.
Are the PAHs (if any) the result of asphalt or charcoal?	N/A
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	Yes. Arsenic is the only driver chemical.
Based on the above information, is further evaluation required?	No.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No. The potential to contaminate groundwater is low.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	Yes. The driver chemicals were detected beneath a concrete building floor that would mitigate exposure to the chemicals.

**OTHER INFORMATION**

Has TPH been Detected over a Screening Criterion?	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No previous exploratory excavations.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	Yes.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City agree that no CERCLA response action is required at remedial area 28-8.

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## SITE IR-28: REMEDIAL AREA 28-9 (GRID CELL BA07)

### Operational History and Site Characterization

Remedial area 28-9 is located in the northwest end of Building 231. Building 231 was used for industrial machining operations. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for educational and cultural reuse, and desires that the area be cleaned up to industrial standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 28-9 is a 100- by 30-foot area located in grid cell BA07. Under an industrial reuse scenario, grid cell BA07 has an estimated ELCR of  $2 \times 10^{-5}$ , an HI

Remedial Area 28-9 Industrial Scenario Risk Drivers			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Arsenic	40.0 at 6.75 feet	$2 \times 10^{-5}$	< 1
Benzo(a)pyrene	0.2 at 1.75 feet	$2 \times 10^{-6}$	< 1

of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BA07. Chemicals driving risk (arsenic and benzo[a]pyrene) were detected in monitoring well PA28MW52A and boring IR28B107, and are bounded spatially. Surrounding borings and monitoring wells include IR28MW268A, IR28B095, PA28B048, and IR28B097A. Chemicals driving risk were not detected in groundwater underlying remedial area 28-9.

### Risk Management Factors

Arsenic was detected at a depth of 6.75 feet at a concentration of 40.0 mg/kg in monitoring well PA28MW52A; this concentration is not consistent with the HPAL (11.1 mg/kg). However, the depth at which arsenic was detected in PA28MW52A is greater than 5 feet bgs and is therefore not within the Navy's planned remediation area. Arsenic was detected at a depth of 1.75 feet bgs in boring IR28B107 at a concentration of 14.8 mg/kg, which is consistent with the HPAL (11.1 mg/kg). Benzo(a)pyrene was detected in boring IR28B107, but at a concentration that did not exceed the 1998 EPA PRG (0.36 mg/kg); in addition, benzo(a)pyrene detected in this boring was considered to be an artifact of the overlying asphalt.

### **Groundwater Issues.**

At remedial area 28-9, groundwater is located at approximately 7 feet bgs. Groundwater underlying remedial area 28-9 is not part of the groundwater remedial units identified in Parcel C. Based on physical and chemical properties, chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination.

### **Other Information**

No removal actions, UST removals or closures, or exploratory excavations occurred in this area. TRPH was detected at a maximum concentration of 1,200 mg/kg in soil at the site.

#### **Conclusion:**

Conclusions were not reached for this area and the following recommendations were made:

- ✓ The Navy, EPA, and the City recommend that no CERCLA response action be taken at remedial area 28-9.
- ✓ DTSC concurs with the recommendation for no CERCLA response action for IR28B107, but recommends remediation of soil at PA28MW52A.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BA07	RA 28-9

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? If the answer to any of the above is yes, further evaluation is required.	Yes. Grid cell BA07 ELCR = $2 \times 10^{-5}$ ; therefore, further evaluation was necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with these grid cells because contamination is bounded within the grid cells.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes. Contamination in Building 231 may have been associated with heavy industrial machining operations.
Are elevated "driver chemicals" bounded spatially?	Yes. Driver chemicals, arsenic and benzo(a)pyrene, were detected in monitoring well PA28MW52A and boring IR28B107. Surrounding borings and monitoring wells include IR28MW268A, IR28B095, PA28B048, and IR28B097A.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	N/A
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	Arsenic may be related to heavy industrial machining operations.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes. Arsenic detected at 1.75 feet bgs in boring IR28B107 is consistent with ambient concentrations. Benzo(a)pyrene detected in boring IR28B107 did not exceed the 1998 industrial EPA PRG (0.36 mg/kg) and is considered an artifact of overlying asphalt.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS, AND CHANGED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	Yes. Arsenic concentrations at shallow depths are consistent with ambient concentrations.
Are the “driver chemicals” PAHs, beryllium, or PCBs?	Yes. Benzo(a)pyrene.
Are the PAHs (if any) the result of asphalt or charcoal?	Yes. The benzo(a)pyrene concentration was considered to be an artifact of the overlying asphalt.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCB concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCB concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	Yes. Arsenic.
Based on the above information, is further evaluation required?	No further evaluation is required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No. Driver chemicals were not detected in the groundwater.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	Yes. The driver chemicals were detected beneath a concrete building floor that would mitigate exposure to the chemicals.

**OTHER INFORMATION**

Has TPH been Detected over a Screening Criterion?	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	1,200 ppm
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (CONTINUED)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No previous exploratory excavations.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	Yes.

**ACTION REQUIRED**

<b>Based on the above information, what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The Navy, EPA, and the City recommend that no CERCLA response action be taken at remedial area 28-9 to meet industrial reuse standard.

DTSC concurs with the recommendations for no CERCLA response action for IR28B107, but recommends remediation at PA28MW52A.

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## SITE IR-28: REMEDIAL AREA 28-10 (GRID CELL BA11)

### Operational History and Site Characterization

Remedial area 28-10 is located between Buildings 228 and 270/273. Aboveground storage tanks (AST) were formerly located in this area. Building 228 is the former cafeteria. Operations conducted in Building 270 included painting, paint stripping, and steam cleaning. Building 273 is a former electrical substation. The former ASTs were located on a concrete pad and all have been removed. The storage contents of the ASTs are unknown, but may have been solvents. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that the site be zoned for research and development, and desires that the area be cleaned up to residential reuse standards. Biased sampling was conducted in the suspected source area of the former ASTs. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 28-10 is a 50- by 35-foot area located in grid cell BA11. Under an industrial reuse scenario, grid cell BA11 has an estimated ELCR of

Remedial Area 28-10 Industrial Scenario Risk Drivers			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Arsenic	16.9 at 6.75 feet	$5 \times 10^{-6}$	< 1
Benzo(a)pyrene	0.5 at 0.25 feet	$4 \times 10^{-6}$	< 1

$1 \times 10^{-5}$ , an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and determined not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BA11. The chemicals driving risk (arsenic and benzo[a]pyrene) were detected in boring IR28B291 and are bounded spatially. Surrounding borings include IR28MW290A, IR28B249, IR28B259, PA51SS16, IR51B025, PA51SS15, and IR28B208. Chemicals driving risk were not detected in groundwater at remedial area 28-10.

### Risk Management Factors

Concentrations of the risk drivers do not appear to be associated with site contamination. Arsenic was detected at a depth of 6.75 feet at a concentration of 16.9 mg/kg. The depth at which this chemical was detected is greater than 5 feet bgs and is therefore not within the Navy's planned remediation area. In addition, the arsenic concentration is consistent with ambient concentrations (HPAL of 11.1 mg/kg)

and may be attributed to natural variations in ambient conditions. Benzo(a)pyrene was detected at a depth of 0.25 feet at a concentration of 0.5 mg/kg, which exceeds the 1998 PRG (0.36 mg/kg). Benzo(a)pyrene at remedial area 28-10 is considered to be an artifact of the overlying asphalt.

### **Groundwater Issues**

At remedial area 28-10, groundwater is located at approximately 7 to 8 feet bgs. Groundwater underlying remedial area 28-10 is not part of the groundwater remedial units identified in Parcel C. Based on physical and chemical properties, the chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination.

### **Other Information**

TPH-motor oil was detected at a maximum concentration of 1,200 mg/kg in soil at the site. No removal actions, UST removals or closures, or exploratory excavations occurred in this area.

While reviewing remedial area 28-10, an elevated concentration of Aroclor-1260 (140 mg/kg) was identified at surface location PA51SS15. The Parcel C risk management review (RMR) team agreed to designate a de minimus area at this location to remediate Aroclor-1260 to a depth of 2 feet bgs. This new de minimus area is referred to as de minimus area SS15.

### **Conclusion:**

- ✓ The BCT and the City concluded that no CERCLA response action is required for remedial area 28-10.
- ✓ The BCT and the City agreed to remediate de minimus area SS15 to address Aroclor-1260 to a depth of 2 feet bgs.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BA11	RA 28-10

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? If the answer to any of the above is yes, further evaluation is required.	Grid cell BA11 ELCR = $1 \times 10^{-5}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known suspected source locations?	Yes. Samples were collected from the suspected source location of the former AST area.
Are elevated "driver chemicals" bounded spatially?	Yes. Driver chemicals, arsenic and benzo(a)pyrene, are bounded spatially. Driver chemicals were detected in boring IR28B291. Surrounding borings include IR28MW290A, IR28B259, PA51SS16, IR51B025, PA51SS15, and IR28B208.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. Driver chemicals were not detected in groundwater.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes. Arsenic was detected at a concentration of 16.9 mg/kg at 6.75 feet bgs. This concentration is consistent with variations in ambient concentrations. Benzo(a)pyrene was detected at a concentration of 0.5 mg/kg at 0.25 feet bgs. This concentration is consistent with asphalt surface cover.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS, AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	Yes. Arsenic was detected at a concentration of 16.9 mg/kg at 6.75 feet bgs. This concentration is consistent with variations in ambient concentrations.
Are the “driver chemicals” PAHs, beryllium, or PCBs?	Yes. Benzo(a)pyrene.
Are the PAHs (if any) the result of asphalt or charcoal?	Yes. Benzo(a)pyrene was considered to be an artifact of overlying asphalt.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCB concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	No. De minimus area SS15 was designated to address Aroclor-1260 of 140 mg/kg.
Are PCB concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	No. De minimus area SS15 was designated to address Aroclor-1260 of 140 mg/kg.
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	Yes. Arsenic.
Based on the above information, is further evaluation required?	No.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No. The potential to contaminate groundwater is low.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	No.

**OTHER INFORMATION**

Has TPH been Detected over a Screening Criterion?	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	1,200 ppm
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (CONTINUED)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information, what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City concluded that no CERCLA response action is required for remedial area 28-10.

The BCT and the City agreed to remediate de minimus area SS15 to address Aroclor-1260 to a depth of 2 feet bgs.

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**SITE IR-28: REMEDIAL AREA 28-11 (GRID CELLS BB05, BB06, BC05, AND BC06)**

**Operational History and Site Characterization**

Remedial area 28-11 is located in the central portion of Building 231 and includes the former locations of two USTs. Operations conducted in Building 231 included machining and fabrication. UST HPA-11 was a 1,600-gallon tank used to store diesel; it was removed in 1993. UST HPA-12 was a 250-gallon tank used to store diesel; it was closed in place in 1993. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that the area be zoned for educational and cultural reuse, and desires that the area be cleaned up to residential standards. Based on a review of the data, the area is adequately characterized.

**Data Evaluation and Risk Assessment**

Remedial area 28-11 is a 170-by 250-foot area located in grid cells BB05, BB06, BC05, and BC06. Under an industrial reuse scenario, grid cell BB05 has an estimated ELCR of  $7 \times 10^{-5}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Grid cell BB06 has an estimated ELCR of

<b>Remedial Area 28-11 Industrial Scenario Risk Drivers</b>			
<b>Area Risk Drivers</b>	<b>Maximum Detection (mg/kg)</b>	<b>Associated Risk</b>	<b>Associated HI</b>
Arsenic	30.3 at 2.25 feet	$1 \times 10^{-5}$	< 1
Aroclor-1260	0.3 at 2.25 feet	$1 \times 10^{-6}$	< 1
Benzo(a)pyrene	5 at 6.25 feet	$4 \times 10^{-5}$	< 1
Benzo(b)fluoranthene	3 at 6.25 feet	$3 \times 10^{-6}$	< 1
Benzo(k)fluoranthene	3 at 6.25 feet	$3 \times 10^{-6}$	< 1
Benzo(a)anthracene	5 at 6.25 feet	$5 \times 10^{-6}$	< 1
Dibenz(a,h)anthracene	1 at 6.25 feet	$5 \times 10^{-6}$	< 1
Indeno(1,2,3-cd)pyrene	3 at 6.25 feet	$3 \times 10^{-6}$	< 1
Vinyl chloride	0.02 at 9.75 feet	$1 \times 10^{-6}$	< 1

$2 \times 10^{-5}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Grid cell BC05 has an estimated ELCR of  $7 \times 10^{-6}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Grid cell BC06 has an estimated ELCR of  $1 \times 10^{-5}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because these ELCRs exceed  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cells BB05, BB06, BC05, and BC06. Chemicals driving risk (arsenic, Aroclor-1260, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]anthracene, dibenz[a,h]anthracene, indeno[1,2,3-cd]pyrene, and vinyl chloride) were detected at concentrations above screening criteria at

sampling locations IR28B090, IR28B104, IR28B105, IR28B106, IR28B135, IR28B264, IR28B265, PA28B049, and PA51SS14. These chemicals are bounded spatially; surrounding sampling locations include IR28MW125A, IR28B133, IR28B134, IR28B258, PA28SU29, PA28SU37, PA28SU30, PA28B047, IR28B092A, IR28B092, IR28MW136A, IR28B091, IR28B093, PA28B044, IR28MW125A, and IR28MW314B. The chemicals driving risk in soil at remedial area 28-11 were not detected in groundwater underlying the site.

### **Risk Management Factors**

Some of the chemicals driving risk may be the result of spills from the former USTs or may be related to activities formerly conducted in Building 231. Risk management factors for each of the chemicals driving risk are discussed in the following paragraphs.

The maximum concentration of arsenic was detected at a depth of 2.25 feet bgs in boring IR28B106; although this concentration (30 mg/kg) exceeded two times the Hunters Point ambient concentration (11.1 mg/kg), the RMR team agreed that it was within the range of ambient variability. Arsenic was detected in borings IR28B104, IR28B105, IR28B135, IR28B264, and IR28B265 at concentrations ranging from 12.8 to 14.4 mg/kg, which are consistent with ambient concentrations.

The maximum concentration of Aroclor-1260, which was detected in surface location PA51SS14, was 0.3 mg/kg, which did not exceed the 1998 EPA PRG (1.3 mg/kg). Aroclor-1260 was also detected in boring PA28B049 at a concentration of 0.1 mg/kg, which did not exceed the 1998 EPA PRG.

The maximum concentrations of benzo(a)pyrene, dibenz(a,h)anthracene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, and indeno(1,2,3-cd)pyrene were detected at a depth of 6.25 feet bgs in boring IR28B135; these chemicals are present at a depth exceeding 5 feet bgs and are therefore not within the Navy's planned remediation area. Benzo(a)pyrene was also detected in borings IR28B106, IR28B264, and IR28B265; however, these benzo(a)pyrene concentrations were either (1) less than the 1998 EPA PRG (0.36 mg/kg) or (2) detected at depths below 5 feet bgs.

Benzo(a)anthracene and benzo(b)fluoranthene were also detected in boring IR28B264; however, concentrations of these chemicals did not exceed the 1998 EPA PRGs and they were present at a depth of 8.75 feet bgs, which is not within the Navy's planned remediation area.

Vinyl chloride was detected in boring IR28B090 at a concentration of 0.02 mg/kg, which did not exceed the 1998 EPA PRG (0.048 mg/kg). This chemical was detected at a depth of 9.75 feet bgs, which exceeds 5 feet bgs and is therefore not within the Navy's planned area of remediation.

All chemicals driving risk were detected either beneath pavement or below the concrete floor of Building 231, which would mitigate exposure to the chemicals.

### **Groundwater Issues**

At remedial area 28-11, groundwater is at approximately 7 feet bgs. Groundwater underlying remedial area 28-11 is not part of groundwater remedial units identified in Parcel C; however, RU-2 is adjacent to the southern border of remedial area 28-11. Based on physical and chemical properties, the chemicals driving risk in soil (note, vinyl chloride is mobile but at low levels and below the remediation depth) are relatively immobile and are not considered a source of groundwater contamination.

### **Other Information**

TPH-motor oil was detected at a maximum concentration of 1,200 mg/kg, and TRPH was detected at a maximum concentration of 5,000 mg/kg in soil at remedial area 28-11. No removal actions or exploratory excavations occurred in this area. In 1993, one UST was removed and one UST was closed in place at the site.

### **Conclusions:**

Conclusions were not reached for this area, and the following recommendations were made:

- ✓ EPA and the Navy recommend no CERCLA remedial action be performed at remedial area 28-11.
- ✓ DTSC and the City recommend further evaluation of the area.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BB05, BB06, BC05, BC06	RA 28-11

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BB05 ELCR = $7 \times 10^{-5}$ , BB06 ELCR = $2 \times 10^{-5}$ , grid cell BC05 ELCR = $7 \times 10^{-6}$ , and grid cell BC06 ELCR = $1 \times 10^{-5}$ ; therefore, further evaluation was necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with these grid cells because contamination is bounded within the grid cells.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. Driver chemicals, arsenic, benzo(a)pyrene, dibenz(a,h)anthracene, benzo(a)anthracene, benzo(k)fluoranthene, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene, aroclor-1260, and vinyl chloride were detected in borings IR28B104, IR28B105, IR28B106, IR28B135, IR28B264, IR28B265, PA51SS14, PA28B049, and IR28B090 and are spatially bounded. Surrounding locations include IR28MW125A, IR28B133, IR28B134, IR28B258, PA28SU29, PA28SU37, PA28SU30, PA28B047, IR28B092A, IR28B092, IR28MW136A, IR28B091, IR28B093, PA28B044, IR28MW125A, and IR28MW314B.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	Yes. The maximum concentrations of Aroclor-1260 and PAHs may be associated with heavy industrial machining activities conducted in Building 231 and leakage from nearby former USTs (HPA-11 and HPA-12).
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes. Concentrations of arsenic were consistent with ambient concentrations.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the "driver chemicals" be considered the results of fill material or variability in ambient levels? Explain.	Yes. Arsenic concentrations detected in all the borings were deemed consistent with ambient concentrations by the RMR team.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. Aroclor-1260 is a PCB; benzo(a)pyrene, dibenz(a,h)anthracene, benzo(a)anthracene, benzo(k)fluoranthene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene are PAHs. The PAHs were either detected at concentrations below the 1998 PRGs or at depths below 5 feet bgs and are therefore not within the Navy's planned remediation area.
Are the PAHs (if any) the result of asphalt or charcoal?	No.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA's level of concern)?	Yes.
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC's level of concern)?	Yes.
Are there other "driver chemicals" besides PAHs, beryllium, or PCBs?	Yes. Arsenic and vinyl chloride are the only other driver chemicals.
Based on the above information, is further evaluation required?	No. Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the "driver chemicals" indicate a potential to contaminate groundwater?	No.
Do site-specific conditions mitigate the exposure or risk associated with the "driver chemicals"?	Yes. Driver chemicals were detected either under paved surfaces or beneath the concrete floor in Building 231, which would mitigate exposure to the chemicals.

**OTHER INFORMATION**

Has TPH been Detected over a Screening Criterion?	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	1,200 ppm
• TRPH > 1,000 ppm?	5,000 ppm
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	Yes. Former UST HPA-11, a 1,600-gallon tank used to store diesel, was removed and former UST HPA-12, a 250-gallon tank also used to store diesel, was closed in place.
– Does this correspond with the distribution of the chemicals?	Yes. The source of PAHs may be associated with leakage from former diesel UST HPA-12.
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	No.
– Cumulative risks?	No.
– Ambient risk?	No.
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	Yes.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

EPA and the Navy agreed that no CERCLA remedial action is required for remedial area 28-11.

DTSC and the City recommend further evaluation of the area.

## SITE IR-28: REMEDIAL AREA 28-12 (GRID CELL AZ07)

### Operational History and Site Characterization

Remedial area 28-12 is located northwest of Building 231 near Dry Dock 2. This historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be used for open space. Biased sampling was conducted in the suspected source area of a former fuel line. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 28-12 is a 50- by 30-foot area located in grid cell AZ07. Under an industrial reuse scenario, grid cell AZ07 has an estimated ELCR of  $2 \times 10^{-5}$ , an HI

Remedial Area 28-12 Industrial Scenario Risk Drivers			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Arsenic	25 at 4.25 feet	$9 \times 10^{-6}$	< 1
Benzo(a)pyrene	0.6 at 4.25 feet	$5 \times 10^{-6}$	< 1

of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR for this area is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell AZ07. The chemicals driving risk (arsenic and benzo[a]pyrene) were detected at concentrations above screening criteria in boring IR49B025 and trench area PA49TA09, and are bounded spatially. Surrounding borings include IR28B108, IR28MW395A, IR49B027, and IR49B026. Arsenic was detected in groundwater at the site, but at a concentration consistent with the HGAL (27.34  $\mu\text{g/L}$ ).

### Risk Management Factors

Chemicals driving risk do not appear to be related to past industrial operations. Arsenic was detected at a depth of 4.25 feet in trench area PA49TA09 at a concentration of 25 mg/kg, which is consistent with the ambient concentration at Hunters Point (11.1 mg/kg). Benzo(a)pyrene was detected at a depth of 4.25 feet at a concentration of 0.60 mg/kg in trench area PA49TA05. Benzo(a)pyrene detected in trench area PA49TA05 may be an artifact of the overlying asphalt.

### **Groundwater Issues**

At remedial area 28-12, groundwater is located at approximately 7 feet bgs. Groundwater underlying remedial area 28-12 is not part of the groundwater remedial units identified in Parcel C. Based on physical and chemical properties, the chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination.

### **Other Information**

No removal actions, UST removals or closures, or exploratory excavations occurred in this area. TRPH was detected at a maximum concentration of 1,600 mg/kg in soil.

#### **Conclusion:**

- ✓ The BCT and the City concluded that no CERCLA response action is needed at remedial area 28-12.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	AZ07	RA 28-12

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? If the answer to any of the above is yes, further evaluation is required.	Yes. Grid cell AZ07 ELCR = $2 \times 10^{-5}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes. Sampling was conducted in the suspected source area of a former fuel line.
Are elevated "driver chemicals" bounded spatially?	Yes. Driver chemicals, arsenic and benzo(a)pyrene, were detected trench area PA49TA09. Surrounding borings include IR28B108, IR28MW395A, IR49B027, and IR49B026.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	Yes. Arsenic was detected in groundwater, but at a concentration consistent with the ambient concentration (27.34 $\mu\text{g/L}$ ).
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	Yes. Arsenic and benzo(a)pyrene detected in shallow soil may be related to leakage from a former fuel line.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes. The arsenic concentration is consistent with the HPAL.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS, AND CHANGED SCREENING CRITERIA**

Can the "driver chemicals" be considered the results of fill material or variability in ambient levels? Explain.	Yes. The arsenic concentration is consistent with the ambient concentrations.
Are the "driver chemicals" PAHs, beryllium, or PCBs?	Yes. Benzo(a)pyrene.
Are the PAHs (if any) the result of asphalt or charcoal?	Yes. The benzo(a)pyrene concentration may be an artifact of overlying asphalt.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCB concentrations (if any) less than 10 mg/kg (EPA's level of concern)?	N/A
Are PCB concentrations (if any) less than 1.3 mg/kg (DTSC's level of concern)?	N/A
Are there other "driver chemicals" besides PAHs, beryllium, or PCBs?	Yes. Arsenic.
Based on the above information, is further evaluation required?	No.

**PROTECTIVENESS**

Do the physical and chemical properties of the "driver chemicals" indicate a potential to contaminate groundwater?	No. The potential to contaminate groundwater is low.
Do site-specific conditions mitigate the exposure or risk associated with the "driver chemicals"?	No.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (CONTINUED)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No previous exploratory excavations.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information, what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City agreed that no CERCLA response action is required for remedial area 28-12.

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## **SITE IR-28: REMEDIAL AREA 28-13 (GRID CELL BA14)**

### **Operational History and Site Characterization**

Remedial area 28-13 is located in the southwest corner of IR-28 near Building 272. Building 272 was used for shipping rigging and metal casting. Solvents were used in the building to clean chain hoists. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for mixed use, and desires that the area be cleaned up to residential reuse standards. Based on a review of the data, the area is adequately characterized.

### **Data Evaluation and Risk Assessment**

Remedial area 28-13 is an 8- by 8-foot area around monitoring well boring IR28MW298A, and is located in grid cell BA14. No chemicals driving risk were identified at remedial area 28-13 under an industrial reuse scenario, because (1) the estimated ELCR for the area was less than  $1 \times 10^{-6}$ , (2) the HI did not exceed 1, and (3) the soil lead concentrations were less than 1,000 mg/kg. Remedial area 28-13 was originally identified because chemicals present at the site may pose a risk under the residential reuse scenario. However, because the Navy proposes to remediate Parcel C to industrial reuse standards, no remedy is needed for remedial area 28-13. Chemicals driving risk were not detected in groundwater beneath this area.

### **Risk Management Factors**

Under an industrial reuse scenario, no potentially unacceptable risk is identified for remedial area 28-13. Under a residential reuse scenario, 3,3'-dichlorobenzidine and PAHs are chemicals driving risk. Detected concentrations of these chemicals were below the 1998 EPA PRGs.

### **Groundwater Issues**

At remedial area 28-13, groundwater is at approximately 7 feet bgs. Groundwater underlying remedial area 28-13 is not part of groundwater remedial units identified in Parcel C.

### **Other Information**

TPH-motor oil was detected at a maximum concentration of 2,100 mg/kg in remedial area 28-13. No removal actions were conducted in this area.

#### **Conclusion:**

A conclusion was not reached for this area, and the following recommendations were made:

- ✓ EPA, DTSC, and the Navy recommended no CERCLA remedial action be performed for remedial area 28-13.
- ✓ The City recommends additional characterization of the site.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BA14	RA 28-13

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	No, under an industrial reuse scenario. Yes, under a residential scenario. Grid cell BA14 residential ELCR = $5 \times 10^{-5}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	No. Driver chemicals under an industrial scenario are not present at this remedial area.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. Driver chemicals were not detected in groundwater beneath this remedial.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	N/A
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	N/A
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the "driver chemicals" be considered the results of fill material or variability in ambient levels? Explain.	N/A
Are the driver chemicals PAHs, beryllium, or PCBs?	N/A
Are the PAHs (if any) the result of asphalt or charcoal?	N/A
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA's level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC's level of concern)?	N/A
Are there other "driver chemicals" besides PAHs, beryllium, or PCBs?	N/A
Based on the above information, is further evaluation required?	No. Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the "driver chemicals" indicate a potential to contaminate groundwater?	N/A
Do site-specific conditions mitigate the exposure or risk associated with the "driver chemicals"?	N/A

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	2,100 ppm
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	N/A

**ACTION REQUIRED**

<b>Based on the above information, what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

Under an industrial reuse scenario, no chemicals driving risk under an industrial reuse scenario are present at this remedial area.

The BCT recommends no CERCLA remedial action be performed for remedial area 28-13.

The City recommends additional characterization of the site.

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## SITE IR-28: REMEDIAL AREA 28-14 (GRID CELLS BE04 AND BE05)

### Operational History and Site Characterization

Remedial area 28-14 is located beneath and adjacent to Building 219 in the eastern portion of Parcel C. Building 219 is an electrical substation; an adjacent concrete pad with a sump was formerly used to store electrical transformers. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that the area be zoned for open space, which includes educational and cultural areas, and desires that the area be cleaned up to industrial standards. Biased sampling was conducted in the suspected source area (the former transformer locations). Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 28-14 is a 60- by 150-foot area located in grid cells BE04 and BE05. Under an industrial reuse scenario, grid cell BE04 has an estimated ELCR of  $1 \times 10^{-5}$  and an HI of

Remedial Area 28-1 Industrial Scenario Risk Drivers			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Arsenic	17 at 1.75 feet	$7 \times 10^{-6}$	< 1
Benzo(a)pyrene	0.1 at 1.75 feet	$8 \times 10^{-7}$	< 1
Aroclor-1260	0.5 at 3.75 feet	$3 \times 10^{-6}$	< 1

less than 1, and it has no lead concentrations above 1,000 mg/kg. Grid cell BE05 has an estimated ELCR of  $7 \times 10^{-6}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because these ELCRs exceed  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cells BE04 and BE05. Chemicals driving risk (arsenic, benzo[a]pyrene, and Aroclor-1260) were detected at concentrations above screening criteria in borings IR28B240, PA51SS13, and IR28B088. These chemicals are bounded spatially; surrounding borings include IR28B241, IR28B242, PA28SS14, PA28SS15, IR28B089, IR28B020, IR28B100, and IR28MW122A. Chemicals driving risk in soil at remedial area 28-14 were not detected in groundwater at the site.

### Risk Management Factors

Arsenic was detected at boring IR28B240 at a concentration of 17 mg/kg, which is consistent with the Hunters Point ambient concentration (11.1 mg/kg). Aroclor-1260 was detected at boring IR28B240 at

concentrations of 0.3 and 0.5 mg/kg, which do not exceed the 1998 EPA PRG (1.3 mg/kg). Soil was removed from boring IR28B240 to a depth of 3.5 feet bgs during the exploratory excavation removal action; however, arsenic and Aroclor-1260 driving risk in this boring were detected at 3.75 feet bgs and were not removed.

Aroclor-1260 was detected at sampling location PA51SS13 at a concentration of 0.3 mg/kg, which does not exceed the 1998 EPA PRG (1.3 mg/kg). Benzo(a)pyrene was detected in boring IR28B088 at a concentration of 0.1 mg/kg, which does not exceed the 1998 EPA PRG (0.36 mg/kg). Benzo(a)pyrene is considered an artifact of the overlying asphalt surface.

### **Groundwater Issues**

At remedial area 28-14, groundwater is at approximately 7 feet bgs. Groundwater underlying remedial area 28-14 is not part of groundwater remedial units identified in Parcel C. Based on physical and chemical properties, the chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination.

### **Other Information**

Petroleum hydrocarbons were not detected in soil at remedial area 28-14. One exploratory excavation (EE-08) occurred in remedial area 28-14. At EE-08, soil to a depth of 3.5 feet bgs was excavated at IR28B240. Arsenic and Aroclor-1260 driving risk at this location were detected at 3.75 feet bgs and were not removed; however, confirmation samples collected at 3.5 feet bgs did not contain these chemicals.

### **Conclusions:**

- ✓ The BCT and the City concluded that no CERCLA remedial action was needed at remedial area 28-14.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BE04, BE05	RA 28-14

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BE04 ELCR = $1 \times 10^{-5}$ and grid cell BE05 ELCR = $7 \times 10^{-6}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with these grid cells because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. Driver chemicals (arsenic, benzo[a]pyrene, and Aroclor-1260) were detected in sample locations IR28B240, PA51SS13, and IR28B088, and are spatially bounded. Surrounding locations include IR28B241, IR28B242, PA28SS14, PA28SS15, IR28B089, IR28B020, IR28B100, and IR28MW122A.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. Chemicals detected in the groundwater are unrelated to driver chemicals in soil.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	Yes. PCB concentrations are consistent with activities at Building 219. Building 219 is an electrical substation that houses PCB-containing transformers and miscellaneous electrical equipment. A sump is located north of the building's exterior.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes. Arsenic detected at a depth of 1.75 feet bgs at a concentration of 17.0 mg/kg exceeds the 1998 industrial PRG (3.0 mg/kg), but is consistent with ambient concentrations (HPAL = 11.1 mg/kg). Benzo(a)pyrene detected at a depth of 1.75 feet bgs in boring IR28B088 is considered an artifact of the overlying asphalt.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the "driver chemicals" be considered the results of fill material or variability in ambient levels? Explain.	Yes. Arsenic concentrations are consistent with ambient concentrations.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. Aroclor-1260 is a PCB and benzo(a)pyrene is a PAH.
Are the PAHs (if any) the result of asphalt or charcoal?	Yes. Benzo(a)pyrene is considered an artifact of the overlying asphalt.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA's level of concern)?	Yes.
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC's level of concern)?	Yes.
Are there other "driver chemicals" besides PAHs, beryllium, or PCBs?	Yes. Arsenic is the only other driver chemical.
Based on the above information, is further evaluation required?	No. Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the "driver chemicals" indicate a potential to contaminate groundwater?	No. The potential to contaminate groundwater is low.
Do site-specific conditions mitigate the exposure or risk associated with the "driver chemicals"?	Yes. Driver chemicals were detected beneath a concrete building floor that would mitigate exposure to the chemicals.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	Yes. An exploratory excavation (EE-08) was performed around boring IR28B240.
– Does this correspond with the distribution of the chemicals?	Yes. Confirmation samples were collected from four sidewalls and one bottom location. Concentrations of chemicals driving risk do not exceed screening criteria in the confirmation samples.
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	Yes.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City concluded that no CERCLA remedial action is required for remedial area 28-14.

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## SITE IR-28: REMEDIAL AREA 28-15 (GRID CELL BE06)

### Operational History and Site Characterization

Remedial area 28-15 is located east of Building 211. Building 211 was formerly used for machining, welding, assembly, and painting operations. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for open space. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 28-15 is a 45- by 45-foot area located in grid cell BE06. Under an industrial reuse scenario, grid cell BE06 has an estimated ELCR of  $1 \times 10^{-5}$ , an HI of less than 1, and it has no lead concentrations

Remedial Area 28-15 Industrial Scenario Risk Drivers			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Arsenic	20.3 at 1.75 feet	$9 \times 10^{-6}$	< 1
Aroclor-1260	0.2 at 1.75 feet	$1 \times 10^{-6}$	< 1

above 1,000 mg/kg. Because the ELCR for this grid cell is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BE06.

Chemicals driving risk (arsenic and Aroclor-1260) were detected in boring IR28B118 and are bounded vertically. Arsenic was detected in the groundwater, but at a concentration that is consistent with the HGAL (27.34  $\mu\text{g/L}$ ).

### Risk Management Factors

Arsenic was detected at a depth of 1.75 feet bgs at a concentration of 20.3 mg/kg, which is consistent with ambient concentrations established for Hunters Point (11.1 mg/kg). Aroclor-1260 was detected at a depth of 1.75 feet bgs at a concentration of 0.2 mg/kg, which does not exceed the 1998 EPA PRG (1.3 mg/kg).

### Groundwater Issues

At remedial area 28-15, groundwater is located at approximately 7 feet bgs. Groundwater underlying remedial area 28-15 is not part of groundwater remedial units identified in Parcel C. Based on physical and chemical properties, chemical driving risk in soil are relatively immobile and are not considered a source of groundwater contamination.

**Other Information**

No removal actions, UST removals or closures, or exploratory excavations occurred in this area.

TPH-motor oil was detected at a maximum concentration of 1,800 mg/kg, and TRPH was detected at a maximum concentration of 4,300 mg/kg in soil at the site.

**Conclusion:**

- ✓ The BCT and the City concluded that no CERCLA response action is needed for remedial area 28-15.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BE06	RA 28-15

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BE06 ELCR = $1 \times 10^{-5}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. Driver chemicals, arsenic and Aroclor-1260, were detected in boring IR28B118 and are bounded vertically.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	Yes. Arsenic was detected in the groundwater, but at a concentration consistent with ambient concentrations.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	Yes. Building 211 was previously used for machining, welding, assembly, and painting operations.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes. Arsenic was detected at 1.75 feet at a concentration of 20.3 mg/kg, which is consistent with the ambient concentration (11.1 mg/kg).
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the "driver chemicals" be considered the results of fill material or variability in ambient levels? Explain.	Yes. The arsenic concentration is consistent with the ambient concentration.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. Aroclor-1260.
Are the PAHs (if any) the result of asphalt or charcoal?	N/A
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA's level of concern)?	Yes.
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC's level of concern)?	Yes.
Are there other "driver chemicals" besides PAHs, beryllium, or PCBs?	Yes. Arsenic.
Based on the above information, is further evaluation required?	No.

**PROTECTIVENESS**

Do the physical and chemical properties of the "driver chemicals" indicate a potential to contaminate groundwater?	No. Arsenic was detected in the groundwater, but at a concentration consistent with ambient concentrations.
Do site-specific conditions mitigate the exposure or risk associated with the "driver chemicals"?	No.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	1,800 ppm
• TRPH > 1,000 ppm?	4,300 ppm
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City recommend that no CERCLA response action are needed for remedial area 28-15.

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## SITE IR-28: REMEDIAL AREA 28-16 (GRID CELL BE07)

### Operational History and Site Characterization

Remedial area 28-16 is located in the southeastern corner of Parcel C near Buildings 211 and underlying a portion of Building 224. Operations conducted in Building 211 included machining, welding, and painting. Building 224 was formerly used as a bomb shelter; a concrete pad formerly used to store transformers is adjacent to the building. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for cultural and institutional reuse, and desires that the area be cleaned up to industrial reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 28-16 is a 50- by 140-foot area in grid cell BE07. Under an industrial reuse scenario, grid cell BE07 has an estimated ELCR of  $6 \times 10^{-6}$  and

Remedial Area 28-16 Industrial Scenario Risk Drivers			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Benzo(a)pyrene	0.3 at 1.25 feet	$3 \times 10^{-6}$	< 1
Aroclor-1260	0.4 at 0.75 feet	$2 \times 10^{-6}$	< 1

an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because this ELCR exceeds  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BE07. The chemicals driving risk (benzo[a]pyrene and Aroclor-1260) were detected at concentrations above the screening criteria in sampling locations IR28B238, PA51SS11, and PA51SS12, and are spatially bounded. Surrounding locations include PA28SS78 and IR28B230. The chemicals driving risk in soil at remedial area 28-16 were not detected in groundwater at the site.

### Risk Management Factors

Benzo(a)pyrene was detected at a depth of 1.25 feet bgs in boring IR28B238 at a concentration of 0.3 mg/kg, which is below the 1998 EPA PRG (0.36 mg/kg). Benzo(a)pyrene is considered an artifact of the overlying asphalt surface. Aroclor-1260 was detected at a depth of 0.75 foot bgs in surface locations PA51SS11 and PA51SS12 at concentrations of 0.4 mg/kg in each boring, which are below the 1998 EPA PRG (1.3 mg/kg).

### **Groundwater Issues**

At remedial area 28-16, groundwater is at approximately 8 feet bgs. Groundwater underlying remedial area 28-16 is not part of groundwater remedial units identified in Parcel C. Based on physical and chemical properties, the chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination.

### **Other Information**

Petroleum hydrocarbons were not detected at concentrations exceeding the screening criteria in soil at remedial area 28-16. No removal actions were conducted in this area.

#### **Conclusion:**

- ✓ The BCT and the City concluded that no CERCLA remedial action was needed for remedial area 28-16.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BE07	RA 28-16

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BE07 ELCR = $6 \times 10^{-6}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes. Biased sampling was conducted based on visible staining on the transformer pad at Building 224.
Are elevated "driver chemicals" bounded spatially?	Yes. Driver chemicals (benzo[a]pyrene and Aroclor-1260) were detected in sample locations IR28B238, PA51SS11, and PA51SS12, and are spatially bounded. Surrounding locations include IR28B230 and PA28SS78.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. Chemicals detected in the groundwater are unrelated to chemicals driving risk in soil.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	Yes. Concentrations of Aroclor-1260 may be associated with releases of PCB-containing oils from transformers stored on a pad adjacent to Building 224.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes. Benzo(a)pyrene, detected at a depth of 1.25 feet bgs in boring IR28B238, is considered to be an artifact of the overlying asphalt.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. Aroclor-1260 is a PCB and benzo(a)pyrene is a PAH.
Are the PAHs (if any) the result of asphalt or charcoal?	Yes. Benzo(a)pyrene is considered an artifact of the overlying asphalt.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	Yes. The maximum concentration of Aroclor-1260 detected was 0.40 mg/kg at a depth of 0.75 foot bgs in boring PA51SS11.
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	Yes.
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	No.
Based on the above information, is further evaluation required?	No. Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No. The potential to contaminate groundwater is low.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	No.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	Yes.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

EPA, DTSC, the City, and the Navy agreed that no CERCLA remedial action is required for remedial area 28-16.

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## SITE IR-28: REMEDIAL AREA 28-17 (GRID CELL BC11)

### Operational History and Site Characterization

Remedial area 28-17 is located about 60 feet northeast of Building 229. Building 229 is an electrical substation. Five small sheds and a concrete pad are associated with Building 229, which was used for electrical supply and storage. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for open space. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 28-17 is a 40- by 25-foot area located in grid cell BC11. Under an industrial reuse scenario, grid cell BC11 has an estimated ELCR

Remedial Area 28-17 Risk Drivers			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Aroclor-1260	0.5 at 0 foot	$3 \times 10^{-6}$	< 1

of  $3 \times 10^{-6}$ , an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR for grid cell BC11 is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BC11. The chemical driving risk, Aroclor-1260, was detected at a concentration above the screening criterion at surface location PA51SS18, and is bounded spatially. Surrounding borings include IR28B239, IR28B296, and IR28MW295A. Aroclor-1260 was not detected in the groundwater.

### Risk Management Factors

Aroclor-1260 was detected at a concentration of 0.5 mg/kg at the ground surface location PA51SS18; the detected concentration did not exceed the 1998 EPA PRG (1.3 mg/kg).

### Groundwater Issues

At remedial area 28-17, groundwater is located at approximately 10 feet bgs. Groundwater underlying this area is not part of the groundwater remediation units identified in Parcel C. Based on physical and chemical properties, the chemical driving risk in soil is relatively immobile and is not considered a source of groundwater contamination.

**Other Information**

No removal actions, UST removals or closures, or exploratory excavations occurred in this area.

**Conclusion:**

✓ The BCT and the City concluded that no CERCLA response action is necessary for remedial area 28-17.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BC11	RA 28-17

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BC11 residential ELCR = $3 \times 10^{-6}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cells.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes. Sampling was conducted in the vicinity of a concrete pad with active transformers.
Are elevated "driver chemicals" bounded spatially?	Yes. The driver chemical, Aroclor-1260, was detected at surface location PA51SS18. Surrounding borings include IR28B239, IR28B296, and IR28MW295A.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. Aroclor-1260 was not detected in groundwater at the site.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	Yes. Aroclor-1260 was detected at the ground surface in the vicinity of a former transformer pad.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	N/A
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. Aroclor-1260.
Are the PAHs (if any) the result of asphalt or charcoal?	No.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	Yes.
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	Yes.
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	No.
Based on the above information, is further evaluation required?	No further evaluation is required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No. Aroclor-1260 was not detected in groundwater at the site.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	No.

**OTHER INFORMATION**

Has TPH been Detected over a Screening Criterion?	
• TPH-gas > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City agreed that no CERCLA response action is necessary for remedial area 28-17.

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## SITE IR-28: REMEDIAL AREA 28-18 (GRID CELL BB10)

### Operational History and Site Characterization

Remedial area 28-18 is located between Buildings 228 and 253. Building 228 is the former cafeteria. Operations conducted in Building 253 included machining, welding, and painting. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for cultural and institutional reuse, and desires that the area be cleaned up to residential reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 28-18 is a 30- by 30-foot area located in grid cell BB10. Under an industrial reuse scenario, grid cell BB10 has an estimated ELCR of  $1 \times 10^{-5}$  and

Remedial Area 28-18 Industrial Scenario Risk Drivers			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Arsenic	29.7 at 6.0 feet	$1 \times 10^{-5}$	< 1
Lead	1,600 at 6.0 feet	N/A	N/A

an HI of less than 1, and it has one lead concentration above 1,000 mg/kg. Because the ELCR is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and determined not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BB10. The chemicals driving risk (arsenic and lead) were detected in boring IR28MW309B and are bounded spatially. Surrounding borings include IR28B165, IR28B164, and IR28B166. Arsenic was detected in groundwater at remedial area 28-18 at a concentration consistent with the HGAL.

### Risk Management Factors

Arsenic and lead were detected at a depth of 6 feet bgs at boring IR28MW309B. This depth is greater than 5 feet bgs and is therefore not within the Navy's planned remediation area.

### Groundwater Issues

At remedial area 28-18, groundwater is located at approximately 7 to 8 feet bgs. Groundwater underlying remedial area 28-18 is not part of the groundwater remedial units identified in Parcel C.

Based on physical and chemical properties, the chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination.

**Other Information**

Petroleum hydrocarbons were not detected in soil at remedial area 28-18. No removal actions, UST removals or closures, or exploratory excavations occurred in this area.

**Conclusion:**

Conclusions were not reached for this area, and the following recommendations were made:

- ✓ The Navy recommended no CERCLA remedial action be performed for remedial area 28-18 because the chemicals driving risk were detected below 5 feet bgs.
- ✓ EPA, DTSC, and the City recommend remediation or additional characterization of the area.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BB10	RA 28-18

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BB10 ELCR = $1 \times 10^{-5}$ ; therefore, further evaluation was necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. Chemicals driving risk, arsenic and lead, were detected above screening criteria in monitoring well IR28MW309B, and are bounded spatially. Surrounding borings include IR28B164, IR28B165, and IR28B166.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	Yes. However, arsenic was detected in the groundwater, at a concentration consistent with ambient concentrations (HGAL of 27.34 $\mu\text{g/L}$ ).
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	Yes. Arsenic and lead were detected at a depth of 6 feet bgs at concentrations of 29.7 mg/kg and 1,620 mg/kg, respectively, and may be the result of storage activities in Building 228 or industrial operations in Building 253.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	N/A
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the "driver chemicals" be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the driver chemicals PAHs, beryllium, or PCBs?	No.
Are the PAHs (if any) the result of asphalt or charcoal?	N/A
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA's level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC's level of concern)?	N/A
Are there other "driver chemicals" besides PAHs, beryllium, or PCBs?	Yes. Arsenic and lead.
Based on the above information, is further evaluation required?	Yes. Further evaluation is required.

**PROTECTIVENESS**

Do the physical and chemical properties of the "driver chemicals" indicate a potential to contaminate groundwater?	No.
Do site-specific conditions mitigate the exposure or risk associated with the "driver chemicals"?	Yes. The driver chemicals are present in soil at a depth of 6 feet bgs beneath concrete pavement, which would mitigate exposure to the chemicals.

**OTHER INFORMATION**

Has TPH been Detected over a Screening Criterion?	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	Yes.
• Human health risks?	No.
– Individual risk?	No.
– Cumulative risks?	No.
– Ambient risk?	No.
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	Yes.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	X(See notes below)
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

Arsenic and lead concentrations were detected at 6 feet bgs, below the Navy’s 5-foot depth of concern. The Navy, based on the depth of chemicals driving risk, recommends no CERCLA remedial action at remedial area 28-18.

At remedial area 28-18, EPA, DTSC, and the City recommend further characterization or remediation of monitoring well IR28MW309B up to 6 feet, with confirmation sampling.

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## SITE IR-28: REMEDIAL AREA 28-19 (GRID CELL BD06)

### Operational History and Site Characterization

Remedial area 28-19 is located inside the eastern end of Building 211. Operations conducted in this building included machining, welding, assembly, electronic testing, and painting. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for educational and cultural areas, and desires that the area be cleaned up to industrial reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 28-19 is a 45- by 45-foot area located in grid cell BD06. Under an industrial reuse scenario, grid cell BD06 has an estimated ELCR of  $2 \times 10^{-5}$  and an HI of less than 1, and it has one lead

Remedial Area 28-19 Industrial Scenario Risk Drivers			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Arsenic	24.8 at 9.75 feet	$1 \times 10^{-5}$	<1
Benzo(a)pyrene	0.3 at 9.75 feet	$2 \times 10^{-6}$	<1
n-Nitroso-di-n-propylamine	0.5 at 9.75 feet	$2 \times 10^{-6}$	<1
Lead	1,200 at 9.75 feet	N/A	N/A

detection above 1,000 mg/kg. Because the ELCR is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and determined not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BD06. Chemicals driving risk (arsenic, lead, benzo[a]pyrene, and n-nitroso-di-n-propylamine) were detected in boring IR28B223 at a 9.75 feet bgs and are bounded vertically. Boring IR28B223 is an isolated boring located inside of Building 211. Chemicals driving risk were not detected in groundwater underlying remedial area 28-19.

### Risk Management Factors

A site visit was conducted to determine the reason for locating boring IR28B223 in the middle of Building 211. Boring IR28B223 is located on in the middle of the level concrete floor of Building 211; it is not located in or near a sump but was part of a series of wells to evaluate the groundwater on an areal basis. Arsenic was detected at concentrations of 5.4, 4.4, and 24.8 mg/kg at depths of 3.25, 5.75, and 9.75 feet, respectively. The arsenic concentrations are consistent with the HPAL (11.1 mg/kg) and may be attributed to natural variations in ambient conditions. Benzo(a)pyrene was

detected at concentrations of 0.06 and 0.3 mg/kg at depths of 3.25 and 9.75 feet, respectively. The benzo(a)pyrene concentrations are below the 1998 EPA PRG (0.36 mg/kg). N-nitroso-di-n-propylamine exceeds its 1998 EPA PRG (0.43 mg/kg) at 9.75 feet in boring IR28B223 and lead exceeds its screening criteria (1,000 mg/kg) at 9.75 feet in boring IR28B223. However, the depth at which these chemicals were detected is greater than 5 feet bgs and is therefore not within the Navy's planned remediation area.

### **Groundwater Issues**

At remedial area 28-19, groundwater is located at approximately 6 to 7 feet bgs. Groundwater underlying remedial area 28-19 is not part of the groundwater remedial units identified in Parcel C. Based on the physical and chemical properties, the chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination.

### **Other Information**

TPH-motor oil was detected at a maximum concentration of 1,100 mg/kg in soil and TRPH was detected at a maximum concentration of 1,340 mg/kg in soil. No removal actions, UST removals or closures, or exploratory excavations occurred in this area.

### **Conclusion:**

Conclusions were not reached for this area and the following recommendations were made:

- ✓ EPA and the Navy recommend that no CERCLA response action be taken at remedial area 28-19.
- ✓ DTSC and the City recommend further characterization of the area or further explanation for locating boring IR28B223 in the middle of Building 211.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BD06	RA 28-19

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BD06 ELCR = $2 \times 10^{-5}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known suspected source locations?	Yes. The reason for locating boring IR28B223 in the middle of Building 211 is for general areal characterization.
Are elevated "driver chemicals" bounded spatially?	Driver chemicals (arsenic, lead, benzo[a]pyrene, and n-nitroso-di-n-propylamine) were detected in boring IR28B223 at 9.75 feet and are bounded vertically. Boring IR28B223 is an isolated boring located inside Building 211.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	N/A
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes. Arsenic was detected at a concentration of 24.8 mg/kg at 9.75 feet bgs. This concentration is consistent with variations in ambient concentrations.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS, AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	Yes. Arsenic was detected at a concentration of 24.8 mg/kg at 9.75 feet bgs. This concentration is consistent with variations in ambient concentrations.
Are the “driver chemicals” PAHs, beryllium, or PCBs?	Yes. Benzo(a)pyrene.
Are the PAHs (if any) the result of asphalt or charcoal?	No.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	n-Nitroso-di-n-propylamine and lead are also driver chemicals.
Based on the above information, is further evaluation required?	Further evaluation is required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No. The potential to contaminate groundwater is low.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	Yes. The driver chemicals were detected at 9.75 feet bgs under a sound concrete building floor that would mitigate exposure to the chemicals.

**OTHER INFORMATION**

Has TPH been Detected over a Screening Criterion?	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	1,100 ppm
• TRPH > 1,000 ppm?	1,340 ppm
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (CONTINUED)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	Yes.

**ACTION REQUIRED**

<b>Based on the above information, what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

EPA and the Navy agreed that no CERCLA response action is required for remedial area 28-19.

DTSC and the City recommend further characterization or request an explanation for locating boring IR28B223 in the middle of Building 211.

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## SITE IR-28: REMEDIAL AREA 28-21 (GRID CELL BB14)

### Operational History and Site Characterization

Remedial area 28-21 is located in the southwest corner of IR-28 near Building 230. Building 230 was formerly used as a machine and automotive paint shop. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for mixed use, and desires that the area be cleaned up to residential reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

Remedial area 28-21 is a 20- by 20-foot area around boring PA28B021, and is located in grid cell BB14. An industrial

Remedial Area 28-21 Residential Scenario Risk Driver			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Arsenic	20 at 1.75 feet	$8 \times 10^{-6}$	< 1

reuse risk assessment was not conducted for this area; as a result, the residential reuse risk assessment results were used in the evaluation of this area. Under a residential reuse scenario, grid cell BB14 has an estimated residential ELCR of  $9 \times 10^{-6}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because this ELCR exceeds  $1 \times 10^{-6}$ , further evaluation was conducted.

Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BB14. The chemical driving risk, arsenic, was detected at a concentration above the screening criterion in boring PA28B021. This chemical is bounded vertically. The chemical driving risk in soil at remedial area 28-21 was not detected in groundwater at the site.

### Risk Management Factors

Arsenic was detected at a depth of 1.75 feet bgs in boring PA28B021 at a concentration of 20 mg/kg, which is consistent with the Hunters Point ambient concentration (11.1 mg/kg).

### Groundwater Issues

At remedial area 28-21, groundwater is at approximately 7 feet bgs. Groundwater underlying remedial area 28-21 is not part of groundwater remedial units identified in Parcel C.

**Other Information**

Petroleum hydrocarbons were not detected at concentrations exceeding the screening criteria in soil at remedial area 28-21. No removal actions were conducted in this area.

**Conclusion:**

A conclusion was not reached for this area, and the following recommendations were made:

- ✓ EPA and the Navy recommended no CERCLA remedial action be performed for remedial area 28-21.
- ✓ DTSC and the City recommend additional characterization of the site.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BB14	RA 28-21

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BB14 ELCR = $9 \times 10^{-6}$ ; therefore, further evaluation was necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. The driver chemical, arsenic, was detected above screening criteria in boring PA28B021, and is bounded vertically.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. The driver chemical was not detected in the groundwater underlying this area.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Arsenic was detected at a depth of 1.75 feet bgs at a concentration of 20.0 mg/kg in boring PA28B021, which is consistent with ambient concentrations (HPAL of 11.1 mg/kg).
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	Yes. The arsenic concentration is consistent with the ambient concentration.
Are the driver chemicals PAHs, beryllium, or PCBs?	No.
Are the PAHs (if any) the result of asphalt or charcoal?	N/A
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	Arsenic is the only chemical driving risk.
Based on the above information, is further evaluation required?	No. Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	No.

**OTHER INFORMATION**

Has TPH been Detected over a Screening Criterion?	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	X(See notes below)
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

EPA and the Navy recommended no CERCLA remedial action be performed for remedial area 28-21. DTSC and the City recommend additional characterization of the site.

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## SITE IR-28: DE MINIMUS AREA 8334 (GRID CELL AX12)

### Operational History and Site Characterization

De minimus area 8334 is located just west of Building 258. Building 258 was a pipe manufacturing facility, which used acids, bases and solvents in its operations. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for research and development, and desires that the area be cleaned up to residential reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

De minimus area 8334 is located in grid cell AX12. Under an industrial reuse scenario, grid cell AX12 has an estimated ELCR of  $6 \times 10^{-6}$  and an HI of less than 1, and it has no lead

De Minimus Area 8334 Industrial Scenario Risk Drivers			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Aroclor-1260	0.2 at 4.75 feet	$1 \times 10^{-6}$	< 1
Arsenic	11.0 at 9.75 feet	$5 \times 10^{-6}$	< 1

concentrations above 1,000 mg/kg. Because the ELCR for grid cell AX12 is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell AX12. Chemicals driving risk (Aroclor-1260 and arsenic) were detected above screening criteria in boring IR28B183, and are bounded vertically. Chemicals driving risk were not detected in the groundwater at the site.

### Risk Management Factors

Aroclor-1260 was detected at a depth of 4.75 feet bgs at a concentration of 0.2 mg/kg, which did not exceed the 1998 EPA PRG (1.3 mg/kg). Arsenic was detected at a depth of 9.75 feet bgs at a concentration of 11.0 mg/kg, which is consistent with the ambient concentration at Hunters Point (11.1 mg/kg). Arsenic was detected at a depth greater than 5 feet bgs and is therefore not within the Navy's planned area of remediation.

### Groundwater Issues

At de minimus area 8334, groundwater is located depths ranging between 6 and 8 feet bgs. Groundwater underlying this area is not part of the groundwater remediation units identified in

Parcel C. Based on physical and chemical properties, the chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination.

**Other Information**

No removal actions, UST removals or closures, or exploratory excavations occurred in this area.

**Conclusion:**

✓ The BCT and the City concluded that no CERCLA response action is necessary for de minimus area 8334.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	AX12	DM 8334

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell AX12 ELCR = $6 \times 10^{-6}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cells.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. The driver chemicals (arsenic and Aroclor-1260) were detected in boring IR28B183 and are bounded vertically.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Arsenic was detected at a depth of 9.75 feet bgs at a concentration of 11.0 mg/kg, which is consistent with the ambient concentration.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the "driver chemicals" be considered the results of fill material or variability in ambient levels? Explain.	Yes. The concentration of arsenic was consistent with the ambient concentration.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. Aroclor-1260.
Are the PAHs (if any) the result of asphalt or charcoal?	N/A
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA's level of concern)?	Yes.
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC's level of concern)?	Yes.
Are there other "driver chemicals" besides PAHs, beryllium, or PCBs?	Yes. Arsenic.
Based on the above information, is further evaluation required?	No further evaluation is required.

**PROTECTIVENESS**

Do the physical and chemical properties of the "driver chemicals" indicate a potential to contaminate groundwater?	No. Based on physical and chemical properties, the chemicals driving risk in soils are relatively immobile and are not considered a source of groundwater contamination.
Do site-specific conditions mitigate the exposure or risk associated with the "driver chemicals"?	No.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City agreed that no CERCLA response action is necessary for de minimus area 8334.

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## SITE IR-28: DE MINIMUS AREA 9336 (GRID CELL BA13)

### Operational History and Site Characterization

De minimus area 9336 is located at the southeastern corner of Building 272. Building 272 was used for shipping rigging and metal casting. Solvents were used in the building to clean chain hoists. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for research and development, and desires that the area be cleaned up to residential reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

De minimus area 9336 is a 20- by 30-foot area located in grid cell BA13; this de minimus area is larger than 8 by 8 feet because it encompasses two

De Minimus Area 9336 Residential Scenario Risk Driver			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Arsenic	17.7 at 5.75 feet	$7 \times 10^{-6}$	< 1

adjacent sampling locations (IR28B210 and IR28MW312F). An industrial reuse risk assessment was not conducted for this area; as a result, the residential reuse risk assessment results were used in the evaluation of this area. Under a residential reuse scenario, grid cell BA13 has an estimated residential ELCR of  $7 \times 10^{-6}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR for grid cell BA13 is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and determined not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BA13. The chemical driving risk, arsenic, was detected in boring IR28B210 at a depth of 5.75 feet bgs and in boring IR28MW312F at a depth of 0.75 foot bgs. These concentrations are bounded vertically. Arsenic was detected in groundwater at the site, but at a concentration below the HGAL.

### Risk Management Factors

Arsenic was detected in borings IR28B210 and IR28MW312F at concentrations of 17.7 and 15.8 mg/kg, respectively; these concentrations are consistent with the Hunters Point ambient concentration for arsenic (11.1 mg/kg). Arsenic in boring IR28B210 was detected at a depth exceeding 5 feet bgs and is therefore not within the Navy's planned remediation area.

**Groundwater Issues**

At de minimus area 9336, groundwater is located approximately between 7 and 8 feet bgs. Based on physical and chemical properties, chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination. Groundwater underlying de minimus area 9336 is not part of the groundwater remedial units identified in Parcel C.

**Other Information**

No removal actions, UST removals or closures, or exploratory excavations occurred in this area.

**Conclusion:**

- ✓ The BCT and the City concluded that no CERCLA remedial action is required at de minimus area 9336.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BA13	DM 9336

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BA13 ELCR = $7 \times 10^{-6}$ ; therefore, further evaluation was necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. The driver chemical, arsenic, was detected above screening criteria in boring IR28B210 and monitoring well IR28MW312F, and is bounded vertically.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	Yes. Arsenic was detected in groundwater, but at a concentration consistent with the ambient concentration (27.34 µg/L).
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Arsenic was detected at a depth of 5.75 feet bgs at a concentration of 17.7 mg/kg in boring IR28B210 and at a depth of 0.75 foot bgs at a concentration of 15.8 mg/kg in monitoring well IR28MW312F. These concentrations are consistent with the ambient concentration (HPAL of 11.1 mg/kg).
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	Yes. Arsenic concentrations are consistent with ambient concentrations.
Are the driver chemicals PAHs, beryllium, or PCBs?	No.
Are the PAHs (if any) the result of asphalt or charcoal?	N/A
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	Yes. Arsenic.
Based on the above information, is further evaluation required?	No. Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	No.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City agreed that no CERCLA remedial action is required at de minimus area 9336. Manganese was identified under a residential scenario. Concentrations of manganese were detected in boring IR28B210 and monitoring well IR28MW312F and may be related to the presence of chert.

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## SITE IR-28: DE MINIMUS AREA 9420 (GRID CELL BA08)

### Operational History and Site Characterization

De minimus area 9420 is located in the western portion of Building 231. Building 231 was used for industrial machining operations. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for educational and cultural reuse, and desires that the area be cleaned up to industrial reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

De minimus area 9420 is an 8-foot by 8-foot area located in grid cell BA08. An industrial reuse risk assessment was not

De Minimus Area 9420 Residential Scenario Risk Driver			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Benzo(a)pyrene	0.2 at 6.25 feet	$2 \times 10^{-6}$	< 1

conducted for this area; as a result, the residential reuse risk assessment results were used in the evaluation of this area. Under a residential reuse scenario, grid cell BA08 has an estimated ELCR of  $2 \times 10^{-6}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BA08. The chemical driving risk, benzo(a)pyrene, was detected at a depth of 6.25 feet bgs in boring IR28B096, and is bounded spatially. Surrounding sampling locations include IR28B097A and IR28B109. The chemical driving risk was not detected in groundwater underlying de minimus area 9420.

### Risk Management Factors

Benzo(a)pyrene was detected at a depth of 6.25 feet bgs at a concentration of 0.2 mg/kg, which does not exceed the 1998 EPA PRG (0.36 mg/kg). Benzo(a)pyrene was detected in soil beneath the concrete floor of Building 231, which would mitigate exposure to the chemical. In addition, the depth at which benzo(a)pyrene was detected exceeds 5 feet bgs and is therefore not within the Navy's planned remediation area.

### **Groundwater Issues**

At de minimus area 9420, groundwater is located at approximately 7 feet bgs. Groundwater underlying de minimus area 9420 is not part of the groundwater remedial units identified in Parcel C. Based on physical and chemical properties, the chemical driving risk in soil is relatively immobile and is not considered a source of groundwater contamination.

### **Other Information**

Petroleum hydrocarbons were not detected in soil at de minimus area 9420. No removal actions, UST removals or closures, or exploratory excavations occurred in this area.

#### **Conclusion:**

Conclusions were not reached for this area, and the following recommendations were made:

- ✓ EPA and the Navy recommended that no CERCLA remedial action be conducted at de minimus area 9420.
- ✓ DTSC and the City recommended that additional characterization data be collected at de minimus area 9420.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BA08	DM 9420

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BA08 residential ELCR = $2 \times 10^{-6}$ ; therefore, further evaluation was necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. The driver chemical, benzo(a)pyrene, was detected above screening criteria in boring IR28B096, and is bounded spatially. Surrounding borings include IR28B097A and IR28B109.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. The driver chemical was not detected in the groundwater underlying this area.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	No.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. Benzo(a)pyrene, a PAH, is a driver chemical; however, it was not detected at a concentration exceeding the 1998 PRG.
Are the PAHs (if any) the result of asphalt or charcoal?	No.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	No.
Based on the above information, is further evaluation required?	No. Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	Yes. The driver chemical was detected in soil beneath the concrete floor of Building 231, which would mitigate exposure to the chemical.

**OTHER INFORMATION**

Has TPH been Detected over a Screening Criterion?	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

EPA and the Navy have concluded that no CERCLA remedial action is required at de minimus area 9420, based on PAH concentrations not exceeding 1998 industrial PRGs.

DTSC and the City recommend additional characterization data at de minimus area 9420.

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## SITE IR-28: DE MINIMUS AREA 9434 (GRID CELL BA12)

### Operational History and Site Characterization

De minimus area 9434 is located in the southwestern corner of Building 270. Operations conducted in building 270 include painting, paint stripping, and steam cleaning. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for research and development, and desires that the area be cleaned up to residential reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

De minimus area 9434 is located in grid cell BA12. An industrial reuse risk assessment was not conducted for this area; as a result, the residential

De Minimus Area 9434 Residential Scenario Risk Drivers			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Arsenic	15.3 at 7.25 feet	$6 \times 10^{-6}$	< 1

reuse risk assessment results were used in the evaluation of this area. Under a residential reuse scenario, grid cell BA12 has an estimated ELCR of  $7 \times 10^{-6}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR for grid cell BA12 is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BA12. The chemical driving risk (arsenic) was detected at a concentration above the screening criterion in boring IR28B198, and is spatially bounded. Surrounding borings include IR28B194, IR28B197, and IR28B199. Arsenic was not detected in groundwater underlying de minimus area 9434.

### Risk Management Factors

Arsenic was detected at a depth of 7.25 feet at a concentration of 15.3 mg/kg, which is consistent with the ambient concentration at Hunters Point (11.1 mg/kg). In addition, the depth at which arsenic was detected is greater than 5 feet bgs and is therefore not within the Navy's planned area of remediation.

### Groundwater Issues

At de minimus area 9434, groundwater is located at approximately 7 to 8 feet bgs. Groundwater underlying this area is not part of the groundwater remediation units identified in Parcel C. Based on

physical and chemical properties, the chemical driving risk in soil is relatively immobile and is not considered a source of groundwater contamination.

**Other Information**

No removal actions, UST removals or closures, or exploratory excavations occurred in this area.

**Conclusion:**

- ✓ The BCT and the City concluded that no CERCLA response action is necessary for de minimus area 9434.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BA12	DM 9434

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BC11 residential ELCR = $7 \times 10^{-6}$ ; therefore, further evaluation is necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cells.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. The driver chemical - arsenic - was detected in boring IR28B198, which is bounded by IR28B194, IR28B197, and IR28B199.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. Arsenic was not detected in groundwater at the site.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No. The concentration of arsenic detected at 7.25 feet bgs is consistent with the ambient concentration (11.1 mg/kg).
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Arsenic was detected at depth of 7.25 feet bgs at a concentration of 15.3 mg/kg, which is consistent with the ambient concentration.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	Yes. The concentration of arsenic detected is consistent with the ambient concentration.
Are the driver chemicals PAHs, beryllium, or PCBs?	No.
Are the PAHs (if any) the result of asphalt or charcoal?	N/A
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	Yes. Arsenic is the only driver chemical.
Based on the above information, is further evaluation required?	No further evaluation is required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No. Based on physical and chemical properties, the chemicals driving risk in soils are relatively immobile and are not considered a source of groundwater contamination.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	Yes. Arsenic was detected beneath a concrete building floor that would mitigate the risk of exposure to the chemical.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City agreed that no CERCLA response action is necessary for de minimus area 9434.

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## SITE IR-28: DE MINIMUS AREA 9532 (GRID CELL BB12)

### Operational History and Site Characterization

De minimus area 9532 is located near the southwestern corner of Building 270. Operations conducted in Building 270 include painting, paint stripping, and steam cleaning. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for research and development, and desires that the area be cleaned up to residential reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

De minimus area 9532 is located in grid cell BB12. An industrial reuse risk assessment was not conducted for this area; as a result, the residential reuse risk assessment results were used in the evaluation of this area. Under a

De Minimus Area 9532 Residential Scenario Risk Drivers			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Benzo(a)pyrene	0.4 at 8.75 feet	$3 \times 10^{-6}$	< 1
Arsenic	11.2 at 8.75 feet	$2 \times 10^{-6}$	< 1
Aroclor-1260	0.2 at 3.75 feet	$8 \times 10^{-7}$	< 1

residential reuse scenario, grid cell BB12 has an estimated ELCR of  $9 \times 10^{-6}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR for grid cell BB12 is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BB12. The chemicals driving risk (benzo[a]pyrene, arsenic, and Aroclor-1260) were detected at concentrations above the screening criteria in boring IR28B243, and are spatially bounded. Surrounding sampling locations include IR28B244, IR28B245, IR28B247, IR28B194, and IR28B246. Chemicals driving risk were not detected in groundwater underlying de minimus area 9532.

### Risk Management Factors

Aroclor-1260 was detected at a depth of 3.75 feet bgs in IR28B243 at a concentration of 0.2 mg/kg, which is below the 1998 EPA PRG (1.3 mg/kg); furthermore, soil at this location was excavated to a depth of 7 feet bgs during the exploratory excavation removal action at EE-09, and as a result, this chemical was removed. Arsenic was detected at a depth of 8.75 feet bgs at a concentration of 11.2 mg/kg, which is consistent with the ambient concentration at Hunters Point (11.1 mg/kg). Benzo(a)pyrene was detected at a depth of 8.75 feet bgs at a concentration of 0.4 mg/kg, which is

slightly above the 1998 EPA PRG (0.36 mg/kg). These contaminants were not removed as part of the exploratory excavation at EE-09; however, the depth at which arsenic and benzo(a)pyrene were detected is greater than 5 feet bgs and is therefore not within the Navy's planned area of remediation.

### **Groundwater Issues**

At de minimus area 9532, groundwater is located at approximately 7 to 8 feet bgs. Groundwater underlying this area is not part of the groundwater remediation units identified in Parcel C. Based on physical and chemical properties, the chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination.

### **Other Information**

TPH-motor oil was detected at a maximum concentration of 19,000 mg/kg, and TRPH was detected at a maximum concentration of 1,590 mg/kg at de minimus area 9532. Exploratory excavation EE-09 was conducted in this area; soil to a depth of 7 feet bgs was excavated and confirmation samples collected from the excavation bottom and sidewalls did not contain hazardous substances at concentrations exceeding the screening criteria.

### **Conclusion:**

- ✓ The BCT and the City concluded that no CERCLA remedial action is necessary for de minimus area 9532.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BB12	DM 9532

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BB12 residential ELCR = $9 \times 10^{-6}$ ; therefore, further evaluation was necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. Chemicals driving risk (Aroclor-1260, arsenic, and benzo[a]pyrene) were detected above screening criteria in boring IR28B243, and are bounded spatially. Surrounding borings include IR28B244, IR28B245, IR28B247, IR28B194, and IR28B246.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. Driver chemicals were not detected in the groundwater underlying this remedial area do not exceed screening criteria.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes, for arsenic. Arsenic was detected at a depth of 8.75 feet bgs at a concentration of 11.2 mg/kg, which is consistent with the ambient concentration (HPAL = 11.1 mg/kg).
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the "driver chemicals" be considered the results of fill material or variability in ambient levels? Explain.	Yes for arsenic. Arsenic was detected at a depth of 8.75 feet bgs at a concentration of 11.2 mg/kg, and is consistent with the ambient concentration (HPAL = 11.1 mg/kg).
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. Benzo(a)pyrene, a PAH, and Aroclor-1260, a PCB, are driver chemicals.
Are the PAHs (if any) the result of asphalt or charcoal?	No.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA's level of concern)?	Yes.
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC's level of concern)?	Yes.
Are there other "driver chemicals" besides PAHs, beryllium, or PCBs?	Yes. Arsenic.
Based on the above information, is further evaluation required?	No.

**PROTECTIVENESS**

Do the physical and chemical properties of the "driver chemicals" indicate a potential to contaminate groundwater?	No.
Do site-specific conditions mitigate the exposure or risk associated with the "driver chemicals"?	No.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	19,000 ppm
• TRPH > 1,000 ppm?	1,590 ppm
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	Yes. Exploratory excavation EE-09 was performed around boring IR28B243.
– Does this correspond with the distribution of the chemicals?	Yes. Confirmation samples were collected from seven sidewalls and one bottom location. Concentrations of chemicals driving risk do not exceed screening criteria in the confirmation samples.
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City concluded that no CERCLA remedial action is required at de minimus area 9532.

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## SITE IR-23: DE MINIMUS AREA 9618 (GRID CELL BB07)

### Operational History and Site Characterization

De minimus area 9618 is located in the western portion of Building 231. Building 231 was used for industrial machining operations. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for educational and cultural reuse, and desires that the area be cleaned up to industrial reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

De minimus area 9618 is an 8-by 8-foot area located in grid cell BB07. An industrial reuse risk assessment was not conducted for this area; as a result, the residential reuse risk

Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Benzo(a)pyrene	0.1 at 6.75 feet	$8 \times 10^{-7}$	< 1
Benzo(b)fluoranthene	0.2 at 6.75 feet	$1 \times 10^{-7}$	< 1
Benzo(a)anthracene	0.1 at 6.75 feet	$1 \times 10^{-7}$	< 1

assessment results were used in the evaluation of this area. Under a residential reuse scenario, grid cell BB07 has an estimated ELCR of  $1 \times 10^{-6}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR is equal to  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BB07. Chemicals driving risk (benzo[a]pyrene, benzo[b]fluoranthene, and benzo[a]anthracene) were detected in boring PA28MW51A, and are bounded spatially. Surrounding borings and monitoring wells include IR28B113, IR28B128A, and IR28B097A. Chemicals driving risk were not detected in groundwater underlying de minimus area 9618.

### Risk Management Factors

Benzo(a)pyrene, benzo(b)fluoranthene, and benzo(a)anthracene were detected at concentrations of 0.1, 0.2, and 0.1 mg/kg, respectively, at a depth of 6.75 feet bgs in boring PA28MW51A. These concentrations of benzo(a)pyrene, benzo(b)fluoranthene, and benzo(a)anthracene did not exceed the 1998 EPA PRGs (0.36, 3.6, and 3.6 mg/kg, respectively). The chemicals driving risk were detected in soil beneath the concrete floor of Building 231, which would mitigate exposure to these chemicals. In

addition, the depth at which these chemicals were detected exceeds 5 feet bgs and is therefore not within the Navy's planned remediation area.

### **Groundwater Issues**

At de minimus area 9618, groundwater is located at approximately 7 feet bgs. Groundwater underlying de minimus area 9618 is not part of the groundwater remedial units identified in Parcel C. Based on physical and chemical properties, chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination.

### **Other Information**

Petroleum hydrocarbons were not detected in soil at de minimus area 9618. No removal actions, UST removals or closures, or exploratory excavations occurred in this area.

### **Conclusion:**

- ✓ The BCT and the City concluded that no CERCLA remedial action is necessary for de minimus area 9618.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BB07	DM 9618

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BB07 residential ELCR = $1 \times 10^{-6}$ ; therefore, further evaluation was conducted.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. The driver chemicals (benzo[a]pyrene, benzo[b]fluoranthene, and benzo[a]anthracene) were detected above screening criteria in boring PA28MW51A, and are bounded spatially. Surrounding borings include IR28B113, IR28B128A, and IR28B097A.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. Driver chemicals were not detected in the groundwater underlying this area.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	No.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. However, concentrations of PAHs detected were less than the 1998 PRGs.
Are the PAHs (if any) the result of asphalt or charcoal?	No.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	No.
Based on the above information, is further evaluation required?	No. Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	Yes. The driver chemicals were detected in soil beneath the concrete floor of Building 231, which would mitigate exposure to the chemicals.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City concluded that no CERCLA remedial action is required at de minimus area 9618.

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## SITE IR-28: DE MINIMUS AREA 9621 (GRID CELL BB08)

### Operational History and Site Characterization

De minimus area 9621 is located near the southwestern corner of Building 231. Operations conducted in Building 231 included machining and fabrication. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for cultural and institutional reuse, and desires that the area be cleaned up to industrial reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

De minimus area 9621 is located in grid cell BB08. An industrial reuse risk assessment was not conducted for this area; as a result, the residential

De Minimus Area 9621 Residential Scenario Risk Driver			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Benzo(a)pyrene	0.2 at 1.75 feet	$2 \times 10^{-6}$	< 1

reuse risk assessment results were used in the evaluation of this area. Under a residential reuse scenario, grid cell BB08 has an estimated ELCR of  $3 \times 10^{-6}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR for grid cell BB08 is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BB08. The chemical driving risk, benzo(a)pyrene, was detected at a concentration above the screening criterion in boring IR28B111, and is spatially bounded. Surrounding sampling locations include IR28B185, IR28B119, and IR28B110. The chemical driving risk was not detected in groundwater underlying de minimus area 9621.

### Risk Management Factors

Benzo(a)pyrene was detected at a depth of 1.75 feet bgs at a concentration of 0.2 mg/kg, which is below the 1998 EPA PRG (0.36 mg/kg). Benzo(a)pyrene detected in this location is considered an artifact of the overlying asphalt surface.

### Groundwater Issues

At de minimus area 9621, groundwater is located at approximately 7 to 8 feet bgs. Groundwater underlying this area is not part of the groundwater remediation units identified in Parcel C. Based on

physical and chemical properties, the chemical driving risk in soil is relatively immobile and is not considered a source of groundwater contamination.

#### **Other Information**

Petroleum hydrocarbons were not detected at de minimus area 9621. No removal actions were conducted at the site.

#### **Conclusion:**

✓ The BCT and the City concluded that no CERCLA remedial action is necessary for de minimus area 9621.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BB08	DM 9621

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BB08 residential ELCR = $3 \times 10^{-6}$ ; therefore, further evaluation was necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. The chemical driving risk, benzo(a)pyrene, was detected above screening criteria in boring IR28B111, and is bounded spatially. Surrounding borings include IR28B185, IR28B119 and IR28B110.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. The chemical driving risk was not detected in the groundwater.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes. Benzo(a)pyrene, detected at a concentration of 0.2 mg/kg at 1.75 feet bgs, is considered an artifact of the overlying asphalt.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the "driver chemicals" be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. Benzo(a)pyrene, a PAH, is a chemical driving risk.
Are the PAHs (if any) the result of asphalt or charcoal?	Yes. Benzo(a)pyrene, detected at a concentration of 0.2 mg/kg at 1.75 feet bgs, is considered an artifact of the overlying asphalt.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA's level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC's level of concern)?	N/A
Are there other "driver chemicals" besides PAHs, beryllium, or PCBs?	No.
Based on the above information, is further evaluation required?	No. Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the "driver chemicals" indicate a potential to contaminate groundwater?	No.
Do site-specific conditions mitigate the exposure or risk associated with the "driver chemicals"?	No.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	No.
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	Yes.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City concluded that no CERCLA remedial action is required at de minimus area 9621.

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## SITE IR-28: DE MINIMUS AREA 9721 (GRID CELL BB08)

### Operational History and Site Characterization

De minimus area 9721 is located near the southwestern corner of Building 231. Operations conducted in Building 231 included machining and fabrication. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for cultural and institutional reuse, and desires that the area be cleaned up to industrial reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

De minimus area 9721 is located in grid cell BB08. An industrial reuse risk assessment was not conducted for this area; as a result, the residential

De Minimus Area 9721 Residential Scenario Risk Driver			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Benzo(a)pyrene	0.1 at 1.75 feet	$2 \times 10^{-6}$	< 1

reuse risk assessment results were used in the evaluation of this area. Under a residential reuse scenario, grid cell BB08 has an estimated ELCR of  $3 \times 10^{-6}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR for grid cell BB08 is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BB08. The chemical driving risk, benzo(a)pyrene, was detected at a concentration above the screening criterion in boring IR28B120, and is spatially bounded. Surrounding sampling locations include IR28B112, IR28B147, IR28B148, IR28B159, and IR28B119. The chemical driving risk was not detected in groundwater underlying de minimus area 9721.

### Risk Management Factors

Benzo(a)pyrene was detected at a depth of 1.75 feet bgs at a concentration of 0.1 mg/kg, which is below the 1998 EPA PRG (0.36 mg/kg). Benzo(a)pyrene detected in this location is considered an artifact of the overlying asphalt surface.

### Groundwater Issues

At de minimus area 9721, groundwater is located at approximately 7 to 8 feet bgs. Groundwater underlying this area is not part of the groundwater remediation units identified in Parcel C. Based on

physical and chemical properties, the chemical driving risk in soil is relatively immobile and is not considered a source of groundwater contamination.

**Other Information**

Petroleum hydrocarbons were not detected at de minimus area 9721. No removal actions were conducted at the site.

**Conclusion:**

✓ The BCT and the City concluded that no CERCLA remedial action is necessary for de minimus area 9721.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BB08	DM 9721

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BB08 residential ELCR = $3 \times 10^{-6}$ ; therefore, further evaluation was necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. The driver chemical, benzo(a)pyrene, was detected above screening criteria in boring IR28B120, and is bounded spatially. Surrounding borings include IR28B112, IR28B147, IR28B148, IR28B159, and IR28B119.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. The driver chemical was not detected in the groundwater.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes. Benzo(a)pyrene, detected at a concentration of 0.1 mg/kg at 1.75 feet bgs, is considered an artifact of the overlying asphalt.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

### FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA

Can the "driver chemicals" be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. Benzo(a)pyrene, a PAH, is a chemical driving risk.
Are the PAHs (if any) the result of asphalt or charcoal?	Yes. Benzo(a)pyrene, detected at a concentration of 0.1 mg/kg at 1.75 feet bgs, is considered an artifact of the overlying asphalt.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA's level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC's level of concern)?	N/A
Are there other "driver chemicals" besides PAHs, beryllium, or PCBs?	No.
Based on the above information, is further evaluation required?	No. Further evaluation is not required.

### PROTECTIVENESS

Do the physical and chemical properties of the "driver chemicals" indicate a potential to contaminate groundwater?	No.
Do site-specific conditions mitigate the exposure or risk associated with the "driver chemicals"?	No.

### OTHER INFORMATION

Has TPH been Detected over a Screening Criterion?	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	Yes.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City concluded that no CERCLA remedial action is required at de minimus area 9721.

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## SITE IR-28: DE MINIMUS AREA 9819 (GRID CELL BC07)

### Operational History and Site Characterization

De minimus area 9819 is located near the northwest corner of Building 211. Operations conducted in Building 211 included machining, welding, and painting. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for cultural and institutional reuse, and desires that the area be cleaned up to industrial reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

De minimus area 9819 is located in grid cell BC07. An industrial reuse risk assessment was not conducted for this area; as a

De Minimus Area 9819 Residential Scenario Risk Driver			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Benzo(a)pyrene	0.2 at 6.75 feet	$2 \times 10^{-6}$	< 1

result, the residential reuse risk assessment results were used in the evaluation of this area. Under a residential reuse scenario, grid cell BC07 has an estimated ELCR of  $4 \times 10^{-6}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR for grid cell BC07 is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BC07. The chemical driving risk, benzo(a)pyrene, was detected at a concentration above the screening criterion at depths of 1.75 and 6.75 feet bgs in boring IR28B121, and is spatially bounded. Surrounding sampling locations include IR28B113, IR28B145, IR28B254, IR28B146, and IR28B112. The chemical driving risk was not detected in groundwater underlying de minimus area 9819.

### Risk Management Factors

Benzo(a)pyrene was detected depths of 1.75 and 6.75 feet bgs at concentrations of 0.1 and 0.2 mg/kg, respectively, which are below the 1998 EPA PRG (0.36 mg/kg). Benzo(a)pyrene detected at 1.75 feet bgs is considered an artifact of the overlying asphalt surface. The benzo(a)pyrene detection at 6.75 feet bgs is below the Navy's planned depth of remediation of 5 feet bgs.

### **Groundwater Issues**

At de minimus area 9819, groundwater is located at approximately 7 to 8 feet bgs. Groundwater underlying this area is not part of the groundwater remediation units identified in Parcel C. Based on physical and chemical properties, the chemical driving risk in soil is relatively immobile and is not considered a source of groundwater contamination.

### **Other Information**

Petroleum hydrocarbons were not detected at de minimus area 9819. No removal actions were conducted at the site.

### **Conclusion:**

- ✓ The BCT and the City concluded that no CERCLA remedial action is necessary for de minimus area 9819.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BC07	DM 9819

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BC07 residential ELCR = $4 \times 10^{-6}$ ; therefore, further evaluation was necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. The driver chemical, benzo(a)pyrene, was detected above screening criteria in boring IR28B121, and is bounded spatially. Surrounding borings include IR28B113, IR28B145, IR28B254, IR28B146, and IR28B112.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. The driver chemical was not detected in the groundwater underlying this area.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Benzo(a)pyrene detected at a depth of 1.75 feet at a concentration of 0.1 mg/kg is considered an artifact of overlying asphalt.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. Benzo(a)pyrene, a PAH, is a chemical driving risk.
Are the PAHs (if any) the result of asphalt or charcoal?	Yes. Benzo(a)pyrene detected at a depth of 1.75 feet at a concentration of 0.1 mg/kg is considered an artifact of overlying asphalt.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	No.
Based on the above information, is further evaluation required?	Yes. Further evaluation is required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	No.

**OTHER INFORMATION**

Has TPH been Detected over a Screening Criterion?	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	No.
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City concluded that no CERCLA remedial action is required at de minimus area 9819.

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## SITE IR-28: DE MINIMUS AREA 9824 (GRID CELL BC09)

### Operational History and Site Characterization

De minimus area 9824 is located in the western portion of Building 253. Operations conducted in Building 253 included machining, welding, and painting. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for cultural and institutional reuse, and desires that the area be cleaned up to industrial reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

De minimus area 9824 is located in grid cell BC09. An industrial reuse risk assessment was not conducted for this area; as a

De Minimus Area 9824 Residential Scenario Risk Driver			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Benzo(a)pyrene	0.36 at 7.25 feet	$3 \times 10^{-6}$	< 1

result, the residential reuse risk assessment results were used in the evaluation of this area. Under a residential reuse scenario, grid cell BC09 has an estimated ELCR of  $4 \times 10^{-6}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR for grid cell BC09 is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BC09. The chemical driving risk, benzo(a)pyrene, was detected at a concentration above the screening criterion at a depth of 7.25 feet bgs in boring PA28B079, and is spatially bounded. Surrounding sampling locations include IR28B164, IR28B141, and IR28B167. The chemical driving risk was not detected in groundwater underlying de minimus area 9824.

### Risk Management Factors

Benzo(a)pyrene was detected at a depth of 7.25 feet bgs at a concentration of 0.36 mg/kg, which does not exceed the 1998 EPA PRG (0.36 mg/kg). Benzo(a)pyrene was detected beneath the concrete floor of Building 253, which would mitigate exposure to the chemical. In addition, the depth at which this chemical was detected exceeds 5 feet bgs and is therefore not within the Navy's planned remediation area.

### **Groundwater Issues**

At de minimus area 9824, groundwater is located at approximately 7 to 8 feet bgs. Groundwater underlying this area is not part of the groundwater remediation units identified in Parcel C. Based on physical and chemical properties, the chemical driving risk in soil is relatively immobile and is not considered a source of groundwater contamination.

### **Other Information**

Petroleum hydrocarbons were not detected in soil at de minimus area 9921. No removal actions were conducted at the site.

### **Conclusion:**

- ✓ The BCT and the City concluded that no CERCLA remedial action is necessary for de minimus area 9824.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BC09	DM 9824

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BC09 residential ELCR = $4 \times 10^{-6}$ ; therefore, further evaluation was necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. The driver chemical, benzo(a)pyrene, was detected above screening criteria in boring PA28B079, and is bounded spatially. Surrounding borings include IR28B164, IR28B141, and IR28B167.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	Yes. Benzo(a)pyrene was detected in the groundwater underlying this area.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	Yes. Benzo(a)pyrene was detected at a depth of 7.25 feet bgs at a concentration of 0.36 mg/kg, and may be related to industrial operations in Building 253.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	N/A
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. Benzo(a)pyrene, a PAH, is a driver chemical; however, it was not detected at a concentration exceeding the 1998 PRG.
Are the PAHs (if any) the result of asphalt or charcoal?	No.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	No.
Based on the above information, is further evaluation required?	No. Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	Yes. The chemical driving risk was detected beneath a concrete building floor that would mitigate exposure to the chemicals.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City concluded that no CERCLA remedial action is required at de minimus area 9824.

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## SITE IR-28: DE MINIMUS AREA 9919 (GRID CELL BC07)

### Operational History and Site Characterization

De minimus area 9919 is located in the northwest corner of Building 211. Operations conducted in Building 211 included machining, welding, and painting. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for cultural and institutional reuse, and desires that the area be cleaned up to industrial reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

De minimus area 9919 is located in grid cell BC07. An industrial reuse risk assessment was not conducted for this area; as a

De Minimus Area 9919 Residential Scenario Risk Driver			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Aroclor-1260	0.1 at 0.75 foot	$6 \times 10^{-7}$	< 1

result, the residential reuse risk assessment results were used in the evaluation of this area. Under a residential reuse scenario, grid cell BC07 has an estimated ELCR of  $4 \times 10^{-6}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR for grid cell BC07 is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BC07. The chemical driving risk, Aroclor-1260, was detected at a concentration above the screening criterion at a depth of 0.75 feet bgs in boring IR28B086, and is spatially bounded. Surrounding sampling locations include PA28B077, IR28B145, and IR28MW173B. The chemical driving risk was not detected in groundwater underlying de minimus area 9919.

### Risk Management Factors

Aroclor-1260 was detected at a depth of 0.75 foot bgs at a concentration of 0.1 mg/kg, which is below the 1998 EPA PRG (1.3 mg/kg). Aroclor-1260 was detected beneath the concrete floor of Building 211, which would mitigate exposure to the chemical.

### Groundwater Issues

At de minimus area 9919, groundwater is located at approximately 7 to 8 feet bgs. Groundwater underlying this area is not part of the groundwater remediation units identified in Parcel C. Based on

physical and chemical properties, the chemical driving risk in soil is relatively immobile and is not considered a source of groundwater contamination.

#### **Other Information**

TPH-motor oil was detected at a maximum concentration of 1,300 mg/kg, and TRPH was detected at a maximum concentration of 2,270 mg/kg in soil at de minimus area 9919. No removal actions were conducted at the site.

#### **Conclusion:**

- ✓ The BCT and the City concluded that no CERCLA remedial action is necessary for de minimus area 9919.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BC07	DM 9919

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BC07 residential ELCR = $4 \times 10^{-6}$ ; therefore, further evaluation was necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. The driver chemical, Aroclor-1260, was detected above screening criteria in boring IR28B086, and is bounded spatially. Surrounding borings include IR28B145, IR28MW173B, and PA28B077.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No. The driver chemical was not detected in the groundwater underlying this area.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	Yes. Aroclor-1260 was detected at a depth of 0.75 foot bgs at a concentration of 0.1 mg/kg, and may be related to industrial operations in Building 211.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	N/A
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. Aroclor-1260, a PCB, is a driver chemical.
Are the PAHs (if any) the result of asphalt or charcoal?	N/A
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	Yes.
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	Yes.
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	No.
Based on the above information, is further evaluation required?	No. Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	Yes. The driver chemical was detected beneath a concrete building floor that would mitigate exposure to the chemicals.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	1,300 ppm
• TRPH > 1,000 ppm?	2,270 ppm
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City concluded that no CERCLA remedial action is required at de minimus area 9919.

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## SITE IR-28: DE MINIMUS AREA 9921 (GRID CELL BC08)

### Operational History and Site Characterization

De minimus area 9921 is located in the northwestern corner of Building 253. Operations conducted in Building 253 included machining, welding, and painting. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for cultural and institutional reuse, and desires that the area be cleaned up to industrial reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

De minimus area 9921 is located in grid cell BC08. An industrial reuse risk assessment was not conducted for this area; as a

De Minimus Area 9921 Residential Scenario Risk Driver			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Aroclor-1260	0.3 at 4.75 feet	$1 \times 10^{-6}$	< 1

result, the residential reuse risk assessment results were used in the evaluation of this area. Under a residential reuse scenario, grid cell BC08 has an estimated ELCR of  $1 \times 10^{-6}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR for grid cell BC08 was equal to  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BC08. The chemical driving risk, Aroclor-1260, was detected at a concentration above the screening criterion at a depth of 4.75 feet bgs in boring IR28B084, and is spatially bounded. Surrounding sampling locations include PA28SS276, IR28MW151A, IR28B144, IR28B143, and IR28B085. The chemical driving risk was not detected in groundwater underlying de minimus area 9921.

### Risk Management Factors

Aroclor-1260 was detected at a depth of 4.75 feet bgs at a concentration of 0.3 mg/kg, which is below the 1998 EPA PRG (1.3 mg/kg). Aroclor-1260 was detected beneath the concrete floor of Building 253, which would mitigate exposure to the chemical.

### **Groundwater Issues**

At de minimus area 9921, groundwater is located at approximately 7 to 8 feet bgs. Groundwater underlying this area is not part of the groundwater remediation units identified in Parcel C. Based on physical and chemical properties, the chemical driving risk in soil is relatively immobile and is not considered a source of groundwater contamination.

### **Other Information**

TPH-diesel was detected at a maximum concentration of 4,400 mg/kg, TPH-motor oil was detected at a maximum concentration of 2,700 mg/kg, and TRPH was detected at a maximum concentration of 6,600 mg/kg in soil at de minimus area 9921. No removal actions were conducted at the site.

#### **Conclusion:**

- ✓ The BCT and the City concluded that no CERCLA remedial action is necessary for de minimus area 9921.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BC08	DM 9921

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	No. However, grid cell BC08 residential ELCR = $1 \times 10^{-6}$ ; therefore, further evaluation was conducted.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. Driver chemical, Aroclor-1260, was detected in boring IR28B084 and is spatially bounded. Surrounding locations include PA28SS76, IR28MW151A, IR28B144, IR28B143, and IR28B085.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	Yes. Aroclor-1260 concentrations detected at a depth of 4.75 feet bgs at a concentration of 0.3 mg/kg may be attributed to releases from sumps in Building 253.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	N/A
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. Aroclor-1260 is a PCB.
Are the PAHs (if any) the result of asphalt or charcoal?	N/A
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	Yes.
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	Yes.
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	No.
Based on the above information, is further evaluation required?	No. Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No. The potential to contaminate groundwater is low.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	Yes. The driver chemical was detected in soil beneath the concrete floor of Building 253, which would mitigate exposure to the chemical.

**OTHER INFORMATION**

Has TPH been Detected over a Screening Criterion?	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	4,400 ppm
• TPH-motor oil > 1,000 ppm?	2,700 ppm
• TRPH > 1,000 ppm?	6,600 ppm
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City agreed that no CERCLA remedial action is required for de minimus area 9921.

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## SITE IR-28: DE MINIMUS AREA 10112 (GRID CELL BD05)

### Operational History and Site Characterization

De minimus area 10112 is located in the eastern end of Building 231. Operations conducted in Building 231 included machining and fabrication. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that the area be zoned for open space, and desires that the area be cleaned up to industrial reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

De minimus area 10112 is an 8- by 8-foot area located in grid cell BD05. An industrial reuse risk assessment was not

De Minimus Area 10112 Residential Scenario Risk Driver			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Benzo(a)pyrene	0.1 at 6.25 feet	$1 \times 10^{-6}$	N/A

conducted for this area; as a result, the residential reuse risk assessment results were used in the evaluation of this area. Under a residential reuse scenario, grid cell BD05 has an estimated ELCR of  $2 \times 10^{-6}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because this ELCR exceeded  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BD05. The chemical driving risk, benzo(a)pyrene, was detected at a concentration above the screening criterion in monitoring well boring PA28MW50A, and is bounded spatially. Surrounding borings include IR28B266, PA28B020, IR28B115, and IR28B094. The chemical driving risk was not detected in groundwater at the site.

### Risk Management Factors

Benzo(a)pyrene was detected at a depth of 6.25 feet bgs in boring PA28MW50A at a concentration of 0.1 mg/kg, which does not exceed the 1998 EPA PRG (0.36 mg/kg). The depth at which this contaminant was detected is greater than 5 feet bgs and is therefore not within the Navy's planned remediation area.

### **Groundwater Issues**

At de minimus area 10112, groundwater is at approximately 7 feet bgs. Groundwater underlying this de minimus area is not part of groundwater remedial units identified in Parcel C. Based on physical and chemical properties, the chemical driving risk in soil is relatively immobile and is not considered a source of groundwater contamination.

### **Other Information**

Petroleum hydrocarbons were not detected in soil at de minimus area 10112. No removal actions or exploratory excavations occurred in this area.

#### **Conclusions:**

- ✓ The BCT and the City concluded that no CERCLA remedial action is needed for de minimus area 10112.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BD05	DM 10112

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BD05 residential ELCR = $2 \times 10^{-6}$ ; therefore, further evaluation was necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. The driver chemical, benzo(a)pyrene, was detected in monitoring well PA28MW50A and is spatially bounded. Surrounding borings include IR28B115, IR28B094, and PA28B020.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	No.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. Benzo(a)pyrene is a PAH.
Are the PAHs (if any) the result of asphalt or charcoal?	No. Benzo(a)pyrene was detected below 2 feet bgs; however, the concentration was lower than the 1998 PRG (0.36 mg/kg).
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	No.
Based on the above information, is further evaluation required?	No. Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No. The potential to contaminate groundwater is low.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	Yes. The driver chemical, benzo(a)pyrene, was detected beneath the concrete floor of Building 231, which would mitigate exposure to the chemical.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City agreed that no CERCLA remedial action is required for de minimus area 10112.

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**SITE IR-28: DE MINIMUS AREA 10204 (GRID CELL BD02)**

**Operational History and Site Characterization**

De minimus area 10204 is located at the northeastern corner of IR-28 about 200 feet from Building 231. Operations conducted in Building 231 included machining and fabrication. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that the area be zoned for open space, and desires that the area be cleaned up to industrial standards. Based on a review of the data, the area is adequately characterized.

**Data Evaluation and Risk Assessment**

De minimus area 10204 is an 8-by 8-foot area located in grid cell BD02. An industrial reuse risk assessment was not

<b>De Minimus Area 10204 Residential Scenario Risk Driver</b>			
<b>Area Risk Drivers</b>	<b>Maximum Detection (mg/kg)</b>	<b>Associated Risk</b>	<b>Associated HI</b>
Benzo(a)pyrene	0.2 at 2.25 feet	$1 \times 10^{-6}$	< 1

conducted for this area; as a result, the residential reuse risk assessment results were used in the evaluation of this area. Under a residential reuse scenario, grid cell BD02 has an estimated ELCR of  $1 \times 10^{-6}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because this ELCR equals  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BD02. The chemical driving risk, benzo(a)pyrene, was detected at concentrations above the screening criterion in test pit PA49TA10, and is bounded spatially. Surrounding borings include PA49TA11 and IR28MW269A. The chemical driving risk was not detected in groundwater at the site.

**Risk Management Factors**

Benzo(a)pyrene was detected at a depth of 2.25 feet bgs in test pit PA49TA10 at a concentration of 0.2 mg/kg, which does not exceed the 1998 EPA PRG (0.36 mg/kg). Benzo(a)pyrene detected at this location is considered an artifact of the overlying asphalt surface, since the original fuel line test pit did not find evidence of leakage as a source.

### **Groundwater Issues**

At de minimus area 10204, groundwater is at approximately 7 feet bgs. Groundwater underlying de minimus area 10204 is not part of groundwater remedial units identified in Parcel C. Based on physical and chemical properties, the chemical driving risk in soil is relatively immobile and is not considered a source of groundwater contamination.

### **Other Information**

TRPH was detected at a maximum concentration of 1,500 mg/kg in soil at de minimus area 10204. No removal actions or exploratory excavations occurred in this area.

### **Conclusions:**

- ✓ The BCT and the City concluded that no CERCLA remedial action is needed for de minimus area 10204.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BD02	DM 10204

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	No. However, grid cell BD02 residential ELCR = $1 \times 10^{-6}$ ; therefore, further evaluation was not conducted.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. The driver chemical, benzo(a)pyrene, was detected in test pit PA49TA10 and is spatially bounded. Surrounding locations include PA49TA11 and IR28MW269A.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes. The driver chemical, benzo(a)pyrene, is considered an artifact of the overlying asphalt surface.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. Benzo(a)pyrene is a PAH.
Are the PAHs (if any) the result of asphalt or charcoal?	Yes. Benzo(a)pyrene is considered an artifact of the overlying asphalt surface.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	No.
Based on the above information, is further evaluation required?	No. Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No. The potential to contaminate groundwater is low.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	No.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	1,500 ppm
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City concluded that no CERCLA remedial action is required for de minimus area 10204.

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## SITE IR-28: DE MINIMUS AREA 10220 (GRID CELL BD08)

### Operational History and Site Characterization

De minimus area 10220 is located along the southern boundary of Building 211. Operations conducted in Building 211 included machining, welding, and painting. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for cultural and institutional reuse, and desires that the area be cleaned up to industrial reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

De minimus area 10220 is located in grid cell BD08. An industrial reuse risk assessment was not conducted for this area; as a result, the residential

De Minimus Area 10220 Residential Scenario Risk Driver			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Arsenic	17.9 at 6.75 feet	$7 \times 10^{-6}$	< 1

reuse risk assessment results were used in the evaluation of this area. Under a residential reuse scenario, grid cell BD08 has an estimated ELCR of  $8 \times 10^{-6}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR for grid cell BD08 is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BD08. The chemical driving risk, arsenic, was detected at a concentration above the screening criterion at depths of 1.75 and 6.75 feet bgs in boring IR28B231, and is spatially bounded. Surrounding sampling locations include IR28B221 and PA28SS78. The chemical driving risk was not detected in groundwater underlying de minimus area 10220.

### Risk Management Factors

Arsenic was detected at depths of 1.75 and 6.75 feet bgs at concentrations of 12.1 and 17.9 mg/kg, respectively, which are consistent with the ambient level at Hunters Point (11.1 mg/kg). The arsenic detection at 6.75 feet bgs is below the Navy's planned depth of remediation of 5 feet bgs.

### Groundwater Issues

At de minimus area 10220, groundwater is located at approximately 7 to 8 feet bgs. Groundwater underlying this area is not part of the groundwater remediation units identified in Parcel C. Based on

physical and chemical properties, the chemical driving risk in soil is relatively immobile and is not considered a source of groundwater contamination.

**Other Information**

Petroleum hydrocarbons were not detected at de minimus area 10220. No removal actions were conducted at the site.

**Conclusion:**

✓ The BCT and the City concluded that no CERCLA remedial action is necessary for de minimus area 10220.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BD08	DM 10220

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BD08 residential ELCR = $8 \times 10^{-6}$ ; therefore, further evaluation was necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. The driver chemical, arsenic, was detected in boring IR28B231 and is spatially bounded. Surrounding locations include IR28B221 and PA28SS78.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes. Arsenic detected at depths of 1.75 and 6.75 feet bgs at concentrations of 12.1 and 17.9 mg/kg, respectively, is consistent with ambient concentrations (HPAL = 11.1 mg/kg). Arsenic detected at 6.75 feet bgs is at a depth greater than the Navy's planned area of remediation.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	Yes. Arsenic concentrations are consistent with ambient concentrations.
Are the driver chemicals PAHs, beryllium, or PCBs?	No.
Are the PAHs (if any) the result of asphalt or charcoal?	No.
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	N/A
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	N/A
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	Arsenic is the only chemical driving risk under the industrial scenario.
Based on the above information, is further evaluation required?	No. Further evaluation is not required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No. The potential to contaminate groundwater is low.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	No.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City agreed that no CERCLA remedial action is required for de minimus area 10220.

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## SITE IR-28: DE MINIMUS AREA 10329 (GRID CELL BD11)

### Operational History and Site Characterization

De minimus area 10329 is located along the southern boundary of Parcel C near Building 226. A fuel line underlies this area. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that this area be zoned for open space, and desires that the area be cleaned up to industrial reuse standards. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

De minimus area 10329 is located in grid cell BD11. An industrial reuse risk assessment was not conducted for this area; as a result, the residential reuse risk assessment results were used

De Minimus Area 10329 Residential Scenario Risk Drivers			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Aroclor-1260	0.3 at 0.5 foot	$1 \times 10^{-6}$	< 1
Benzo(a)pyrene	0.08 at 0.5 foot	$7 \times 10^{-7}$	< 1

in the evaluation of this area. Under a residential reuse scenario, grid cell BD11 has an estimated ELCR of  $2 \times 10^{-6}$  and an HI of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR for grid cell BD11 is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BD11. The chemicals driving risk (Aroclor-1260 and benzo[a]pyrene) were detected at concentrations above the screening criteria at the ground surface in sampling location PA49TA21. Chemicals driving risk were not detected in groundwater underlying de minimus area 10329.

### Risk Management Factors

Aroclor-1260 was detected at the ground surface of PA49TA21 at a concentration of 0.3 mg/kg, which is below the 1998 EPA PRG (1.3 mg/kg). Benzo(a)pyrene was detected at the ground surface of PA49TA21 at a concentration of 0.08 mg/kg, which is below the 1998 EPA PRG (0.36 mg/kg). The benzo(a)pyrene detection is considered an artifact of the overlying asphalt surface.

### **Groundwater Issues**

At de minimus area 10329, groundwater is located at approximately 7 to 8 feet bgs. Groundwater underlying this area is not part of the groundwater remediation units identified in Parcel C. Based on physical and chemical properties, the chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination.

### **Other Information**

Petroleum hydrocarbons were not detected at de minimus area 10329. No removal actions were conducted at the site.

#### **Conclusion:**

- ✓ The BCT and the City concluded that no CERCLA response action is necessary for de minimus area 10329.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BD11	DM 10329

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BD11 residential ELCR = $2 \times 10^{-6}$ ; therefore, further evaluation was necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. Driver chemicals, benzo(a)pyrene and Aroclor-1260, were detected in test pit IR49TA21 and are bounded vertically.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	No.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	Yes. Benzo(a)pyrene detected at the surface of test pit IR49TA21 was considered to be an artifact of the overlying asphalt.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

## FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA

Can the "driver chemicals" be considered the results of fill material or variability in ambient levels? Explain.	Yes.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. Benzo(a)pyrene is a PAH and Aroclor-1260 is a PCB.
Are the PAHs (if any) the result of asphalt or charcoal?	Yes. Benzo(a)pyrene is likely to be an artifact of the overlying asphalt.
Are beryllium concentrations (if any) less than the EPA PRG?	No.
Are PCBs concentrations (if any) less than 10 mg/kg (EPA's level of concern)?	Yes.
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC's level of concern)?	Yes.
Are there other "driver chemicals" besides PAHs, beryllium, or PCBs?	No.
Based on the above information, is further evaluation required?	No. Further evaluation is not required.

## PROTECTIVENESS

Do the physical and chemical properties of the "driver chemicals" indicate a potential to contaminate groundwater?	No. The potential to contaminate groundwater is low.
Do site-specific conditions mitigate the exposure or risk associated with the "driver chemicals"?	No.

## OTHER INFORMATION

Has TPH been Detected over a Screening Criterion?	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	No.
• Human health risks?	No.
– Individual risk?	N/A
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	Yes.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• CERCLA remedial action required in addition to land-use restrictions.	
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

EPA, DTSC, the City, and the Navy agreed that no CERCLA response action is required for de minimus area 10329.

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## SITE IR-28: DE MINIMUS AREA 51SS15 (GRID CELL BA11)

### Operational History and Site Characterization

De minimus area 51SS15 is located between Buildings 228 and 270/273. ASTs were formerly located in this area. Building 228 is the former cafeteria. Operations conducted in Building 270 included painting, paint stripping, and steam cleaning. Building 273 is a former electrical substation. The former ASTs were located on a concrete pad and all have been removed. The storage contents of the ASTs are unknown, but may have been solvents. Historical use of the site is industrial, and the Navy proposes to remediate the site to industrial reuse standards. The City is proposing that the site be zoned for research and development, and desires that the area be cleaned up to residential reuse standards. Biased sampling was conducted in the suspected source area of the former ASTs. Based on a review of the data, the area is adequately characterized.

### Data Evaluation and Risk Assessment

De minimus area 51SS15 is located in grid cell BA11. Under an industrial reuse scenario, grid cell BA11 has an estimated ELCR of  $1 \times 10^{-5}$  and an HI

De Minimus Area 51SS15 Industrial Scenario Risk Driver			
Area Risk Drivers	Maximum Detection (mg/kg)	Associated Risk	Associated HI
Aroclor-1260	140 at 1.25 feet	$> 1 \times 10^{-6}$	$< 1$

of less than 1, and it has no lead concentrations above 1,000 mg/kg. Because the ELCR for grid cell BA11 is greater than  $1 \times 10^{-6}$ , further evaluation was conducted. Surrounding borings and grid cells were reviewed and found not to include similar contaminants; therefore, data from adjacent grid cells were not used to evaluate grid cell BA11. The chemical driving risk, Aroclor-1260, was detected at a concentration above the screening criterion at a depth of 1.25 feet bgs at sampling location PA51SS15. The chemical driving risk was not detected in groundwater underlying de minimus area 51SS15.

### Risk Management Factors

Aroclor-1260 was detected at a depth of 1.25 feet bgs at PA51SS15 at a concentration of 140 mg/kg, which exceeds the 1998 EPA PRG (1.3 mg/kg). The presence of Aroclor-1260 may be related to the use of transformers at Building 273, a former electrical substation.

### **Groundwater Issues**

At de minimus area 51SS15, groundwater is located at approximately 7 to 8 feet bgs. Groundwater underlying de minimus area 51SS15 is not part of the groundwater remedial units identified in Parcel C. Based on physical and chemical properties, the chemicals driving risk in soil are relatively immobile and are not considered a source of groundwater contamination.

### **Other Information**

Petroleum hydrocarbons were not detected at de minimus area 51SS15. No removal actions were conducted at the site.

#### **Conclusion:**

- ✓ The BCT and the City concluded that a CERCLA remedial action is necessary to remediate Aroclor-1260 at de minimus area 51SS15 to a depth of 2 feet bgs.

**RISK MANAGEMENT DECISION PROCESS FOR SOIL  
PARCEL C, HUNTERS POINT SHIPYARD**

IR Site Number	Risk Grid Cell Number	Remediation or De Minimus Area Number
IR-28	BA11	DM51SS15

**RISK ASSESSMENT**

Does the grid cell have an ELCR greater than $1 \times 10^{-6}$ , or an HI greater than 1, or a lead concentration greater than 1,000 mg/kg (169 mg/kg for mixed-use areas)? Based on this information is further evaluation required?	Yes. Grid cell BA11 ELCR = $1 \times 10^{-5}$ ; therefore, further evaluation was necessary.
Should adjacent grid cells be considered together? If so, list the grid cells that should be evaluated with this grid cell.	No. Adjacent grid cells do not need to be evaluated with this grid cell because contamination is bounded within the grid cell.

**SITE CHARACTERIZATION**

Were samples collected from all known or suspected source locations?	Yes.
Are elevated "driver chemicals" bounded spatially?	Yes. The driver chemical, Aroclor-1260, was detected in surface sample PA51SS15 and is bounded spatially. Surrounding locations include IR28B208, IR51B026, IR51B027, PA51SS16, IR28B291, IR28B292, IR28MW290A, and IR51B025.
Are chemicals in groundwater (if any) consistent with soil "driver chemicals"?	No.
Are the "driver chemicals" and distribution consistent with operational history? Describe operational history.	Yes. Aroclor-1260 detected at depth 1.25 feet at a concentration of 140 mg/kg is suspected to be a result of contamination from Building 273. Building 273 was an electrical substation that housed transformers and switches.
If the "driver chemicals" are not consistent with operational history, can the distribution be explained by other means such as type of backfill, surface cover, or ambient conditions?	No.
Based on the above information, is the site adequately characterized?	Yes. The site is adequately characterized.
If the site is not adequately characterized, is additional characterization necessary to evaluate risk or protectiveness? Explain why or why not.	N/A

**FILL MATERIAL, AMBIENT CONDITIONS AND REVISED SCREENING CRITERIA**

Can the “driver chemicals” be considered the results of fill material or variability in ambient levels? Explain.	No.
Are the driver chemicals PAHs, beryllium, or PCBs?	Yes. Aroclor-1260 is a PCB.
Are the PAHs (if any) the result of asphalt or charcoal?	N/A
Are beryllium concentrations (if any) less than the EPA PRG?	N/A
Are PCBs concentrations (if any) less than 10 mg/kg (EPA’s level of concern)?	No. Aroclor-1260 was detected at depth 1.25 feet in surface sample PA51SS15 at a concentration of 140 mg/kg.
Are PCBs concentrations (if any) less than 1.3 mg/kg (DTSC’s level of concern)?	No.
Are there other “driver chemicals” besides PAHs, beryllium, or PCBs?	No.
Based on the above information, is further evaluation required?	Yes. Further evaluation is required.

**PROTECTIVENESS**

Do the physical and chemical properties of the “driver chemicals” indicate a potential to contaminate groundwater?	No. The potential to contaminate groundwater is low.
Do site-specific conditions mitigate the exposure or risk associated with the “driver chemicals”?	No.

**OTHER INFORMATION**

<b>Has TPH been Detected over a Screening Criterion?</b>	
• TPH-gasoline > 100 ppm?	No.
• TPH-diesel > 1,000 ppm?	No.
• TPH-motor oil > 1,000 ppm?	No.
• TRPH > 1,000 ppm?	No.
• Total oil and grease > 1,000 ppm?	No.

**OTHER INFORMATION (Continued)**

<b>Special Factors</b>	
• Previous removal actions such as UST removal?	No.
– Does this correspond with the distribution of the chemicals?	N/A
• Previous exploratory excavations? List excavation name, report.	No.
– Does this correspond with the distribution of the chemicals?	N/A
<b>Is There a Problem with</b>	
• Maximum concentrations?	Yes.
• Human health risks?	Yes.
– Individual risk?	Yes.
– Cumulative risks?	N/A
– Ambient risk?	N/A
<b>Institutional Controls</b>	
Can the risk associated with the “driver chemicals” be mitigated by requiring industrial land use or specific institutional controls?	No.

**ACTION REQUIRED**

<b>Based on the above information what action is required?</b>	
• No CERCLA remedial action required in addition to land-use restrictions.	
• CERCLA remedial action required in addition to land-use restrictions.	X (See notes below)
• Implement institutional controls in addition to land-use restrictions.	

**NOTES:**

The BCT and the City recommend remedial action at de minimus area 51SS15 to address Aroclor-1260 to a depth of 2 feet bgs.

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**IR-28 BORING MAP CROSS REFERENCE  
PARCEL C RISK MANAGEMENT REVIEW  
HUNTERS POINT SHIPYARD**

<b>Remedial or De Minimus Area</b>	<b>Borings</b>	<b>Figure (Soil)</b>	<b>Figure (Groundwater)</b>
RA 28-1	IR28B101	5 of 5	2 of 3
	IR28B102	4 of 5	3 of 3
	IR28B130	4 of 5	---
	IR28B131	5 of 5	---
	IR28B132	5 of 5	---
	IR28B137	4 of 5	3 of 3
	IR28B138	4 of 5	---
	IR28B139	5 of 5	---
	IR28B266	1 of 5	3 of 3
	IR28MW124A	---	1 of 3
	IR28MW140F	---	1 of 3
	PA28B023	3 of 5	---
	PA28B053	3 of 5	3 of 3
RA 28-2	IR28B279	2 of 5	3 of 3
	IR28B280	2 of 5	3 of 3
	IR28B307	---	3 of 3
	IR58B028	5 of 5	3 of 3
	IR58B030	5 of 5	---
	IR58MW31A	---	2 of 3, 3 of 3
	IR58MW33B	5 of 5	2 of 3
	IR58SS34	5 of 5	---
	IR58SS35	5 of 5	---
RA 28-3	IR28B276	1 of 5	---
	IR28MW310F	2 of 5	2 of 3
	IR28MW311A	2 of 5	2 of 3
RA 28-4	IR28MW299B	2 of 5	2 of 3
RA 28-5	IR28283	2 of 5	3 of 3
	IR28B285	2 of 5	---

**IR-28 BORING MAP CROSS REFERENCE (Continued)**  
**PARCEL C RISK MANAGEMENT REVIEW**  
**HUNTERS POINT SHIPYARD**

<b>Remedial or De Minimus Area</b>	<b>Borings</b>	<b>Figure (Soil)</b>	<b>Figure (Groundwater)</b>
RA 28-5 (continued)	IR28B285A	---	3 of 3
	IR28B301	2 of 5	---
	IR28MW286A	---	2 of 3
RA 28-6	PA28B063	3 of 5	---
	PA28SS82	5 of 5	---
RA 28-7	IR28B237	1 of 5	1 of 3
RA 28-8	IR28MW273F	2 of 5	1 of 3
RA 28-9	IR28B095	4 of 5	3 of 3
	IR28B107	4 of 5	2 of 3
	IR28MW127A	---	1 of 3, 3 of 3
	IR28MW255F	---	1 of 3
	PA28MW52A	5 of 5	2 of 3
RA 28-10	IR28B291	2 of 5	3 of 3
	IR28B292	2 of 5	---
RA 28-11	IR28B090	5 of 5	2 of 3
	IR28B091	5 of 5	3 of 3
	IR28B093	5 of 5	3 of 3
	IR28B104	4 of 5	2 of 3
	IR28B105	4 of 5	2 of 3
	IR28B106	4 of 5	2 of 3
	IR28B133	4 of 5	3 of 3
	IR28B134	4 of 5	---
	IR28B135	4 of 5	---
	IR28B258	1 of 5	3 of 3
	IR28B264	1 of 5	3 of 3
	IR28B265	1 of 5	3 of 3
	PA28B044	3 of 5	---
	PA28B049	3 of 5	---

**IR-28 BORING MAP CROSS REFERENCE (Continued)**  
**PARCEL C RISK MANAGEMENT REVIEW**  
**HUNTERS POINT SHIPYARD**

<b>Remedial or De Minimus Area</b>	<b>Borings</b>	<b>Figure (Soil)</b>	<b>Figure (Groundwater)</b>
RA 28-11 (continued)	PA51SS14	3 of 5	---
RA 28-12	IR49B025	2 of 5	3 of 3
	IR49B027	2 of 5	---
	PA49TA09	2 of 5	---
RA 28-13	IR28MW298A	2 of 5	2 of 3
RA 28-14	IR28B088	5 of 5	3 of 3
	IR28B089	5 of 5	---
	IR28B100	5 of 5	---
	IR28B240	1 of 5	---
	IR28B241	1 of 5	---
	IR28B242	1 of 5	---
	IR28MW122A	---	1 of 3
	PA28SS14	5 of 5	---
	PA51SS13	3 of 5	---
RA 28-15	IR28B118	4 of 5	---
	IR28MW123A	---	1 of 3
RA 28-16	IR28B238	1 of 5	---
	PA28SS78	5 of 5	---
	PA51SS11	3 of 5	---
	PA51SS12	3 of 5	---
RA 28-17	PA51SS18	3 of 5	---
RA 28-18	IR28B166	---	3 of 3
	IR28MW149A	---	1 of 3
	IR28MW309B	2 of 5	2 of 3
RA 28-19	IR28B223	1 of 5	1 of 3
RA 28-21	PA28B021	3 of 5	---
DM 8334	IR28B183	3 of 5	---
DM 9336	IR28B210	1 of 5	2 of 3

**IR-28 BORING MAP CROSS REFERENCE (Continued)**  
**PARCEL C RISK MANAGEMENT REVIEW**  
**HUNTERS POINT SHIPYARD**

<b>Remedial or De Minimus Area</b>	<b>Borings</b>	<b>Figure (Soil)</b>	<b>Figure (Groundwater)</b>
DM 9336 (continued)	IR28MW312F	2 of 5	2 of 3
DM 9420	IR28B096	4 of 5	1 of 3
DM 9434	IR28B198	3 of 5	3 of 3
DM 9532	IR28B243	1 of 5	---
DM 9618	PA28MW51A	5 of 5	2 of 3
DM 9621	IR28B111	4 of 5	2 of 3
	IR28MW129A	---	1 of 3
DM 9721	IR28B120	4 of 5	3 of 3
DM 9819	IR28B121	4 of 5	3 of 3
DM 9824	PA28B079	3 of 5	---
DM 9919	IR28B086	5 of 5	2 of 3
DM 9921	IR28B084	5 of 5	2 of 3
DM 10112	PA28MW50A	3 of 5	---
DM 10204	PA49TA10	2 of 5	---
DM 10220	IR28B231	1 of 5	---
DM 10329	IR49TA21	2 of 5	---
DM 51SS15	PA51SS15	3 of 5	---

Notes:

DM De minimus area

RA Remedial area

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-27	BA03 (093007)	2E-06 (2E-07)	Benzo(a)pyrene (1E-06)	0.14	PA49TA06	2.25	0.1	
			Benzo(b)fluoranthene (2E-07)	0.21	PA49TA06	2.25	0.2	
			Benzo(a)anthracene (1E-07)	0.12	PA49TA06	2.25	0.1	
			Benzo(k)fluoranthene (7E-08)	0.078	PA49TA06	2.25	0.08	
			Indeno(1,2,3-cd)pyrene (6E-08)	0.075	PA49TA06	2.25	0.08	
			Chrysene (1E-08)	0.15	PA49TA06	2.25	0.2	
IR-27	BB03 (095006, 097006)	9E-07 (1E-07)	Benzo(a)pyrene (7E-07)	0.088	PA49TA07	1.75	0.09	
			Benzo(b)fluoranthene (1E-07)	0.13	PA49TA07	1.75	0.1	
			Benzo(a)anthracene (7E-08)	0.089	PA49TA07	1.75	0.09	
			Chrysene (8E-09)	0.097	PA49TA07	1.75	0.1	
			Cadmium (4E-09)	4.4	PA49TA07	1.75	4.4	α
			Cadmium	--	IR27B004	6.25	1.8	
IR-28 (IR-58)	AW11 (080029, 081030, 081031)	3E-06 (2E-07)	Benzo(a)pyrene (2E-06)	0.26	IR28B257	0.75	0.3	
			Beryllium (9E-07)	1.1	IR58B018	1.75	1.1	α
			Cadmium (3E-09)	3.8	IR58B018	6.25	4.6	α
			Cadmium	--	IR58B018	1.75	3.8	α
			Cadmium	--	IR28B257	0.75	3.3	α
			Cadmium	--	IR28B257	5.25	1.2	
IR-28 (IR-29, IR-58)	AW12 (081032, 081034, 082034)	NC	NE	NE	NE	NE	NE	

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28 (IR-58)	AX09 (084024, 084025, 085024)	8E-06 (5E-07)	Arsenic (6E-06)	14	IR58B011	6.75	14.2	*,α
			Arsenic	--	IR58B011	1.75	3.4	*
			Arsenic	--	IR58B010	6.75	2.5	*
			Arsenic	--	PA58SS02	0.00	2.2	*
			Arsenic	--	IR58B010	1.75	1.6	
			Benzo(a)pyrene (1E-06)	0.15	IR58B011	6.75	0.2	
			Heptachlor epoxide (1E-07)	0.030	PA58SS01	0.00	0.03	
			Benzo(b)fluoranthene (1E-07)	0.14	IR58B011	6.75	0.1	
			Benzo(a)anthracene (8E-08)	0.10	IR58B011	6.75	0.1	
			Benzo(k)fluoranthene (8E-08)	0.096	IR58B011	6.75	0.1	
Chromium VI (3E-08)	0.35	NE	NE	NE				
Chrysene (9E-09)	0.11	IR58B011	6.75	0.1				
IR-28 (IR-58)	AX10 (084027, 084028, 085026, 085027, 085028)	3E-06 (3E-07)	Benzo(a)pyrene (1E-06)	0.13	IR58SS35	0.25	0.1	
			Aroclor-1260 (6E-07)	0.12	IR58SS34	0.50	0.1	
			Heptachlor epoxide (4E-07)	0.093	PA58SS04	0.00	0.09	
			Chromium VI (4E-07)	4.1	NE	NE	NE	
			Aroclor-1254 (3E-07)	0.065	IR58SS34	0.50	0.07	
			Benzo(b)fluoranthene (1E-07)	0.17	IR58SS35	0.25	0.2	
			Nickel (2E-08)	510	IR58SS36	0.25	930	
			Nickel	--	IR28B277	1.75	522	
			Nickel	--	IR58B030	6.75	469	
			Nickel	--	IR28B176	2.00	343	
Nickel	--	IR58MW33B	0.75	224				

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>e</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28 (IR-58)	AX10 (084027, 084028, 085026, 085027, 085028) (Continued)	3E-06 (3E-07)	Nickel	--	IR28B176	6.25	208	
			Nickel	--	IR58B028	6.75	116	
			Nickel	--	PA58SS04	0.00	107	
			Nickel	--	IR58SS35	0.25	88.1	
			Nickel	--	IR58B023	6.25	83.7	
			Nickel	--	IR28B277	5.75	69.2	
			Nickel	--	IR58SS34	0.50	54.9	
			Nickel	--	IR58MW33B	5.25	46.4	
			Nickel	--	IR58B023	1.75	40.2	
IR-28 (IR-58)	AX11 (083031, 084029, 085029)	5E-07 (8E-08)	Beryllium (5E-07)	0.56	PA28SS81	1.25	0.76	α
			Beryllium	--	PA28B062	6.75	0.30	
			Beryllium	--	PA28B061	2.25	0.24	
			Beryllium	--	PA28B062	2.25	0.16	
			Tetrachloroethene (4E-10)	0.0030	PA28B061	5.75	0.003	
			Tetrachloroethene	--	PA28B062	6.75	0.001	
			Trichloroethene (1E-09)	0.013	PA28B061	5.75	0.02	
			Trichloroethene	--	PA28B062	6.75	0.01	
			Trichloroethene	--	PA28B061	2.25	0.003	
			Trichloroethene	--	PA28B062	2.25	0.002	
IR-28 (IR-29)	AX12 (083034, 085032)	6E-06 (3E-07)	Arsenic (5E-06)	11	IR28B183	9.75	11.1	*
			Arsenic	--	IR28B183	2.75	3.9	*
			Arsenic	--	IR28B183	4.75	2.6	*
			Aroclor-1260 (1E-06)	0.21	IR28B183	4.75	0.2	

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28 (IR-29)	AX12 (083034, 085032) (Continued)	6E-06 (3E-07)	Aroclor-1260	--	IR28B183	2.75	0.09
			Nickel (1E-07)	2,500	IR28B179	5.25	2520
			Nickel	--	IR28B183	9.75	556
			Nickel	--	IR28B179	1.25	37.2
			Nickel	--	IR28B183	2.75	28.1
			Nickel	--	IR28B183	4.75	14.1
			Chrysene (8E-08)	0.93	IR28B183	2.75	0.9
			Chromium VI (2E-08)	0.24	NE	NE	NE
			Carbon tetrachloride (2E-08)	0.0080	IR28B179	1.25	0.008
			Carbon tetrachloride	--	IR28B179	5.25	0.003
			4,4'-DDD (7E-10)	0.0083	IR28B183	4.75	0.008
			Trichloroethene (2E-09)	0.018	IR28B179	1.25	0.02
			Trichloroethene	--	IR28B183	2.75	0.01
4,4'-DDT (2E-09)	0.015	IR28B183	4.75	0.02			
IR-28 (IR-29)	AX13 (084035, 084036, 085035, 085036, 085037)	NC	NE	NE	NE	NE	NE
IR-28 (IR-64)	AY08 (086022)	NC	NE	NE	NE	NE	NE

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	AY09 (086023, 086024, 087024, 087025, 088024)	4E-08 (6E-09)	Chromium VI (4E-08)	0.40	NE	NE	NE
			Methylene chloride (7E-10)	0.0080	IR28B234	6.75	0.008
			Methylene chloride	--	IR28B234	1.75	0.006
			Tetrachloroethene (3E-10)	0.0020	IR58MW32B	5.75	0.002
IR-28	AY10 (086027, 086028, 087027, 088026, 088028)	7E-06 (9E-07)	Arsenic (3E-06)	7.6	IR28B280	0.75	245 * <sub>,α</sub>
			Arsenic	--	IR28MW299B	2.00	14.0 * <sub>,α</sub>
			Arsenic	--	IR28B278	0.75	11.8 * <sub>,α</sub>
			Arsenic	--	IR28B279	1.25	10.1 *
			Arsenic	--	IR28MW299B	5.50	7.7 *
			Arsenic	--	IR28B283	5.75	7.2 *
			Arsenic	--	IR28B279	5.25	6.5 *
			Arsenic	--	IR28B281	5.75	4.7 *
			Arsenic	--	IR28B280	7.75	4.0 *
			Arsenic	--	IR28B281	1.25	4.0 *
			Arsenic	--	IR28B278	5.75	3.8 *
			Arsenic	--	IR28B278	9.25	3.5 *
			Arsenic	--	IR28B280	4.75	2.4 *
			Arsenic	--	IR28B283	0.75	0.93
			Benzo(a)pyrene (2E-06)	0.21	IR28B301	1.00	0.3
			Benzo(a)pyrene	--	IR28MW299B	2.00	0.2
Benzo(a)pyrene	--	IR28B280	0.75	0.07			

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	AY10 (086027, 086028, 087027, 088026, 088028) (Continued)	7E-06 (9E-07)	Benzo(a)pyrene	--	IR28B281	1.25	0.03
			Aroclor-1260 (1E-06)	0.23	IR28B279	5.25	270
			Aroclor-1260	--	IR28B279	1.25	14
			Aroclor-1260	--	IR28B280	0.75	0.6
			Aroclor-1260	--	IR28B280	7.75	0.3
			Aroclor-1260	--	IR28B280	4.75	0.1
			Aroclor-1260	--	IR28B278	9.25	0.05
			Benzo(a)anthracene (2E-07)	0.27	IR28MW299B	2.00	0.3
			Benzo(a)anthracene	--	IR28B301	1.00	0.2
			Benzo(a)anthracene	--	IR28B280	0.75	0.06
			Alpha-chlordane (2E-07)	0.45	IR28B279	5.25	0.5
			Alpha-chlordane	--	IR28B279	1.25	0.02
			4,4'-DDE (2E-07)	1.7	IR28B279	5.25	2
			4,4'-DDE	--	IR28B279	1.25	0.09
			Benzo(b)fluoranthene (2E-07)	0.22	IR28B301	1.00	0.4
			Benzo(b)fluoranthene	--	IR28MW299B	2.00	0.3
			Benzo(b)fluoranthene	--	IR28MW299B	5.50	0.2
			Benzo(b)fluoranthene	--	IR28B280	0.75	0.1
			Benzo(b)fluoranthene	--	IR28B281	1.25	0.04
			Benzo(k)fluoranthene (1E-07)	0.14	IR28B301	1.00	0.1
Benzo(k)fluoranthene	--	IR28MW299B	2.00	0.1			
Chromium VI (8E-08)	0.79	NE	NE	NE			
Chrysene (2E-08)	0.26	IR28B301	1.00	0.3			

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>e</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	AY10 (086027, 086028, 087027, 088026, 088028) (Continued)	7E-06 (9E-07)	Chrysene	--	IR28MW299B	2.00	0.3
			Chrysene	--	IR28B280	0.75	0.08
IR-28	AY11 (086030, 086031, 087031)	1E-05 (8E-07)	Aroclor-1260 (3E-06)	0.60	PA28B063	2.25	0.6
			Arsenic (3E-06)	6.4	IR28B180	6.75	11.7 * $\alpha$
			Arsenic	--	IR28MW300F	1.50	6.9 *
			Arsenic	--	IR28B178	2.25	5.1 *
			Arsenic	--	PA28B063	2.25	5.0 *
			Arsenic	--	PA28SS82	1.25	3.0 *
			Arsenic	--	IR28B178	7.75	2.1 *
			Arsenic	--	PA28B063	6.25	1.7
			Arsenic	--	IR28MW300F	7.00	0.99
			Benzo(a)pyrene (3E-06)	0.31	PA28SS82	1.25	0.3
			Beryllium (5E-07)	0.55	IR28B178	7.75	0.95 $\alpha$
			Beryllium	--	PA28B063	6.25	0.72 $\alpha$
			Beryllium	--	PA28SS82	1.25	0.56
			Beryllium	--	IR28B178	2.25	0.28
			Beryllium	--	IR28B180	2.25	0.28
Beryllium	--	PA28B063	2.25	0.19			

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	AY11 (086030, 086031, 087031) (Continued)	1E-05 (8E-07)	Beryllium	--	IR28B180	6.75	0.060
			Benzo(a)anthracene (4E-07)	0.51	PA28SS82	1.25	0.5
			Benzo(b)fluoranthene (3E-07)	0.36	PA28SS82	1.25	0.4
			Benzo(k)fluoranthene (2E-07)	0.24	PA28SS82	1.25	0.2
			1,4-Dichlorobenzene (9E-08)	1.1	PA28B063	6.25	1
			Chrysene (4E-08)	0.53	PA28SS82	1.25	0.5
			Nickel (3E-08)	580	PA28SS82	1.25	1054
			Nickel	--	PA28B063	6.25	780
			Nickel	--	IR28B178	7.75	510
			Nickel	--	IR28MW300F	7.00	317
			Nickel	--	IR28B178	2.25	301
			Nickel	--	IR28MW300F	1.50	173
			Nickel	--	IR28B180	2.25	68.5
			Nickel	--	PA28B063	2.25	49.3
			Nickel	--	IR28B180	6.75	5.7
			Trichloroethene (2E-08)	0.23	PA28B063	6.25	0.2
			Trichloroethene	--	PA28SS82	1.25	0.01
			Trichloroethene	--	PA28B063	2.25	0.004
			Carbon tetrachloride (2E-08)	0.0087	PA28SS82	1.25	0.009
			Chloroform (2E-08)	0.021	PA28SS82	1.25	0.02
Bis(2-ethylhexyl)phthalate (1E-09)	0.18	PA28B063	2.25	0.2			
Bis(2-ethylhexyl)phthalate	--	PA28B063	6.25	0.2			

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>e</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	AY12 (086032, 086034, 087033, 088032, 088034)	9E-07 (7E-08)	Aroclor-1260 (4E-07)	0.080	IR28B227	3.75	0.08
			Aroclor-1260	--	IR28B227	5.75	0.07
			Benzo(a)pyrene (3E-07)	0.037	IR28B227	5.75	0.04
			Benzo(a)pyrene	--	IR28B185	1.75	0.03
			Benzo(a)anthracene (4E-08)	0.050	IR28B227	5.75	0.05
			Benzo(a)anthracene	--	IR28B185	1.75	0.03
			Benzo(b)fluoranthene (4E-08)	0.048	IR28B227	5.75	0.05
			Benzo(k)fluoranthene (4E-08)	0.042	IR28B227	5.75	0.04
			Bis(2-ethylhexyl)phthalate (1E-09)	0.13	IR28B181	1.25	0.1
			Trichloroethene (8E-10)	0.0080	IR28B227	5.75	0.008
			Trichloroethene	--	IR28B214	6.75	0.006
			Trichloroethene	--	IR28B227	3.75	0.003
			Alpha-chlordane (8E-10)	0.0017	IR28B227	5.75	0.002
			Gamma-chlordane (6E-10)	0.0013	IR28B227	5.75	0.001
			Chrysene (5E-09)	0.060	IR28B227	5.75	0.06
			Chrysene	--	IR28B185	1.75	0.03
			Chrysene	--	IR28B227	3.75	0.02
			4,4'-DDE (3E-10)	0.0026	IR28B227	5.75	0.003
			Tetrachloroethene (3E-10)	0.0020	IR28B227	5.75	0.002
			4,4'-DDT (3E-09)	0.025	IR28B227	5.75	0.03
4,4'-DDT	--	IR28B227	3.75	0.01			

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28 (IR-29)	AY13 (086037, 087036, 088035)	8E-07 (5E-08)	Beryllium (8E-07)	0.89	IR29B083	0.75	0.89	α
			Beryllium	--	IR29B083	5.25	0.41	
			Trichloroethene (8E-09)	0.085	IR28B226	3.75	0.09	
			Trichloroethene	--	IR28B226	6.25	0.004	
IR-28	AZ07 (090018, 090019, 091019)	2E-05 (2E-06)	Arsenic (9E-06)	22	PA49TA09	4.25	25.0	*,α
			Arsenic	--	IR49B025	6.75	4.1	*
			Arsenic	--	IR49B025	4.25	3.1	*
			Arsenic	--	IR49B026	6.75	3.1	*
			Arsenic	--	IR49B026	4.25	2.9	*
			Arsenic	--	IR49B027	6.75	1.8	
			Arsenic	--	IR49B026	2.25	1.1	
			Benzo(a)pyrene (5E-06)	0.57	PA49TA09	4.25	0.6	
			Benzo(a)pyrene	--	IR49B025	6.75	0.1	
			Benzo(b)fluoranthene (6E-07)	0.69	PA49TA09	4.25	0.7	
			Benzo(b)fluoranthene	--	IR49B025	6.75	0.1	
			Benzo(b)fluoranthene	--	IR28B108	5.25	0.09	
			Benzo(a)anthracene (4E-07)	0.51	PA49TA09	4.25	0.5	
			Benzo(a)anthracene	--	IR28B108	5.25	0.09	
			Dibenz(a,h)anthracene (3E-07)	0.062	PA49TA09	4.25	0.06	
			Benzo(k)fluoranthene (3E-07)	0.30	PA49TA09	4.25	0.3	
			Benzo(k)fluoranthene	--	IR28B108	5.25	0.08	
			Chrysene (5E-08)	0.57	PA49TA09	4.25	0.6	
Chrysene	--	IR28B108	5.25	0.2				

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	AZ07 (090018, 090019, 091019) (Continued)	2E-05 (2E-06)	Chrysene	--	IR49B026	4.25	0.2
			Tetrachloroethene (4E-10)	0.0030	IR28B108	5.25	0.003
			Methylene chloride (3E-10)	0.0040	IR49B025	6.75	0.004
			Methylene chloride	--	IR49B025	1.75	0.003
			Bis(2-ethylhexyl)phthalate (3E-09)	0.36	IR49B025	1.75	1
			Bis(2-ethylhexyl)phthalate	--	IR49B025	4.25	0.9
			Bis(2-ethylhexyl)phthalate	--	IR49B025	6.75	0.8
			Bis(2-ethylhexyl)phthalate	--	IR28B108	5.25	0.1
IR-28	AZ08 (090021, 091020)	NC	NE	NE	NE	NE	NE
IR-28	AZ10 (089026, 091027, 091028)	7E-06 (6E-07)	Arsenic (7E-06)	18	IR28B285	0.75	17.5 * <sub>,α</sub>
IR-28	AZ11 (089030, 090029)	4E-08 (6E-09)	Chromium VI (4E-08)	0.35	NE	NE	NE * <sub>,α</sub>
			Tetrachloroethene (9E-10)	0.0060	IR28B187	1.75	0.006

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28	AZ12 (089034, 090033, 090034, 091032, 091034)	2E-05 (2E-06)	Benzo(a)pyrene (1E-05)	1.2	IR28MW311A	5.50	1	
			Benzo(a)pyrene	--	IR28MW310F	5.25	0.6	
			Benzo(a)pyrene	--	IR28B276	6.25	0.5	
			Arsenic (9E-06)	21	IR28MW311A	0.75	30.1	*,α
			Arsenic	--	IR28MW310F	0.75	11.0	*
			Arsenic	--	IR28MW311A	5.50	9.1	*
			Arsenic	--	IR28MW310F	5.25	8.4	*
			Arsenic	--	IR28B204	5.25	6.1	*
			Arsenic	--	IR28B276	0.75	4.9	*
			Arsenic	--	IR28B276	6.25	4.0	*
			Arsenic	--	IR28B225	7.25	3.3	*
			Arsenic	--	PA28B071	3.75	2.8	*
			Arsenic	--	IR28B225	3.75	2.3	*
			Arsenic	--	IR28B207	6.25	0.31	
			Benzo(a)anthracene (1E-06)	1.7	IR28MW311A	5.50	2	
			Benzo(a)anthracene	--	IR28MW310F	5.25	0.8	
			Benzo(a)anthracene	--	IR28B276	6.25	0.2	
			Benzo(b)fluoranthene (1E-06)	1.3	IR28MW311A	5.50	1	
			Benzo(b)fluoranthene	--	IR28MW310F	5.25	0.7	
			Benzo(b)fluoranthene	--	IR28B276	6.25	0.5	
			Benzo(k)fluoranthene (8E-07)	0.92	IR28MW311A	5.50	0.9	
			Benzo(k)fluoranthene	--	IR28B276	6.25	0.2	
Dibenz(a,h)anthracene (5E-07)	0.090	IR28MW311A	5.50	0.09				

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28	AZ12 (089034, 090033, 090034, 091032, 091034) (Continued)	2E-05 (2E-06)	Indeno(1,2,3-cd)pyrene (3E-07)	0.32	IR28B276	6.25	0.3	
			Indeno(1,2,3-cd)pyrene	--	IR28MW311A	5.50	0.3	
			Chrysene (2E-07)	2.1	IR28MW311A	5.50	2	
			Chrysene	--	IR28MW310F	5.25	1	
			Chrysene	--	IR28B276	6.25	0.4	
			Chromium VI (6E-08)	0.60	NE	NE	NE	
			1,2-Dichloroethane (2E-08)	0.022	IR28B206	6.75	0.02	
			Tetrachloroethene (1E-08)	0.092	IR28B204	5.25	0.09	
			Chloroform (1E-08)	0.012	IR28B206	6.75	0.01	
			Trichloroethene (8E-09)	0.083	IR28B206	6.75	0.1	
			Trichloroethene	--	IR28B209	6.75	0.01	
			Trichloroethene	--	IR28MW311A	5.50	0.01	
			Trichloroethene	--	IR28B225	7.25	0.009	
			Trichloroethene	--	IR28B204	5.25	0.001	
Benzene (3E-09)	0.0030	IR28B209	6.75	0.003				
N-nitrosodiphenylamine (3E-10)	0.067	PA28B071	3.75	0.07				
4,4'-DDT (2E-09)	0.013	IR28B225	7.25	0.01				
IR-28	AZ13 (089035, 089036, 091036)	1E-05 (7E-07)	Arsenic (9E-06)	22	IR28MW273F	5.75	22.4	*,α
			Arsenic	--	IR28MW273F	9.75	15.6	*,α
			Arsenic	--	IR28MW273F	1.25	6.6	*
			Arsenic	--	IR28B205	6.25	5.2	*
			Arsenic	--	IR28B237	2.25	4.6	*
			Arsenic	--	IR28B237	4.75	4.6	*

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28	AZ13 (089035, 089036, 091036) (Continued)	1E-05 (7E-07)	Arsenic	--	IR28B237	7.25	4.5	*
			Benzo(a)pyrene (1E-06)	0.12	IR28B237	4.75	0.1	
			Benzo(a)pyrene	--	IR28B237	7.25	0.08	
			Benzo(a)pyrene	--	IR28B237	2.25	0.03	
			Aroclor-1254 (3E-07)	0.049	IR28MW275F	1.50	0.05	
			Aroclor-1260 (3E-07)	0.047	IR28MW275F	1.50	0.05	
			Benzo(a)anthracene (1E-07)	0.15	IR28B237	4.75	0.2	
			Benzo(a)anthracene	--	IR28B237	7.25	0.09	
			Benzo(a)anthracene	--	IR28B237	2.25	0.03	
			Benzo(k)fluoranthene (1E-07)	0.12	IR28B237	4.75	0.1	
			Benzo(k)fluoranthene	--	IR28B237	7.25	0.07	
			Benzo(k)fluoranthene	--	IR28B237	2.25	0.04	
			Benzo(b)fluoranthene (7E-08)	0.082	IR28B237	4.75	0.08	
			Benzo(b)fluoranthene	--	IR28B237	7.25	0.05	
			Benzo(b)fluoranthene	--	IR28B237	2.25	0.04	
			Indeno(1,2,3-cd)pyrene (5E-08)	0.056	IR28B237	4.75	0.06	
			Chrysene (1E-08)	0.16	IR28B237	4.75	0.2	
			Chrysene	--	IR28B237	7.25	0.1	
			Chrysene	--	IR28B237	2.25	0.05	
			Trichloroethene (3E-09)	0.030	IR28B205	6.25	0.03	
Trichloroethene	--	IR28B237	2.25	0.02				
Trichloroethene	--	IR28B237	4.75	0.004				
Trichloroethene	--	IR28B237	7.25	0.002				

(Continued)

SOIL SUMMARY TABLE  
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS  
PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28	AZ13 (089035, 089036, 091036) (Continued)	1E-05 (7E-07)	1,1,2-Trichloroethane (3E-09)	0.0090	IR28B205	6.25	0.009	
IR-28 (IR-29)	AZ14 (089039, 089040, 090039, 090040, 091038, 091040)	3E-05 (1E-06)	Aroclor-1260 (2E-05) Aroclor-1260 Aroclor-1260 Aroclor-1260 Aroclor-1260 Aroclor-1260 Aroclor-1260 Aroclor-1260 Aroclor-1260 Aroclor-1260 Arsenic (3E-06) Arsenic Arsenic Arsenic Arsenic Arsenic Arsenic Arsenic Arsenic	4.6 -- -- -- -- -- -- -- -- -- 6.3 -- -- -- -- -- -- -- -- -- --	PA29SS37 IR29B073 IR29B075 IR29B073 IR29B072 IR29B072 IR29B075 IR29B073 IR29B075 IR29B072 IR29B072 IR29B075 IR29B072 IR29TA52 PA29SS37 IR29B075 IR29B075 IR29B073 IR29B075 IR29B072 IR29TA52	0.00 3.75 1.25 1.75 1.75 3.75 3.75 6.25 6.25 1.75 9.75 0.00 1.25 6.25 6.25 6.3 6.1 3.75 3.75 6.25	5 2 1 0.4 0.2 0.2 0.2 0.2 0.03 0.02 11.2 8.1 6.8 6.5 6.3 6.1 6.0 5.1 4.7	*, α * * * * * * * * * * * * * * * * * *

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28 (IR-29)	AZ14 (089039, 089040, 090039, 090040, 091038, 091040) (Continued)	3E-05 (1E-06)	Arsenic	--	IR29B073	1.75	4.6	*
			Arsenic	--	IR29B073	3.75	3.5	*
			Arsenic	--	PA29B036	1.75	2.8	*
			Arsenic	--	IR29B070	5.75	1.3	
			Benzo(a)pyrene (2E-06)	0.22	IR29B073	1.75	1	
			Benzo(a)pyrene	--	IR29B072	1.75	0.6	
			Benzo(a)pyrene	--	IR29TA52	9.75	0.4	
			Benzo(a)pyrene	--	IR29B073	6.25	0.2	
			Benzo(a)pyrene	--	IR29B075	6.25	0.09	
			Benzo(a)pyrene	--	IR29B073	3.75	0.05	
			Benzo(a)pyrene	--	IR29B075	1.25	0.05	
			Dibenz(a,h)anthracene (1E-06)	0.27	IR29B073	1.75	0.3	
			Dibenz(a,h)anthracene	--	IR29B072	1.75	0.1	
			Dibenz(a,h)anthracene	--	IR29B073	6.25	0.07	
			Benzo(a)anthracene (2E-07)	0.29	IR29B073	1.75	1	
			Benzo(a)anthracene	--	IR29B072	1.75	0.7	
			Benzo(a)anthracene	--	IR29TA52	9.75	0.7	
			Benzo(a)anthracene	--	IR29B073	6.25	0.3	
			Benzo(a)anthracene	--	IR29B075	6.25	0.09	
			Benzo(a)anthracene	--	IR29B075	1.25	0.05	
Benzo(b)fluoranthene (2E-07)	0.19	IR29B072	1.75	0.9				
Benzo(b)fluoranthene	--	IR29B073	1.75	0.8				
Benzo(b)fluoranthene	--	IR29B073	6.25	0.3				

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28 (IR-29)	AZ14 (089039, 089040, 090039, 090040, 091038, 091040) (Continued)	3E-05  (1E-06)	Benzo(b)fluoranthene	--	IR29TA52	9.75	0.2
			Benzo(b)fluoranthene	--	IR29B075	6.25	0.1
			Benzo(b)fluoranthene	--	IR29B073	3.75	0.05
			Indeno(1,2,3-cd)pyrene (2E-07)	0.19	IR29B073	1.75	0.6
			Indeno(1,2,3-cd)pyrene	--	IR29B072	1.75	0.2
			Indeno(1,2,3-cd)pyrene	--	IR29B073	6.25	0.2
			Indeno(1,2,3-cd)pyrene	--	IR29B075	6.25	0.04
			Indeno(1,2,3-cd)pyrene	--	IR29B073	3.75	0.03
			Benzo(k)fluoranthene (2E-07)	0.19	IR29B073	1.75	1
			Benzo(k)fluoranthene	--	IR29B072	1.75	0.5
			Benzo(k)fluoranthene	--	IR29B073	6.25	0.2
			Benzo(k)fluoranthene	--	IR29TA52	9.75	0.09
			Benzo(k)fluoranthene	--	IR29B075	6.25	0.05
			Benzo(k)fluoranthene	--	IR29B073	3.75	0.04
			Chrysene (3E-08)	0.37	IR29B073	1.75	2
			Chrysene	--	IR29TA52	9.75	1
			Chrysene	--	IR29B072	1.75	0.8
			Chrysene	--	IR29B073	6.25	0.4
			Chrysene	--	IR29B075	6.25	0.1
			Chrysene	--	IR29B073	3.75	0.06
Chrysene	--	IR29B075	1.25	0.06			
Chrysene	--	IR29B072	3.75	0.03			
Dieldrin (1E-08)	0.0018	IR29B072	3.75	0.002			

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28 (IR-29)	AZ14 (089039, 089040, 090039, 090040, 091038, 091040) (Continued)	3E-05  (1E-06)	Dieldrin	--	IR29B073	3.75	0.002	
			Bis(2-ethylhexyl)phthalate (5E-09)	0.67	IR29B073	3.75	0.7	
			Bis(2-ethylhexyl)phthalate	--	IR29B073	6.25	0.2	
			4,4'-DDE (4E-10)	0.0032	PA29B036	3.75	0.03	
			4,4'-DDE	--	IR29B073	3.75	0.007	
			4,4'-DDE	--	IR29B073	1.75	0.004	
			4,4'-DDE	--	IR29B072	1.75	0.002	
			4,4'-DDD (3E-10)	0.0039	IR29B072	1.75	0.004	
			Carbazole (3E-09)	0.24	IR29B073	1.75	0.2	
			Carbazole	--	IR29B072	1.75	0.09	
IR-28	BA07 (093017, 094018)	2E-05  (1E-06)	Arsenic (2E-05)	40	PA28MW52A	6.75	40.0	*,α
			Arsenic	--	IR28B107	1.75	14.8	*,α
			Arsenic	--	PA28MW52A	2.75	3.2	*
			Benzo(a)pyrene (2E-06)	0.20	IR28B107	1.75	0.2	
			Chromium VI (3E-07)	3.3	NE	NE	NE	
			Tetrachloroethene (2E-07)	1.6	IR28B107	6.75	2	
			Tetrachloroethene	--	IR28B107	1.75	0.3	
			Tetrachloroethene	--	IR28B095	4.25	0.02	
			Tetrachloroethene	--	PA28MW52A	2.75	0.009	
			Tetrachloroethene	--	PA28MW52A	6.75	0.002	
			Benzo(a)anthracene (2E-07)	0.21	IR28B107	1.75	0.2	
			Benzo(a)anthracene	--	IR28B107	6.75	0.08	
			Benzo(k)fluoranthene (2E-07)	0.18	IR28B107	1.75	0.2	

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	BA07 (093017, 094018) (Continued)	2E-05 (1E-06)	Benzo(b)fluoranthene (1E-07)	0.16	IR28B107	1.75	0.2
			Chrysene (2E-08)	0.27	IR28B107	1.75	0.3
			Chrysene	--	IR28B107	6.75	0.09
			4,4'-DDT (1E-10)	0.00080	PA28MW52A	2.75	0.0008
			4,4'-DDD (9E-12)	0.00011	PA28MW52A	2.75	0.0001
			Trichloroethene (2E-09)	0.019	IR28B107	6.75	0.02
			Trichloroethene	--	IR28B107	1.75	0.009
			Trichloroethene	--	PA28MW52A	2.75	0.003
			4,4'-DDE (2E-11)	0.00013	PA28MW52A	2.75	0.0001
IR-28	BA08 (092021, 093021, 093022, 094020)	2E-06 (2E-07)	Benzo(a)pyrene (2E-06)	0.19	IR28B096	6.25	0.2
			Benzo(a)pyrene	--	IR28B109	1.75	0.07
			Indeno(1,2,3-cd)pyrene (2E-07)	0.29	IR28B096	6.25	0.3
			Indeno(1,2,3-cd)pyrene	--	IR28B109	1.75	0.04
			Benzo(b)fluoranthene (2E-07)	0.20	IR28B096	6.25	0.2
			Benzo(b)fluoranthene	--	IR28B109	1.75	0.06
			Benzo(k)fluoranthene (1E-07)	0.15	IR28B096	6.25	0.2
			Benzo(k)fluoranthene	--	IR28B109	1.75	0.06
			Benzo(a)anthracene (5E-08)	0.063	IR28B096	6.25	0.06
			Benzo(a)anthracene	--	IR28B109	1.75	0.06
			Chrysene (1E-08)	0.12	IR28B096	6.25	0.1
			Chrysene	--	IR28B109	1.75	0.08

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28	BA11 (092030, 093030, 093031, 094030)	1E-05 (1E-06)	Arsenic (5E-06)	11	IR28B291	6.25	16.9	*,α
			Arsenic	--	IR28B292	6.25	10.8	*
			Arsenic	--	IR28MW290A	0.25	4.8	*
			Arsenic	--	IR28MW290A	6.25	3.3	*
			Arsenic	--	IR51B026	1.25	2.6	*
			Arsenic	--	IR51B026	3.75	2.4	*
			Arsenic	--	IR51B025	1.75	2.3	*
			Arsenic	--	IR51B026	6.25	1.6	
			Arsenic	--	IR51B025	6.25	1.4	
			Arsenic	--	IR51B025	3.75	1.1	
			Benzo(a)pyrene (4E-06)	0.51	IR28B291	0.25	0.5	
			Benzo(a)pyrene	--	IR28MW290A	0.25	0.2	
			Benzo(a)anthracene (6E-07)	0.75	IR28B291	0.25	0.8	
			Benzo(b)fluoranthene (6E-07)	0.70	IR28B291	0.25	0.7	
			Aroclor-1260 (3E-07)	0.052	PA51SS15	1.25	140	
			Aroclor-1260	--	PA51SS16	1.25	2	
			Aroclor-1260	--	IR51B025	1.75	1	
			Aroclor-1260	--	IR51B026	1.25	0.08	
			Chrysene (8E-08)	0.97	IR51B025	1.75	1	
			Chrysene	--	IR28B291	0.25	0.6	
			Nickel (1E-08)	210	IR28B292	1.25	727	
			Nickel	--	IR51B026	3.75	272	
			Nickel	--	IR51B027	1.75	210	

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28	BA11 (092030, 093030, 093031, 094030) (Continued)	1E-05 (1E-06)	Nickel	--	IR51B026	1.25	141	
			Nickel	--	IR28B208	6.75	126	
			Nickel	--	IR51B025	3.75	112	
			Nickel	--	IR51B027	3.25	98.7	
			Nickel	--	IR28B291	6.25	74.9	
			Nickel	--	IR28B292	6.25	72.4	
			Nickel	--	IR51B026	6.25	70.5	
			Nickel	--	IR51B025	1.75	67.3	
			Nickel	--	IR28MW290A	6.25	65.2	
			Nickel	--	IR51B025	6.25	62.8	
			Nickel	--	IR51B027	6.25	41.7	
			Nickel	--	IR28B291	0.25	38.4	
			Nickel	--	IR28MW290A	0.25	30.1	
			4,4'-DDT (4E-09)	0.032	IR51B026	1.25	0.03	
			4,4'-DDD (3E-09)	0.034	IR51B025	1.75	0.03	
4,4'-DDD	--	IR51B026	1.25	0.004				
4,4'-DDE (2E-09)	0.013	IR51B025	1.75	0.01				
IR-28	BA12 (092033, 093034, 094032, 094034)	7E-06 (5E-07)	Arsenic (6E-06)	15	IR28B198	7.25	15.3	*,α
			Arsenic	--	IR28B197	6.75	6.4	*
			Arsenic	--	PA28SS69	0.75	3.7	*
			Aroclor-1260 (2E-07)	0.029	PA28SS69	0.75	0.03	
			4,4'-DDT (4E-10)	0.0034	PA28SS69	0.75	0.003	

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28	BA13 (093036, 093037, 094035)	7E-06 (8E-07)	Arsenic (7E-06)	18	IR28B210	5.75	17.7	*,α
			Arsenic	--	IR28MW312F	0.75	15.8	*,α
			Arsenic	--	IR28B199	6.75	3.6	*
IR-28 (IR-29)	BA14 (092039, 094040)	5E-07 (5E-08)	Benzo(a)anthracene (3E-07)	0.34	IR28MW298A	1.25	0.3	
			Chrysene (3E-08)	0.34	IR28MW298A	1.25	0.3	
			Trichloroethene (2E-09)	0.020	IR28MW298A	9.50	0.02	
			Trichloroethene	--	IR28MW298A	1.25	0.01	
IR-28 (IR-29)	BA15 (092042, 092043, 093043, 094041, 094043)	3E-05 (7E-07)	Benzo(a)pyrene (2E-05)	2.9	IR29B064	2.25	3	
			Benzo(b)fluoranthene (3E-06)	3.9	IR29B064	2.25	4	
			Benzo(a)anthracene (2E-06)	2.6	IR29B064	2.25	3	
			Dibenz(a,h)anthracene (2E-06)	0.31	IR29B064	2.25	0.3	
			Indeno(1,2,3-cd)pyrene (9E-07)	1.1	IR29B064	2.25	1	
			Benzo(k)fluoranthene (9E-07)	1.1	IR29B064	2.25	1	
			Chrysene (2E-07)	2.7	IR29B064	2.25	3	
			4,4'-DDE (5E-10)	0.0038	IR49TA20	0.00	0.004	
			4,4'-DDE	--	IR49TA20	0.00	0.003	
			Nickel (4E-09)	88	IR49B017A	2.25	1640	
			Nickel	--	IR49B017A	2.75	112	
			Nickel	--	IR29B063	6.25	90.8	
Nickel	--	IR29B064A	6.25	57.2				
Nickel	--	IR29B064	6.25	54.2				
Nickel	--	IR49TA20	0.00	52.8				

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28 (IR-29)	BA15 (092042, 092043, 093043, 094041, 094043) (Continued)	3E-05 (7E-07)	Nickel Nickel Nickel Nickel	-- -- -- --	IR49TA20 IR29B064 IR49B017A IR28B288	0.00 2.25 5.75 0.25	50.9 46.7 19.3 14.1	
IR-28	BB05 (096013, 097011, 097012, 097013)	7E-05 (2E-06)	Benzo(a)pyrene (4E-05) Arsenic (5E-06) Arsenic Dibenz(a,h)anthracene (5E-06) Benzo(a)anthracene (5E-06) Benzo(k)fluoranthene (3E-06) Benzo(b)fluoranthene (3E-06) Indeno(1,2,3-cd)pyrene (3E-06) Chrysene (5E-07) Carbazole (1E-09) Alpha-chlordane (1E-09)	5.3 13 -- 0.95 5.4 3.4 3.2 3.2 5.6 0.091 0.0024	IR28B135 IR28B135 IR28B134 IR28B135 IR28B135 IR28B135 IR28B135 IR28B135 IR28B135 IR28B135 IR28B135	6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25	5 12.8 1.6 1 5 3 3 3 6 0.09 0.002	*, $\alpha$
IR-28	BB06 (095015, 096014, 097014, 097016)	2E-05 (7E-07)	Arsenic (1E-05) Arsenic Benzo(a)pyrene (2E-06) Benzo(a)pyrene Aroclor-1260 (1E-06)	30 -- 0.21 -- 0.26	IR28B106 IR28B105 IR28B106 IR28B105 PA51SS14	2.25 1.75 2.25 6.25 2.25	30.3 14.4 0.2 0.06 0.3	*, $\alpha$ *, $\alpha$

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	BB06 (095015, 096014, 097014, 097016) (Continued)	2E-05 (7E-07)	Benzo(b)fluoranthene (2E-07)	0.20	IR28B106	2.25	0.2
			Benzo(b)fluoranthene	--	IR28B105	6.25	0.08
			Benzo(a)anthracene (2E-07)	0.19	IR28B105	1.75	0.2
			Benzo(a)anthracene	--	IR28B106	2.25	0.2
			Benzo(a)anthracene	--	IR28B105	6.25	0.05
			Indeno(1,2,3-cd)pyrene (2E-07)	0.18	IR28B106	2.25	0.2
			Benzo(k)fluoranthene (1E-07)	0.14	IR28B106	2.25	0.1
			Benzo(k)fluoranthene	--	IR28B105	6.25	0.03
			Chrysene (2E-08)	0.24	IR28B105	1.75	0.2
			Chrysene	--	IR28B106	2.25	0.2
			Chrysene	--	IR28B105	6.25	0.07
			Tetrachloroethene (3E-09)	0.021	IR28B106	2.25	0.02
			Tetrachloroethene	--	IR28B106	6.75	0.02
			Tetrachloroethene	--	IR28B105	6.25	0.008
Trichloroethene (1E-09)	0.011	IR28B106	2.25	0.01			
IR-28	BB07 (095018, 095019, 096017, 096018, 097019)	1E-06 (1E-07)	Benzo(a)pyrene (8E-07)	0.10	PA28MW51A	6.75	0.1
			Benzo(b)fluoranthene (1E-07)	0.15	PA28MW51A	6.75	0.2
			Benzo(a)anthracene (1E-07)	0.12	PA28MW51A	6.75	0.1
			Benzo(a)anthracene	--	IR28B097A	3.75	0.04
			Chrysene (1E-08)	0.14	PA28MW51A	6.75	0.1
			Chrysene	--	IR28B097A	3.75	0.06
			Alpha-chlordane (6E-11)	0.00014	PA28B048	6.75	0.0001
4,4'-DDT (6E-11)	0.00052	PA28MW51A	6.75	0.0005			

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	BB07 (095018, 095019, 096017, 096018, 097019) (Continued)	1E-06 (1E-07)	Trichloroethene (6E-10)	0.0060	IR28B112	2.25	0.006
			Trichloroethene	--	IR28B112	6.75	0.004
			Benzene (4E-09)	0.0040	IR28B098	9.75	0.004
			Beta-BHC (4E-11)	0.000060	PA28B048	2.75	0.00006
			Tetrachloroethene (1E-09)	0.0080	PA28MW51A	6.75	0.008
			Tetrachloroethene	--	PA28B048	2.75	0.002
IR-28	BB08 (095022, 096021, 096022, 097021, 097022)	3E-06 (3E-07)	Benzo(a)pyrene (2E-06)	0.18	IR28B111	1.75	0.2
			Benzo(a)pyrene	--	IR28B120	1.75	0.1
			Chromium VI (6E-07)	5.7	NE	NE	NE
			Benzo(a)anthracene (2E-07)	0.18	IR28B111	1.75	0.2
			Benzo(a)anthracene	--	IR28B120	1.75	0.1
			Benzo(b)fluoranthene (1E-07)	0.16	IR28B111	1.75	0.2
			Benzo(b)fluoranthene	--	IR28B120	1.75	0.1
			Benzo(k)fluoranthene (1E-07)	0.16	IR28B111	1.75	0.2
			Benzo(k)fluoranthene	--	IR28B120	1.75	0.05
			Indeno(1,2,3-cd)pyrene (8E-08)	0.096	IR28B111	1.75	0.1
			1,2-Dichloroethane (3E-08)	0.033	IR28B159	5.25	0.03
			Chloroform (2E-08)	0.020	IR28B159	5.25	0.02
			Chrysene (2E-08)	0.20	IR28B111	1.75	0.2
			Chrysene	--	IR28B120	1.75	0.2
			Chrysene	--	IR28B160	5.75	0.03
			Benzene (1E-08)	0.011	IR28B119	6.75	0.01

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	BB08 (095022, 096021, 096022, 097021, 097022) (Continued)	3E-06 (3E-07)	Trichloroethene (3E-09)	0.029	IR28B159	5.25	0.2
			Trichloroethene	--	IR28B120	1.75	0.07
			Trichloroethene	--	IR28B120	6.75	0.05
			Trichloroethene	--	IR28B111	1.75	0.04
			Carbazole (3E-10)	0.026	IR28B111	1.75	0.03
			Tetrachloroethene (1E-09)	0.0080	IR28B159	5.25	0.008
IR-28	BB09 (095023, 095024, 096023, 096024, 096025, 097023, 097024)	3E-10 (3F-11)	Methylene chloride (3E-10)	0.0040	PA50B012	8.50	0.004
IR-28	BB10 (096028, 097026)	1E-05 (5E-07)	Arsenic (1E-05)	30	IR28MW309B	6.00	29.7 * <sub>,α</sub>
			Arsenic	--	IR28MW309B	2.00	3.5 *
			Arsenic	--	IR28B259	1.75	3.1 *
IR-28	BB11 (097029)	NC	NE	NE	NE	NE	NE

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28	BB12 (095032, 096032, 096033, 097032)	9E-06 (8E-07)	Benzo(a)pyrene (3E-06)	0.36	IR28B243	8.75	0.4	
			Benzo(a)pyrene	--	IR28B245	5.75	0.05	
			Benzo(a)pyrene	--	IR28B245	3.75	0.02	
			Arsenic (2E-06)	5.6	IR28B243	8.75	11.2	*,α
			Arsenic	--	IR28B194	6.75	8.5	*
			Arsenic	--	IR28B196	2.25	6.3	*
			Arsenic	--	IR28B243	1.75	6.1	*
			Arsenic	--	PA28SS106	0.00	5.9	*
			Arsenic	--	IR28B246	1.75	5.9	*
			Arsenic	--	IR28B246	3.75	5.9	*
			Arsenic	--	IR28B195	6.75	5.5	*
			Arsenic	--	IR28B247	1.25	5.5	*
			Arsenic	--	IR28B243	3.75	5.0	*
			Arsenic	--	IR28B244	3.75	4.6	*
			Arsenic	--	IR28B244	6.25	4.5	*
			Arsenic	--	IR28B246	6.25	4.0	*
			Arsenic	--	IR28B196	6.75	3.6	*
			Arsenic	--	IR28B245	3.75	2.7	*
			Arsenic	--	IR28B245	5.75	2.6	*
			Arsenic	--	IR28B247	6.25	1.8	
			Arsenic	--	IR28B247	3.75	0.87	
Aroclor-1248 (8E-07)	0.15	IR28B243	3.75	0.2				
Aroclor-1248	--	IR28B245	5.75	0.08				

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	BB12 (095032, 096032, 096033, 097032) (Continued)	9E-06 (8E-07)	Dibenz(a,h)anthracene (5E-07)	0.099	IR28B243	8.75	0.1
			Vinyl chloride (4E-07)	0.0050	IR28B243	8.75	0.005
			Benzo(b)fluoranthene (4E-07)	0.42	IR28B243	8.75	0.4
			Benzo(k)fluoranthene (3E-07)	0.41	IR28B243	8.75	0.4
			Beryllium (3E-07)	0.37	IR28B196	2.25	0.71
			Beryllium	--	IR28B246	3.75	0.66
			Beryllium	--	IR28B194	6.75	0.60
			Beryllium	--	IR28B196	6.75	0.50
			Beryllium	--	IR28B195	6.75	0.43
			Beryllium	--	IR28B243	1.75	0.40
			Beryllium	--	IR28B244	3.75	0.38
			Beryllium	--	IR28B246	1.75	0.38
			Beryllium	--	PA28SS74	0.75	0.38
			Beryllium	--	IR28B244	6.25	0.31
			Beryllium	--	IR28B194	2.25	0.27
			Indeno(1,2,3-cd)pyrene (2E-07)	0.26	IR28B243	8.75	0.3
			Aroclor-1260 (1E-07)	0.021	PA28SS74	0.75	1
			Aroclor-1260	--	IR28B245	5.75	0.6
			Aroclor-1260	--	IR28B243	3.75	0.2
			Aroclor-1260	--	PA28SS106	0.00	0.2
Chrysene (4E-08)	0.45	IR28B243	8.75	0.5			
Chrysene	--	IR28B245	5.75	0.1			
Chrysene	--	IR28B243	3.75	0.03			

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	BB12 (095032, 096032, 096033, 097032) (Continued)	9E-06 (8E-07)	Aldrin (3E-08)	0.0046	IR28B243	3.75	0.005
			Aldrin	--	IR28B245	5.75	0.001
			Benzo(a)anthracene (3E-08)	0.031	IR28B243	3.75	0.03
			Benzo(a)anthracene	--	IR28B245	5.75	0.03
			4,4'-DDE (9E-10)	0.0079	IR28B245	5.75	0.008
			4,4'-DDE	--	IR28B243	3.75	0.003
			4,4'-DDD (6E-10)	0.0077	IR28B245	5.75	0.008
			4,4'-DDD	--	IR28B243	3.75	0.004
			Chloroform (6E-09)	0.0070	IR28B245	3.75	0.007
			Trichloroethene (5E-10)	0.0055	IR28B244	3.75	0.6
			Trichloroethene	--	IR28B246	6.25	0.03
			Trichloroethene	--	IR28B246	1.75	0.008
			Trichloroethene	--	PA28SS106	0.00	0.005
			Trichloroethene	--	IR28B195	6.75	0.002
			Trichloroethene	--	IR28B243	8.75	0.002
			Trichloroethene	--	IR28B244	6.25	0.002
			Trichloroethene	--	IR28B245	3.75	0.002
			Trichloroethene	--	IR28B245	5.75	0.002
			Trichloroethene	--	IR28B246	3.75	0.002
			Tetrachloroethene (4E-10)	0.0030	IR28B195	6.75	0.003
			Heptachlor (4E-09)	0.0021	IR28B244	3.75	0.002
4,4'-DDT (4E-09)	0.034	IR28B245	5.75	0.03			
4,4'-DDT	--	IR28B243	3.75	0.004			

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	BB12 (095032, 096032, 096033, 097032) (Continued)	9E-06 (8E-07)	Alpha-chlordane (2E-09)	0.0042	IR28B245	5.75	0.004
IR-28	BB13 (095035, 095036, 096037)	NC	NE	NE	NE	NE	NE
IR-28	BB14 (095038, 095040, 096040)	9E-06 (8E-07)	Arsenic (8E-06) Arsenic Chromium VI (3E-07)	20 -- 2.8	PA28B021 PA28B021 PA28B021	1.75 6.25 1.75	20.0 4.1 2.8
IR-28 (IR-29)	BB15 (095042, 096041)	4E-09 (5E-10)	Aldrin (4E-09)	0.00067	IR29B085	2.25	0.0007
IR-28	BC03 (100006, 100007)	NC	NE	NE	NE	NE	NE
IR-28	BC04 (100008, 100009)	6E-05 (2E-06)	Benzo(a)pyrene (4E-05) Benzo(a)pyrene Indeno(1,2,3-cd)pyrene (4E-06)	5.3 -- 4.9	PA28B023 IR28B138 PA28B023	2.25 4.75 2.25	5 0.1 5

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28	BC04 (100008, 100009) (Continued)	6E-05 (2E-06)	Benzo(b)fluoranthene (4E-06)	4.3	PA28B023	2.25	4	
			Benzo(b)fluoranthene	--	IR28B138	4.75	0.09	
			Benzo(k)fluoranthene (3E-06)	3.7	PA28B023	2.25	4	
			Benzo(k)fluoranthene	--	IR28B138	4.75	0.08	
			Benzo(a)anthracene (2E-06)	2.4	PA28B023	2.25	2	
			Benzo(a)anthracene	--	IR28B138	4.75	0.1	
			Aroclor-1260 (6E-07)	0.12	IR28B137	5.25	0.1	
			Chrysene (3E-07)	3.5	PA28B023	2.25	3	
			Chrysene	--	IR28B138	4.75	0.1	
			Trichloroethene (8E-10)	0.0077	PA28B023	2.25	0.008	
IR-28	BC05 (098012, 098013, 099013, 100012)	7E-06 (8E-07)	Arsenic (3E-06)	7.0	IR28B104	1.75	13.0	*,α
			Arsenic	--	IR28B265	2.25	9.3	*
			Arsenic	--	IR28B265	6.25	9.3	*
			Arsenic	--	IR28B265	8.75	6.8	*
			Arsenic	--	IR28B104	6.25	5.8	*
			Arsenic	--	IR28B265	3.75	3.1	*
			Arsenic	--	PA28B049	2.25	0.92	
			Benzo(a)pyrene (2E-06)	0.26	IR28B265	6.25	0.4	
			Benzo(a)pyrene	--	IR28B265	3.75	0.2	
			Benzo(a)pyrene	--	IR28B265	8.75	0.2	
			Benzo(a)pyrene	--	IR28B104	1.75	0.1	
			Benzo(a)pyrene	--	IR28B104	6.25	0.09	
			Benzo(a)pyrene	--	IR28B265	2.25	0.08	

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>e</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	BC05 (098012, 098013, 099013, 100012) (Continued)	7E-06 (8E-07)	Aroclor-1260 (6E-07)	0.11	PA28B049	2.25	0.1
			Aroclor-1260	--	IR28B104	6.25	0.03
			Benzo(b)fluoranthene (3E-07)	0.30	IR28B265	6.25	0.5
			Benzo(b)fluoranthene	--	IR28B265	8.75	0.3
			Benzo(b)fluoranthene	--	IR28B265	3.75	0.2
			Benzo(b)fluoranthene	--	IR28B104	1.75	0.1
			Benzo(b)fluoranthene	--	IR28B265	2.25	0.1
			Benzo(b)fluoranthene	--	IR28B104	6.25	0.07
			Benzo(a)anthracene (2E-07)	0.25	IR28B265	6.25	0.4
			Benzo(a)anthracene	--	IR28B265	3.75	0.2
			Benzo(a)anthracene	--	IR28B265	8.75	0.2
			Benzo(a)anthracene	--	IR28B104	1.75	0.09
			Benzo(a)anthracene	--	IR28B104	6.25	0.09
			Benzo(a)anthracene	--	IR28B265	2.25	0.09
			Indeno(1,2,3-cd)pyrene (2E-07)	0.19	IR28B265	6.25	0.2
			Indeno(1,2,3-cd)pyrene	--	IR28B104	1.75	0.1
			Indeno(1,2,3-cd)pyrene	--	IR28B265	3.75	0.1
			Indeno(1,2,3-cd)pyrene	--	IR28B265	8.75	0.1
			Indeno(1,2,3-cd)pyrene	--	IR28B104	6.25	0.05
			Indeno(1,2,3-cd)pyrene	--	IR28B265	2.25	0.05
			Dibenz(a,h)anthracene (1E-07)	0.027	IR28B104	6.25	0.03
Benzo(k)fluoranthene (1E-07)	0.14	IR28B265	6.25	0.2			
Benzo(k)fluoranthene	--	IR28B104	1.75	0.08			

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	BC05 (098012, 098013, 099013, 100012) (Continued)	7E-06 (8E-07)	Benzo(k)fluoranthene	--	IR28B265	8.75	0.08
			Benzo(k)fluoranthene	--	IR28B104	6.25	0.07
			Benzo(k)fluoranthene	--	IR28B265	3.75	0.06
			Benzo(k)fluoranthene	--	IR28B265	2.25	0.03
			Chrysene (2E-08)	0.26	IR28B265	6.25	0.4
			Chrysene	--	IR28B265	3.75	0.2
			Chrysene	--	IR28B265	8.75	0.2
			Chrysene	--	IR28B104	1.75	0.1
			Chrysene	--	IR28B104	6.25	0.1
			Chrysene	--	IR28B265	2.25	0.08
			Tetrachloroethene (9E-10)	0.0063	IR28B094	7.25	0.03
			Tetrachloroethene	--	IR28B265	6.25	0.009
			Tetrachloroethene	--	IR28B265	8.75	0.006
			Tetrachloroethene	--	IR28B265	3.75	0.005
			Tetrachloroethene	--	PA28B049	2.25	0.005
			Tetrachloroethene	--	IR28B104	1.75	0.002
			Carbazole (5E-10)	0.043	IR28B265	6.25	0.04
			Trichloroethene (1E-09)	0.012	IR28B265	6.25	0.05
			Trichloroethene	--	IR28B265	8.75	0.03
			Trichloroethene	--	IR28B094	7.25	0.01
Trichloroethene	--	IR28B265	3.75	0.01			
Trichloroethene	--	IR28B265	2.25	0.004			

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28	BC06 (098014, 098015, 099014, 099015, 100015, 100016)	1E-05 (6E-07)	Benzo(a)pyrene (8E-06)	1.0	IR28B264	8.75	1	
			Benzo(a)pyrene	--	IR28B264	3.75	0.4	
			Vinyl chloride (1E-06)	0.015	IR28B090	9.75	0.02	*
			Benzo(a)anthracene (1E-06)	1.3	IR28B264	8.75	1	
			Benzo(a)anthracene	--	IR28B264	3.75	0.4	
			Benzo(a)anthracene	--	IR28B264	6.25	0.1	
			Benzo(b)fluoranthene (1E-06)	1.3	IR28B264	8.75	1	
			Benzo(b)fluoranthene	--	IR28B264	3.75	0.4	
			Benzo(b)fluoranthene	--	IR28B264	6.25	0.2	
			Benzo(k)fluoranthene (8E-07)	0.95	IR28B264	8.75	1	
			Benzo(k)fluoranthene	--	IR28B264	3.75	0.3	
			Benzo(k)fluoranthene	--	IR28B264	6.25	0.1	
			Dibenz(a,h)anthracene (8E-07)	0.15	IR28B264	8.75	0.2	
			Arsenic (7E-07)	1.7	IR28B264	8.75	36.2	*,α
			Arsenic	--	IR28B264	3.75	8.8	*
			Arsenic	--	IR28B264	6.25	5.1	*
			Arsenic	--	IR28B092	5.25	2.0	
			Arsenic	--	PA28B047	2.75	1.9	
			Arsenic	--	PA28B047	6.75	1.5	
			Indeno(1,2,3-cd)pyrene (5E-07)	0.56	IR28B264	8.75	0.6	
Indeno(1,2,3-cd)pyrene	--	IR28B264	3.75	0.2				
Indeno(1,2,3-cd)pyrene	--	IR28B264	6.25	0.08				
Chrysene (1E-07)	1.6	IR28B264	8.75	2				

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	BC06 (098014, 098015, 099014, 099015, 100015, 100016) (Continued)	1E-05 (6E-07)	Chrysene	--	IR28B264	3.75	0.4
			Chrysene	--	IR28B264	6.25	0.2
			Tetrachloroethene (9E-10)	0.0061	IR28B090	9.75	0.007
			Tetrachloroethene	--	IR28B092A	5.25	0.007
			Tetrachloroethene	--	IR28B264	3.75	0.004
			Tetrachloroethene	--	IR28B264	6.25	0.003
			Tetrachloroethene	--	PA28B047	2.75	0.001
			Tetrachloroethene	--	PA28B047	6.75	0.001
			Gamma-chlordane (8E-11)	0.00018	PA28B047	6.75	0.0002
			Alpha-chlordane (5E-11)	0.00011	PA28B047	6.75	0.0001
			4,4'-DDT (5E-10)	0.0038	PA28B047	6.75	0.004
			4,4'-DDE (4E-11)	0.00031	PA28B047	6.75	0.0003
			4,4'-DDD (4E-11)	0.00043	PA28B047	6.75	0.0004
			Carbazole (4E-09)	0.34	IR28B264	8.75	0.3
Trichloroethene (3E-10)	0.0030	IR28B264	3.75	0.003			
IR-28	BC07 (098017, 098019, 099017, 099019, 100017, 100018)	4E-06 (4E-07)	Benzo(a)pyrene (2E-06)	0.20	IR28B121	6.75	0.2
			Benzo(a)pyrene	--	IR28B121	1.75	0.1
			Chromium VI (1E-06)	11	NE	NE	NE
			Aroclor-1260 (6E-07)	0.12	IR28B086	0.75	0.1
			Aroclor-1242 (3E-07)	0.059	IR28B086	0.75	0.06
			Benzo(a)anthracene (1E-07)	0.15	IR28B121	6.75	0.2
			Benzo(a)anthracene	--	IR28B121	1.75	0.1
			Benzo(b)fluoranthene (1E-07)	0.14	IR28B121	1.75	0.1

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	BC07 (098017, 098019, 099017, 099019, 100017, 100018) (Continued)	4E-06 (4E-07)	Benzo(b)fluoranthene	--	IR28B121	6.75	0.1
			Indeno(1,2,3-cd)pyrene (1E-07)	0.14	IR28B121	1.75	0.1
			Indeno(1,2,3-cd)pyrene	--	IR28B121	6.75	0.1
			Benzo(k)fluoranthene (1E-07)	0.12	IR28B121	1.75	0.1
			Benzo(k)fluoranthene	--	IR28B121	6.75	0.1
			Chrysene (2E-08)	0.19	IR28B121	6.75	0.2
			Chrysene	--	IR28B121	1.75	0.1
			Chrysene	--	IR28B086	0.75	0.07
			Alpha-chlordane (1E-09)	0.0022	IR28B086	0.75	0.002
			4,4'-DDE (7E-10)	0.0061	IR28B086	0.75	0.006
			Bis(2-ethylhexyl)phthalate (6E-10)	0.085	IR28B145	5.25	0.09
			Trichloroethene (4E-09)	0.043	IR28B121	1.75	2
			Trichloroethene	--	IR28B146	5.25	0.2
			Trichloroethene	--	IR28B121	1.75	0.06
			Trichloroethene	--	IR28B235	2.25	0.04
			Trichloroethene	--	IR28B121	6.75	0.03
			Trichloroethene	--	IR28B145	5.25	0.02
			Trichloroethene	--	IR28B086	0.75	0.003
			Tetrachloroethene (3E-09)	0.022	IR28B086	0.75	0.02
			Tetrachloroethene	--	IR28B235	2.25	0.02
Tetrachloroethene	--	IR28B121	1.75	0.01			
4,4'-DDT (3E-09)	0.022	IR28B086	0.75	0.02			

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	BC08 (098020, 098021, 099020, 099021)	1E-06 (3E-08)	Aroclor-1260 (1E-06)	0.25	IR28B084	4.75	0.3
			Aroclor-1260	--	IR28B084	9.25	0.03
			Aldrin (2E-08)	0.0026	IR28B084	4.75	0.003
			4,4'-DDE (8E-10)	0.0067	IR28B084	4.75	0.007
			Gamma-chlordane (5E-10)	0.0012	IR28B084	4.75	0.001
			Trichloroethene (5E-09)	0.054	IR28B147	5.25	0.05
			Trichloroethene	--	IR28B143	6.25	0.04
			Trichloroethene	--	IR28B085	2.25	0.03
			Trichloroethene	--	IR28B144	6.25	0.03
			Trichloroethene	--	PA28SS76	4.75	0.02
			Trichloroethene	--	IR28B148	5.25	0.01
			Trichloroethene	--	IR28B085	5.75	0.003
			Tetrachloroethene (3E-10)	0.0020	IR28B144	6.25	0.002
			Tetrachloroethene	--	IR28B085	2.25	0.001
			4,4'-DDT (2E-10)	0.0017	IR28B085	2.25	0.002
4,4'-DDD (2E-10)	0.0020	IR28B085	2.25	0.002			
IR-28	BC09 (098024, 098025, 099024, 099025, 100023)	4E-06 (3E-07)	Benzo(a)pyrene (3E-06)	0.36	PA28B079	7.25	0.4
			Benzo(a)pyrene	--	IR28B141	3.25	0.1
			Benzo(a)pyrene	--	IR28B141	6.25	0.03
			Benzo(a)anthracene (3E-07)	0.38	PA28B079	7.25	0.4
			Benzo(a)anthracene	--	IR28B141	3.25	0.05
			Benzo(b)fluoranthene (3E-07)	0.35	PA28B079	7.25	0.3
			Benzo(b)fluoranthene	--	IR28B141	3.25	0.1

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	BC09 (098024, 098025, 099024, 099025, 100023) (Continued)	4E-06 (3E-07)	Benzo(b)fluoranthene	--	IR28B141	6.25	0.04
			Benzo(k)fluoranthene (3E-07)	0.33	PA28B079	7.25	0.3
			Dibenz(a,h)anthracene (2E-07)	0.033	IR28B141	3.25	0.03
			Indeno(1,2,3-cd)pyrene (1E-07)	0.13	IR28B141	3.25	0.1
			Indeno(1,2,3-cd)pyrene	--	IR28B141	6.25	0.03
			Chrysene (3E-08)	0.30	PA28B079	7.25	0.3
			Chrysene	--	IR28B141	3.25	0.1
			Chrysene	--	IR28B141	6.25	0.02
			Alpha-chlordane (1E-09)	0.0022	IR28B141	3.25	0.002
			Alpha-chlordane	--	IR28B141	9.25	0.001
			4,4'-DDT (3E-10)	0.0024	IR28B141	3.25	0.002
			4,4'-DDT	--	IR28B236	8.75	0.002
			Tetrachloroethene (1E-10)	0.0010	IR28B141	9.25	0.001
			Bis(2-ethylhexyl)phthalate (1E-09)	0.15	PA28B079	7.25	0.2
IR-28	BC10 (098027, 099026, 100027, 100028)	2E-10 (2E-11)	Methylene chloride (2E-10)	0.0030	PA50B013	10.00	0.003
IR-28	BC11 (100030)	3E-06 (3E-07)	Aroclor-1260 (3E-06)	0.50	PA51SS18	0.00	0.5

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28	BC12 (099032, 100033)	NC	NE	NE	NE	NE	NE	
IR-28	BD02 (102004)	1E-06 (1E-07)	Benzo(a)pyrene (1E-06)	0.15	PA49TA10	2.25	0.2	
IR-28	BD03 (102007, 103005)	NC	NE	NE	NE	NE	NE	
IR-28	BD04 (101008, 101009, 101010, 102008, 102009)	1E-05 (1E-06)	Arsenic (3E-06)	8.0	IR28B101	6.25	707	*,α
			Arsenic	--	IR28B102	4.25	26.3	*,α
			Arsenic	--	IR28B131	5.25	11.0	*
			Arsenic	--	IR28B130	5.25	7.9	*
			Arsenic	--	IR28B132	5.25	7.6	*
			Arsenic	--	PA28B053	2.25	7.4	*
			Arsenic	--	PA28B053	6.25	6.8	*
			Arsenic	--	IR28B101	1.75	5.9	*
			Arsenic	--	IR28B266	7.25	5.5	*
			Arsenic	--	IR28B266	2.25	2.9	*
			Arsenic	--	IR28B266	4.75	2.8	*
			Arsenic	--	IR28B266	9.75	2.5	*
			Dibenz(a,h)anthracene (3E-06)	0.52	IR28B101	6.25	0.5	
			Benzo(a)pyrene (2E-06)	0.23	IR28B131	5.25	10	
Benzo(a)pyrene	--	IR28B102	4.25	2				

(Continued)

SOIL SUMMARY TABLE  
COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS  
PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	BD04 (101008, 101009, 101010, 102008, 102009) (Continued)	1E-05  (1E-06)	Benzo(a)pyrene	--	IR28B101	6.25	1
			Benzo(a)pyrene	--	IR28B130	5.25	0.2
			Benzo(a)pyrene	--	IR28B132	5.25	0.2
			Benzo(a)pyrene	--	PA28B053	6.25	0.2
			Benzo(a)pyrene	--	IR28B266	9.75	0.1
			Benzo(a)pyrene	--	PA28B053	2.25	0.07
			Benzo(a)pyrene	--	IR28B266	7.25	0.06
			Indeno(1,2,3-cd)pyrene (1E-06)	1.3	IR28B101	6.25	1
			Indeno(1,2,3-cd)pyrene	--	IR28B102	4.25	1
			Indeno(1,2,3-cd)pyrene	--	IR28B266	9.75	0.1
			Indeno(1,2,3-cd)pyrene	--	PA28B053	6.25	0.08
			Indeno(1,2,3-cd)pyrene	--	IR28B266	7.25	0.06
			Indeno(1,2,3-cd)pyrene	--	PA28B053	2.25	0.05
			Benzo(b)fluoranthene (2E-07)	0.25	IR28B131	5.25	6
			Benzo(b)fluoranthene	--	IR28B102	4.25	2
			Benzo(b)fluoranthene	--	IR28B101	6.25	1
			Benzo(b)fluoranthene	--	IR28B130	5.25	0.2
			Benzo(b)fluoranthene	--	IR28B132	5.25	0.2
			Benzo(b)fluoranthene	--	PA28B053	6.25	0.2
			Benzo(b)fluoranthene	--	PA28B053	2.25	0.1
			Benzo(k)fluoranthene (2E-07)	0.24	IR28B131	5.25	5
Benzo(k)fluoranthene	--	IR28B101	6.25	1			
Benzo(k)fluoranthene	--	IR28B102	4.25	1			

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28	BD04 (101008, 101009, 101010, 102008, 102009) (Continued)	1E-05 (1E-06)	Benzo(k)fluoranthene	--	IR28B130	5.25	0.1	
			Benzo(k)fluoranthene	--	IR28B132	5.25	0.1	
			Benzo(k)fluoranthene	--	PA28B053	6.25	0.09	
			Benzo(a)anthracene (2E-07)	0.21	IR28B131	5.25	12	
			Benzo(a)anthracene	--	IR28B102	4.25	2	
			Benzo(a)anthracene	--	IR28B101	6.25	0.8	
			Benzo(a)anthracene	--	IR28B130	5.25	0.2	
			Benzo(a)anthracene	--	PA28B053	6.25	0.2	
			Benzo(a)anthracene	--	IR28B132	5.25	0.1	
			Benzo(a)anthracene	--	IR28B266	9.75	0.07	
			Benzo(a)anthracene	--	PA28B053	2.25	0.07	
			Benzo(a)anthracene	--	IR28B266	7.25	0.05	
			Chrysene (2E-08)	0.27	IR28B131	5.25	27	*
			Chrysene	--	IR28B102	4.25	2	
			Chrysene	--	IR28B101	6.25	1	
			Chrysene	--	IR28B130	5.25	0.2	
			Chrysene	--	IR28B132	5.25	0.2	
			Chrysene	--	PA28B053	6.25	0.2	
			Chrysene	--	IR28B266	9.75	0.09	
			Chrysene	--	PA28B053	2.25	0.07	
			Chrysene	--	IR28B266	7.25	0.05	
			Tetrachloroethene (3E-09)	0.023	IR28B266	7.25	0.02	
			Tetrachloroethene	--	IR28B266	9.75	0.01	

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	BD04 (101008, 101009, 101010, 102008, 102009) (Continued)	1E-05 (1E-06)	Tetrachloroethene	--	PA28B053	6.25	0.003
			Trichloroethene (1E-09)	0.012	IR28B102	4.25	0.02
			Trichloroethene	--	IR28B266	9.75	0.02
			Trichloroethene	--	IR28B266	7.25	0.01
			Trichloroethene	--	IR28B130	5.25	0.007
			Trichloroethene	--	PA28B053	6.25	0.003
IR-28	BD05 (101012, 101013, 103011, 103012)	2E-06 (2E-07)	Benzo(a)pyrene (1E-06)	0.14	PA28MW50A	6.25	0.1
			Benzo(a)pyrene	--	IR28B115	2.25	0.05
			Benzo(b)fluoranthene (3E-07)	0.32	PA28MW50A	6.25	0.3
			Benzo(b)fluoranthene	--	IR28B115	2.25	0.05
			Benzo(a)anthracene (2E-07)	0.19	PA28MW50A	6.25	0.2
			Benzo(a)anthracene	--	IR28B115	2.25	0.05
			Benzo(k)fluoranthene (4E-08)	0.050	IR28B115	2.25	0.05
			Indeno(1,2,3-cd)pyrene (3E-08)	0.040	IR28B115	2.25	0.04
			Chrysene (2E-08)	0.25	PA28MW50A	6.25	0.3
			Chrysene	--	IR28B115	2.25	0.06
			Benzene (5E-10)	0.00050	PA28MW50A	2.75	0.0005
			Benzene	--	PA28MW50A	6.25	0.0005
			1,1-Dichloroethene (5E-09)	0.00040	PA28MW50A	6.25	0.0004
			Trichloroethene (4E-10)	0.0040	IR28B115	2.25	0.004
			Trichloroethene	--	PA28MW50A	6.25	0.002
Heptachlor epoxide (3E-09)	0.00067	PA28MW50A	6.25	0.0007			

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28	BD05 (101012, 101013, 103011, 103012) (Continued)	2E-06 (2E-07)	4,4'-DDT (1E-10)	0.0012	PA28MW50A	6.25	0.001	
			Tetrachloroethene (1E-09)	0.0080	PA28MW50A	6.25	0.008	
			Tetrachloroethene	--	IR28B115	2.25	0.002	
IR-28	BD06 (101016, 103015)	2E-05 (7E-07)	Arsenic (1E-05)	25	IR28B223	9.75	24.8	*,α
			Arsenic	--	IR28B223	3.25	5.4	*
			Arsenic	--	IR28B223	5.75	4.4	*
			Benzo(a)pyrene (2E-06)	0.26	IR28B223	9.75	0.3	
			Benzo(a)pyrene	--	IR28B223	3.25	0.06	
			N-nitroso-di-n-propylamine (2E-06)	0.46	IR28B223	9.75	0.5	
			Benzo(a)anthracene (2E-07)	0.27	IR28B223	9.75	0.3	
			Benzo(a)anthracene	--	IR28B223	3.25	0.05	
			Benzo(b)fluoranthene (2E-07)	0.26	IR28B223	9.75	0.3	
			Benzo(b)fluoranthene	--	IR28B223	3.25	0.06	
			Benzo(k)fluoranthene (2E-07)	0.20	IR28B223	9.75	0.2	
			Benzo(k)fluoranthene	--	IR28B223	3.25	0.06	
			Indeno(1,2,3-cd)pyrene (1E-07)	0.17	IR28B223	9.75	0.2	
			Indeno(1,2,3-cd)pyrene	--	IR28B223	3.25	0.05	
			Chrysene (3E-08)	0.36	IR28B223	9.75	0.4	
			Chrysene	--	IR28B223	3.25	0.09	
Heptachlor epoxide (1E-08)	0.0032	IR28B223	9.75	0.003				

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28	BD06 (101016, 103015) (Continued)	2E-05 (7E-07)	Trichloroethene (5E-09)	0.055	IR28B087	9.75	0.06	
			Tetrachloroethene (5E-09)	0.033	IR28B087	9.75	0.03	
			Cadmium (3E-09)	3.6	IR28B223	9.75	3.6	α
			Cadmium	--	IR28B223	3.25	0.50	
			Cadmium	--	IR28B087	9.75	0.46	
			Alpha-chlordane (1E-09)	0.0025	IR28B223	9.75	0.003	
IR-28	BD07 (101017, 103017, 103018)	1E-07 (1E-08)	Aroclor-1260 (1E-07)	0.027	PA51SS10	2.75	0.03	
IR-28	BD08 (101022, 102020)	8E-06 (8E-07)	Arsenic (7E-06)	18	IR28B231	6.75	17.9	*,α
			Arsenic	--	IR28B231	1.75	12.1	*,α
			Arsenic	--	IR28B221	8.75	6.6	*
			Chrysene (5E-08)	0.62	IR28B221	8.75	0.6	
			Chrysene	--	IR28B231	1.75	0.02	
			Benzo(a)anthracene (1E-08)	0.017	IR28B231	1.75	0.02	
			Alpha-chlordane (5E-10)	0.0011	IR28B221	8.75	0.001	
IR-28	BD09 (102024)	3E-10 (3E-11)	Methylene chloride (3E-10)	0.0040	IR28B233	1.75	0.004	
			Methylene chloride	--	IR28B233	6.75	0.003	
IR-28	BD10 (101027, 101028, 103028)	NC	NE	NE	NE	NE	NE	

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	BD11 (103029)	2E-06 (2E-07)	Aroclor-1260 (1E-06)	0.25	IR49TA21	0.00	0.3
			Benzo(a)pyrene (7E-07)	0.083	IR49TA21	0.00	0.08
			Benzo(a)pyrene	--	IR49TA21	0.00	0.04
			Benzo(k)fluoranthene (1E-07)	0.13	IR49TA21	0.00	0.1
			Benzo(k)fluoranthene	--	IR49TA21	0.00	0.02
			Benzo(b)fluoranthene (1E-07)	0.12	IR49TA21	0.00	0.1
			Benzo(b)fluoranthene	--	IR49TA21	0.00	0.06
			Benzo(a)anthracene (6E-08)	0.076	IR49TA21	0.00	0.08
			Benzo(a)anthracene	--	IR49TA21	0.00	0.04
			Chrysene (6E-09)	0.067	IR49TA21	0.00	0.07
			Chrysene	--	IR49TA21	0.00	0.03
IR-28	BD12 (101032, 101033)	6E-07 (6E-08)	Chromium VI (3E-07)	3.2	NE	NE	NE
			Nickel (2E-07)	4,300	IR28MW295A	6.25	4340
			Nickel	--	IR28MW295A	9.75	145
			Nickel	--	IR28MW297A	6.25	76.4
			Nickel	--	IR28MW295A	0.75	45.9
			Nickel	--	IR28MW297A	0.75	35.1
			Bis(2-ethylhexyl)phthalate (2E-08)	3.2	IR28MW297A	6.25	3
IR-28	BE04 (104010)	1E-05 (5E-07)	Arsenic (7E-06)	17	IR28B240	1.75	17.0 * <sub>,α</sub>
			Arsenic	--	IR28B100	1.25	7.2 *
			Arsenic	--	IR28B242	1.25	6.8 *
			Arsenic	--	IR28B240	6.25	3.2 *
			Arsenic	--	IR28B241	1.75	2.1 *

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28	BE04 (104010) (Continued)	1E-05 (5E-07)	Arsenic	--	IR28B241	6.25	2.1	*
			Arsenic	--	IR28B242	5.25	1.1	
			Arsenic	--	IR28B241	3.75	0.54	
			Aroclor-1242 (3E-06)	0.47	IR28B240	3.75	0.5	
			Aroclor-1254 (2E-06)	0.33	IR28B240	3.75	0.3	
			Aroclor-1260 (3E-07)	0.051	IR28B240	3.75	0.05	
			Aldrin (1E-07)	0.017	IR28B240	3.75	0.02	
			Benzo(a)anthracene (3E-08)	0.035	IR28B240	6.25	0.04	
			Alpha-chlordane (1E-08)	0.029	IR28B240	3.75	0.03	
			4,4'-DDT (5E-10)	0.0046	IR28B240	3.75	0.005	
			Chrysene (3E-09)	0.041	IR28B240	6.25	0.04	
			Trichloroethene (1E-09)	0.014	IR28B240	1.75	0.01	
			Trichloroethene	--	IR28B240	3.75	0.002	
IR-28	BE05 (104011, 104012, 104013, 106012, 106013)	7E-06 (8E-07)	Arsenic (4E-06)	11	IR28B117	1.75	15.5	*,α
			Arsenic	--	IR28B117	6.25	12.5	*,α
			Arsenic	--	PA49TA12	5.25	5.4	*
			Arsenic	--	IR28B088	1.75	5.2	*
			Arsenic	--	IR28B088	6.25	4.7	*
			Arsenic	--	IR28B089	6.75	2.7	*
			Aroclor-1260 (2E-06)	0.30	PA51SS13	0.75	0.3	
			Aroclor-1260	--	IR28B117	6.25	0.03	
			Benzo(a)pyrene (8E-07)	0.10	IR28B088	1.75	0.1	
			Benzo(a)pyrene	--	IR28B117	1.75	0.08	

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>			
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)	
IR-28	BE05 (104011, 104012, 104013, 106012, 106013) (Continued)	7E-06 (8E-07)	Benzo(a)anthracene (1E-07)	0.12	IR28B088	1.75	0.1	
			Benzo(a)anthracene	--	IR28B117	1.75	0.07	
			Benzo(k)fluoranthene (1E-07)	0.12	IR28B088	1.75	0.1	
			Benzo(k)fluoranthene	--	IR28B117	1.75	0.07	
			Benzo(b)fluoranthene (7E-08)	0.088	IR28B088	1.75	0.09	
			Benzo(b)fluoranthene	--	IR28B117	1.75	0.07	
			Indeno(1,2,3-cd)pyrene (4E-08)	0.047	IR28B117	1.75	0.05	
			Chrysene (1E-08)	0.14	IR28B088	1.75	0.1	
			Chrysene	--	IR28B117	1.75	0.1	
			Chrysene	--	IR28B088	6.25	0.03	
			Trichloroethene (1E-09)	0.012	IR28B089	1.75	0.01	
			Trichloroethene	--	IR28B117	6.25	0.003	
			IR-28	BE06 (105014)	1E-05 (8E-07)	Arsenic (9E-06)	20	IR28B118
Arsenic	--	IR28B118				5.25	3.4	*
Aroclor-1260 (1E-06)	0.19	IR28B118				1.75	0.2	
Chrysene (4E-08)	0.51	IR28B118				1.75	0.5	
Tetrachloroethene (4E-10)	0.0030	IR28B118				1.75	0.003	
Tetrachloroethene	--	IR28B118				5.25	0.003	

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

Site <sup>a</sup>	Industrial Exposure Area <sup>b,c</sup>	Total ELCR <sup>d</sup>	COPC Contributing Significantly to the Total ELCR <sup>f</sup>	EPC <sup>g</sup> (mg/kg)	Significant Sampling Location Information <sup>h</sup>		
					Sampling Location	Sampling Depth (feet bgs)	Detected Concentration (mg/kg)
IR-28	BE07 (104017, 104018, 104019, 105018, 106018)	6E-06 (4E-07)	Benzo(a)pyrene (3E-06)	0.30	IR28B238	1.25	0.3
			Aroclor-1260 (2E-06)	0.38	PA51SS11	0.75	0.4
			Aroclor-1260	--	PA51SS12	0.75	0.4
			Dibenz(a,h)anthracene (4E-07)	0.076	IR28B238	1.25	0.08
			Benzo(a)anthracene (3E-07)	0.33	IR28B238	1.25	0.3
			Benzo(b)fluoranthene (3E-07)	0.33	IR28B238	1.25	0.3
			Benzo(k)fluoranthene (2E-07)	0.26	IR28B238	1.25	0.3
			Indeno(1,2,3-cd)pyrene (2E-07)	0.18	IR28B238	1.25	0.2
			Chrysene (3E-08)	0.39	IR28B238	1.25	0.4
			Cadmium (3E-08)	31	PA28SS78	1.25	31.5
			Cadmium	--	IR28B238	1.25	0.22
Alpha-chlordane (5E-10)	0.0012	IR28B238	1.25	0.001			
IR-28	BF07 (107019, 108018, 109019)	9E-07 (1E-07)	Benzo(a)pyrene (7E-07)	0.081	IR49TA22	0.00	0.08
			Aroclor-1260 (1E-07)	0.021	PA51SS08	0.75	0.02
			Benzo(b)fluoranthene (8E-08)	0.099	IR49TA22	0.00	0.1
			Benzo(a)anthracene (4E-08)	0.047	IR49TA22	0.00	0.05
			Chrysene (7E-09)	0.079	IR49TA22	0.00	0.08
IR-28	BF08 (109021)	NC	NE	NE	NE	NE	NE
IR-28	BF09 (109023)	2E-07 (2E-08)	Benzo(a)pyrene (2E-07)	0.024	IR28B232	1.75	0.02
			Chrysene (3E-09)	0.041	IR28B232	1.75	0.04
			Methylene chloride (2E-10)	0.0020	IR28B232	1.75	0.002

(Continued)

**SOIL SUMMARY TABLE**  
**COPCs CONTRIBUTING 100 PERCENT TO 10E-6 FUTURE INDUSTRIAL CARCINOGENIC RISKS**  
**PARCEL C, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CA**

HI Hazard Index  
EPC Exposure point concentration

mg/kg Milligram per kilogram

NC Not calculated. No noncarcinogenic COPCs were identified in this exposure area; therefore, a total HI and total segregated HI was not calculated exposure area.

NE Not evaluated

- a The number presented in parenthesis is another IR site with which the subject industrial exposure area is associated.
- b The exposure area presented is based on a 0.5-acre exposure area.
- c The exposure area presented in parentheses is the associated exposure area for the residential scenario based on a 2500-square foot exposure area. The total residential scenario can be found in Table N.5.9.
- d The total HI and total segregated HI presented is for the RME case. The value presented in parentheses is for the average exposure case. The total segregated HI evaluates the ingestion of, dermal contact with, and inhalation of VOCs and particulate emissions from soil, and ingestion of pathway exposure.
- e Only the COPC-specific HIs for COPCs contributing about 90% of the HIs that exceed 1 or COPCs contributing a HI exceeding 1 under the RME
- f The value presented is the EPC assumed for the COPCs contributing significantly to the total HI under the RME case.
- g If the total COPC-specific total segregated HI exceeding 1 can be attributed to one or several sample locations, the sampling location, depth, and are listed.
- h Chromium VI was not speciated; therefore, for all IR-sites, a surrogate chromium VI value was calculated assuming 0.99 percent of the total chromium value (see Attachment N-C).
- i The central nervous system is the primary system affected by the indicated chemical, generally at the lowest dose levels.
- j Blood, including the hematopoietic system, is the primary of critical system affected by the indicated chemical, generally at the lowest dose levels.
- k Examples of non-specific toxicity include decreased organ weights and decreased weight gain, effects not limited to a few organs or systems.
- l The kidney is the primary organ affected by the indicated chemical, generally at the lowest dose levels.
- m The gastrointestinal system is the primary or critical system affected by the indicated chemical, generally at the lowest dose levels.
- n The cardiovascular system is the primary or critical system affected by the indicated chemical, generally at the lowest dose levels.
- o The skin is the primary or critical organ affected by the indicated chemical, generally at the lowest dose levels.
- p The liver is the primary or critical organ affected by the indicated chemical, generally at the lowest dose levels.
- q The peripheral nervous system (PNS) is the primary or critical system affected by the indicated chemical, generally at the lowest dose levels.
- \* The detected concentration exceeds the residential soil U.S. EPA Region IX Preliminary Remediation Goal (PRG).
- α The detected concentration exceeds the Hunters Point Ambient Level (HPAL).

**TABLE D-3b  
PROPOSED ACTION FOR SOIL AT IR-28  
SOIL CLEANUP GOAL SCENARIO 2  
PARCEL C FEASIBILITY STUDY  
HUNTERS POINT SHIPYARD - SAN FRANCISCO, CALIFORNIA**

Exposure Area <sup>a</sup>	Soil Cleanup Goal Criteria Exceeded <sup>b</sup>	Risk Assessment Findings	Site Characterization Findings	Proposed Action <sup>c</sup>
<b>Remediation Area 28-1</b>				
BC04 (100008, 100009)	ELCR = $6 \times 10^{-5}$	The ELCR is largely due to potential exposure to PAHs in boring IR28B138 at 4.75 feet bgs and PA28B023 at 2.25 feet bgs.	PAHs were detected at a maximum concentration of 5 mg/kg.  The source of PAHs may be associated with former diesel UST HPA-17.	Remediate soil to a depth of 10 feet bgs to remove potential source for leaching to groundwater.
BD04 (101008, 101009, 101010, 102008, 102009)	ELCR = $1 \times 10^{-5}$  Lead = 1,800 mg/kg TPH-d = 2,900 mg/kg TPH-mo = 15,000 mg/kg TRPH = 14,000 mg/kg	The ELCR is largely due to potential exposure to arsenic and PAHs in boring IR28B101 at 6.25 feet bgs and boring IR28B102 at 4.25 feet bgs, and PAHs in IR28B130 at 5.25 feet bgs, IR28B131 at 5.25 feet bgs, IR28B132 at 5.25 feet bgs, and PA28B053 at 6.25 feet bgs.  Lead exceeds the level of concern (1,000 mg/kg, calculated using EPA's uptake biokinetic model) in boring IR28B101 at 6.25 feet bgs.	Arsenic and PAHs were detected at maximum concentrations of 707 mg/kg and 10 mg/kg, respectively. The source of the arsenic is unknown; however, arsenic was detected at a concentration of 5.9 mg/kg in boring IR28B101 at 1.75 feet bgs.  The source of PAHs and lead may be associated with former fuel oil UST HPA-10.	Remediate soil to a depth of 10 feet bgs to remove potential source for leaching to groundwater.
<b>Remediation Area 28-2</b>				
AY10 (086027, 086028, 087027, 088026, 088028)	ELCR = $7 \times 10^{-6}$  TPH-g = 5,500 mg/kg TPH-d = 2,900 mg/kg TPH-mo = 1,200 mg/kg TRPH = 9,400 mg/kg	The ELCR is largely due to potential exposure to Aroclor-1260 and arsenic in boring IR28B280 up to 7.75 feet bgs; Aroclor-1260 in boring IR28B279 up to 5.25 feet bgs; and PAHs in borings IR28B301 at 1 foot bgs and in soil associated with IR28MW299B at 2 feet bgs.	Aroclor-1260, arsenic, and PAHs were detected at maximum concentrations of 270 mg/kg, 245 mg/kg, and 0.3 mg/kg, respectively.  The source of contamination may be associated with former stripping activities conducted in Building 251.	Remediate soil to a depth of 10 feet bgs to remove potential source for leaching to groundwater.
AX10 (084027, 084028, 085026, 085027, 085028)	ELCR = $3 \times 10^{-6}$  TRPH = 3,800 mg/kg	The ELCR is largely due to potential exposure to PAHs in surface sample IR58SS35 at 0.25 feet bgs and Aroclor-1260 in surface sample IR58SS34 at 0.5 feet bgs.	Aroclor-1260 and PAHs were both detected at concentration of 0.1 mg/kg.  The source of contamination may be associated with former solvent and waste solvent USTs S-251 and S-219.	Remediate soil to a depth of 10 feet bgs to remove potential source for leaching to groundwater.

TABLE D-3b (continued)  
**ACTION REQUIRED FOR SOIL AT IR-28**  
**SOIL CLEANUP GOAL SCENARIO 2**  
**PARCEL C FEASIBILITY STUDY**  
**HUNTERS POINT SHIPYARD - SAN FRANCISCO, CALIFORNIA**

Exposure Area <sup>a</sup>	Soil Cleanup Goal Criteria Exceeded <sup>b</sup>	Risk Assessment Findings	Site Characterization Findings	Proposed Action <sup>c</sup>
<b>Remediation Area 28-3</b>				
AZ12 (089034, 090033, 090034, 091032, 091034)	ELCR = $2 \times 10^{-5}$	The ELCR is largely due to potential exposure to arsenic in soil associated with IR28MW311A at 0.75 feet bgs; and PAHs in boring IR28B276 at 6.25 feet bgs and soil associated with IR28MW311A at 5.5 feet bgs, and IR28MW310F at 5.25 feet bgs.	Arsenic and PAHs were detected at maximum concentrations of 30.1 mg/kg and 2 mg/kg, respectively.  The source of contamination may be associated with leakage from sumps in a painting/stripping area located in the southwestern portion of Building 281 and/or leakage from former waste oil UST HPA-07.	Remediate soil to a depth of 8 feet bgs.
<b>Remediation Area 28-4</b>				
AY10 (086027, 086028, 087027, 088026, 088028)	ELCR = $7 \times 10^{-6}$ TPH-g = 5,500 mg/kg TPH-d = 2,900 mg/kg TPH-mo = 1,200 mg/kg TRPH = 9,400 mg/kg	The ELCR is largely due to potential exposure to Aroclor-1260 and arsenic in boring IR28B280 up to 7.75 feet bgs; Aroclor-1260 in boring IR28B279 up to 5.25 feet bgs; and PAHs in borings IR28B301 at 1 foot bgs and in soil associated with IR28MW299B at 2 feet bgs.	Aroclor-1260, arsenic, and PAHs were detected at maximum concentrations of 270 mg/kg, 245 mg/kg, and 0.3 mg/kg, respectively.  The source of contamination may be associated with former stripping activities conducted in Building 251.	Remediate soil at IR28MW299B to a depth of 4 feet bgs.
<b>Remediation Area 28-5</b>				
AY10 (086027, 086028, 087027, 088026, 088028)	ELCR = $7 \times 10^{-6}$ TPH-g = 5,500 mg/kg TPH-d = 2,900 mg/kg TPH-mo = 1,200 mg/kg TRPH = 9,400 mg/kg	The ELCR is largely due to potential exposure to Aroclor-1260 and arsenic in boring IR28B280 up to 7.75 feet bgs; Aroclor-1260 in boring IR28B279 up to 5.25 feet bgs; and PAHs in borings IR28B301 at 1 foot bgs and in soil associated with IR28MW299B at 2 feet bgs.	Aroclor-1260, arsenic, and PAHs were detected at maximum concentrations of 270 mg/kg, 245 mg/kg, and 0.3 mg/kg, respectively.  The source of contamination may be associated with former stripping activities conducted in Building 251.	Remediate soil to a depth of 3 feet bgs.
AZ10 (089026, 091027, 091028)	ELCR = $7 \times 10^{-6}$	The ELCR is largely due to potential exposure to arsenic in boring IR28B285 at 0.75 feet bgs.	Arsenic was detected at a concentration of 17.5 mg/kg. The source of arsenic is unknown.	Remediate soil to a depth of 3 feet bgs.

**TABLE D-3b (continued)**  
**ACTION REQUIRED FOR SOIL AT IR-28**  
**SOIL CLEANUP GOAL SCENARIO 2**  
**PARCEL C FEASIBILITY STUDY**  
**HUNTERS POINT SHIPYARD - SAN FRANCISCO, CALIFORNIA**

Exposure Area <sup>a</sup>	Soil Cleanup Goal Criteria Exceeded <sup>b</sup>	Risk Assessment Findings	Site Characterization Findings	Proposed Action <sup>c</sup>
<b>Remediation Area 28-6</b>				
AY11 (086030, 086031, 087031)	ELCR = $1 \times 10^{-5}$	The ELCR is largely due to potential exposure to Aroclor-1260 and beryllium in boring PA28B063 up to 6.25 feet bgs; arsenic in boring IR28B180 at 6.75 feet bgs; beryllium in boring IR28B178 at 7.75 feet bgs, and PAHs in surface sample PA28SS82 at 1.25 feet bgs.	Aroclor-1260, arsenic, beryllium, and PAHs were detected at maximum concentrations of 0.6 mg/kg, 11.7 mg/kg, 0.95 mg/kg, and 0.3 mg/kg, respectively. The concentrations of arsenic and beryllium are only slightly higher than the HPAL and are attributed to variations in background concentrations.  The source of Aroclor-1260 and PAHs may be associated with pickling and degreasing activities conducted in Building 258.	Remediate soil to a depth of 4 feet bgs.
<b>Remediation Area 28-7</b>				
AZ13 (089035, 089036, 091036)	ELCR = $1 \times 10^{-5}$	The ELCR is largely due to potential exposure to PAHs in boring IR28B237 at 4.75 feet bgs and arsenic in soil associated with IR28MW273F up to 9.75 feet bgs.	Arsenic and PAHs were detected at maximum concentrations of 22.4 mg/kg and 0.1 mg/kg, respectively.  The source of contamination is unknown, but possibly associated with former activities conducted in Building 272.	Remediate soil at IR28B237 to a depth of 7 feet bgs.
<b>Remediation Area 28-8</b>				
AZ13 (089035, 089036, 091036)	ELCR = $1 \times 10^{-5}$	The ELCR is largely due to potential exposure to PAHs in boring IR28B237 at 4.75 feet bgs and arsenic in soil associated with IR28MW273F up to 9.75 feet bgs.	Arsenic and PAHs were detected at maximum concentrations of 22.4 mg/kg and 0.1 mg/kg, respectively.  The source of contamination is unknown, but possibly associated with former activities conducted in Building 272.	Remediate soil at IR28MW273F to a depth of 10 feet bgs.
<b>Remediation Area 28-9</b>				
BA07 (093017, 094018)	ELCR = $2 \times 10^{-5}$ TRPH = 1,200 mg/kg	The ELCR is largely due to potential exposure to arsenic and PAHs in boring IR28B107 at 1.75 feet bgs and arsenic in soil associated with PA28MW52A at 6.75 feet bgs.	Arsenic and PAHs were detected at maximum concentrations of 40 mg/kg and 0.2 mg/kg, respectively.  The source of contamination may be associated with heavy industrial machining activities conducted in Building 231.	Remediate soil to a depth of 8 feet bgs.

**TABLE D-3b (continued)**  
**ACTION REQUIRED FOR SOIL AT IR-28**  
**SOIL CLEANUP GOAL SCENARIO 2**  
**PARCEL C FEASIBILITY STUDY**  
**HUNTERS POINT SHIPYARD - SAN FRANCISCO, CALIFORNIA**

Exposure Area <sup>a</sup>	Soil Cleanup Goal Criteria Exceeded <sup>b</sup>	Risk Assessment Findings	Site Characterization Findings	Proposed Action <sup>c</sup>
<b>Remediation Area 28-10</b>				
BA11 (092030, 093030, 093031, 094030)	ELCR = $1 \times 10^{-5}$ TPH-mo = 1,200 mg/kg	The ELCR is largely due to potential exposure to arsenic and PAHs in boring IR28B291 at 6.25 and 0.25 feet bgs, respectively.	Arsenic and PAHs were detected at concentrations of 16.9 mg/kg and 0.5 mg/kg, respectively.  The source of contamination may be associated with painting/stripping and steam cleaning activities conducted inside and east of Building 270.	Remediate soil to a depth of 8 feet bgs.
<b>Remediation Area 28-11</b>				
BB05 (096013, 097011, 097012, 097013)	ELCR = $7 \times 10^{-5}$	The ELCR is largely due to potential exposure to arsenic and PAHs in boring IR28B135 at 6.25 feet bgs.	Arsenic and PAHs were detected at maximum concentrations of 12.8 mg/kg and 5 mg/kg, respectively. The concentration of arsenic is only slightly higher than the HPAL and is attributed to variations in background concentrations.  The source of PAHs may be associated with leakage from former diesel UST HPA-12.	Remediate soil to a depth of 10 feet bgs.
BB06 (095015, 096014, 097014, 097016)	ELCR = $2 \times 10^{-5}$	The ELCR is largely due to potential exposure to arsenic and PAHs in boring IR28B106 at 2.25 feet bgs; arsenic in boring IR28B105 at 1.75 feet bgs; and Aroclor-1260 in surface sample PA51SS14 at 2.25 feet bgs.	Arsenic, Aroclor-1260, and PAHs were detected at maximum concentrations of 30.3 mg/kg, 0.3 mg/kg, and 0.2 mg/kg, respectively.  The source of contamination may be associated with heavy industrial machining activities conducted in Building 231.	Remediate soil to a depth of 10 feet bgs.
BC05 (098012, 098013, 099013, 100012)	ELCR = $7 \times 10^{-6}$	The ELCR is largely due to potential exposure to arsenic in boring IR28B104 at 1.75 feet bgs, Aroclor-1260 in boring PA28B049 at 2.25 feet bgs, and PAHs in boring IR28B265 up to 8.75 feet bgs.	Arsenic, Aroclor-1260, and PAHs were detected at maximum concentrations of 13 mg/kg, 0.1 mg/kg, and 0.4 mg/kg, respectively. The concentration of arsenic is only slightly higher than the HPAL and is attributed to variations in background concentrations.  The source of contamination may be associated with heavy industrial machining activities conducted in Building 231.	Remediate soil to a depth of 10 feet bgs.

**TABLE D-3b (continued)**  
**ACTION REQUIRED FOR SOIL AT IR-28**  
**SOIL CLEANUP GOAL SCENARIO 2**  
**PARCEL C FEASIBILITY STUDY**  
**HUNTERS POINT SHIPYARD - SAN FRANCISCO, CALIFORNIA**

Exposure Area <sup>a</sup>	Soil Cleanup Goal Criteria Exceeded <sup>b</sup>	Risk Assessment Findings	Site Characterization Findings	Proposed Action <sup>c</sup>
BC06 (098014, 098015, 099014, 099015, 100015, 100016)	ELCR = $1 \times 10^{-5}$	The ELCR is largely due to potential exposure to vinyl chloride in boring IR28B090 at 9.75 feet bgs and PAHs in boring IR28B264 up to 8.75 feet bgs.	Vinyl chloride and PAHs were detected at maximum concentrations of 0.02 mg/kg and 1 mg/kg, respectively.  The source of contamination may be associated with heavy industrial machining activities conducted in Building 231.	Remediate soil to a depth of 10 feet bgs.
<b>Remediation Area 28-12</b>				
AZ07 (090018, 090019, 091019)	ELCR = $2 \times 10^{-5}$ TRPH = 1,600 mg/kg	The ELCR is largely due to potential exposure to arsenic and PAHs in test pit PA49TA09 at 4.25 feet bgs and PAHs in boring IR49B025 at 6.75 feet bgs.	Arsenic and PAHs were detected at concentrations of 25 mg/kg and up to 0.6 mg/kg, respectively.  The source of PAHs may be associated with leakage from a fuel line. The source of arsenic is unknown.	Remediate soil to a depth of 9 feet bgs.
<b>Remediation Area 28-14</b>				
BE04 (104010)	ELCR = $1 \times 10^{-5}$	The ELCR is largely due to potential exposure to arsenic in boring IR28B240 at 1.75 feet bgs, and Aroclor-1242 and Aroclor-1254 in the same boring at 3.75 feet bgs.	Arsenic, Aroclor-1242, and Aroclor-1254 were detected at concentrations of 17 mg/kg, 0.5 mg/kg, and 0.3 mg/kg, respectively.  The source of PCBs is unknown, but may be associated with releases of PCB-containing oils from transformers. The source of arsenic is unknown.	Remediate soil to a depth of 6 feet bgs.
BE05 (104011, 104012, 104013, 106012, 106013)	ELCR = $7 \times 10^{-6}$	The ELCR is largely due to potential exposure to arsenic in boring IR28B117 up to 6.25 feet bgs, Aroclor-1260 in surface sample PA51SS13 at 0.75 feet bgs, and PAHs in boring IR28B088 at 1.75 feet bgs.	Arsenic, Aroclor-1260, and PAHs were detected at maximum concentrations of 15.5 mg/kg, 0.3 mg/kg, and 0.1 mg/kg, respectively.  The source of contamination is unknown, but may be associated with storage of chemicals in Building 219.	Remediate soil to a depth of 6 feet bgs.
<b>Remediation Area 28-15</b>				
BE06 (105014)	ELCR = $1 \times 10^{-5}$ TPH-mo = 1,800 mg/kg TRPH = 4,300 mg/kg	The ELCR is largely due to potential exposure to Aroclor-1260 and arsenic in boring IR28B118 at 1.75 feet bgs.	Aroclor-1260 and arsenic were detected at concentrations of 0.2 mg/kg and 20.3 mg/kg, respectively.  The source of Aroclor-1260 and PAHs is unknown.	Remediate soil to a depth of 4 feet bgs.

TABLE D-3b (continued)  
**ACTION REQUIRED FOR SOIL AT IR-28**  
**SOIL CLEANUP GOAL SCENARIO 2**  
**PARCEL C FEASIBILITY STUDY**  
**HUNTERS POINT SHIPYARD - SAN FRANCISCO, CALIFORNIA**

Exposure Area <sup>a</sup>	Soil Cleanup Goal Criteria Exceeded <sup>b</sup>	Risk Assessment Findings	Site Characterization Findings	Proposed Action <sup>c</sup>
<b>Remediation Area 28-16</b>				
BE07 (104017, 104018, 104019, 105018, 106018)	ELCR = $6 \times 10^{-6}$	The ELCR is largely due to potential exposure to Aroclor-1260 in surface samples PA51SS11 and PA51SS12 at 0.75 feet bgs, and PAHs in boring IR28B238 at 1.25 feet bgs.	Aroclor-1260 and PAHs were detected at maximum concentrations of 0.4 mg/kg and 0.3 mg/kg, respectively.  The source of contamination may be associated with releases of PCB-containing oils from transformers.	Remediate soil to a depth of 3 feet bgs.
<b>Remediation Area 28-17</b>				
BC11 (100030)	ELCR = $3 \times 10^{-6}$	The ELCR is largely due to potential exposure to Aroclor-1260 in surface sample PA51SS18.	Aroclor-1260 was detected at a maximum concentration of 0.5 mg/kg.  The source of Aroclor-1260 may be associated with releases of PCB-containing oils from transformers.	Remediate soil to a depth of 2 feet bgs.
<b>Remediation Area 28-18</b>				
BB10 (096028, 097026)	ELCR = $1 \times 10^{-5}$  Lead = 1,600 mg/kg	The ELCR is largely due to potential exposure to arsenic in soil associated with IR28MW309B at 6.0 feet bgs.  Lead exceeds the level of concern (1,000 mg/kg, calculated using EPA's uptake biokinetic model) in soil associated with IR28MW309B at 6.0 feet bgs.	Arsenic was detected at a concentration of 29.7 mg/kg. The source of arsenic and lead is unknown.	Remediate soil to a depth of 8 feet bgs.
<b>Remediation Area 28-19</b>				
BD06 (101016, 103015)	ELCR = $2 \times 10^{-5}$  Lead = 1,200 mg/kg TPH-mo = 1,100 mg/kg TRPH = 1,340 mg.kg	The ELCR is largely due to potential exposure to arsenic and PAHs in boring IR28B223 at 9.75 feet bgs.  Lead exceeds the level of concern (1,000 mg/kg, calculated using EPA's uptake biokinetic model) in boring IR28B223 at 9.75 feet bgs.	Arsenic and PAHs were detected at maximum concentrations of 24.8 mg/kg and 0.5 mg/kg, respectively.  The source of contamination may be associated with former machining, welding, assembly, testing, and painting operations conducted in Building 211/253.	Remediate soil to a depth of 10 feet bgs.

**TABLE D-3b (continued)**  
**ACTION REQUIRED FOR SOIL AT IR-28**  
**SOIL CLEANUP GOAL SCENARIO 2**  
**PARCEL C FEASIBILITY STUDY**  
**HUNTERS POINT SHIPYARD - SAN FRANCISCO, CALIFORNIA**

Exposure Area <sup>a</sup>	Soil Cleanup Goal Criteria Exceeded <sup>b</sup>	Risk Assessment Findings	Site Characterization Findings	Proposed Action <sup>c</sup>
<b>SOIL REMEDIATION AREAS IN MIXED REUSE AREA RETAINED FROM SOIL CLEANUP GOAL SCENARIO 3<sup>d</sup></b>				
<b>Remediation Area 28-13</b>				
BA14 (092039)	ELCR = $5 \times 10^{-5}$ HI = 3.9 TPH-mo = 2,100 mg/kg	The ELCR is largely due to potential exposure to 3,3'-dichlorobenzidine and PAHs in soil associated with IR28MW298A at 1.25 feet bgs.  The maximum child total segregated HI is due to potential exposure to manganese in soil associated with IR28MW298A at 9.25 feet bgs.	3,3'-Dichlorobenzidine and PAHs were detected at concentrations of 0.3 mg/kg and 0.3 mg/kg, respectively.  Manganese was detected at a concentration of 2,990 mg/kg.  The source of contamination is unknown.	Remediate soil to a depth of 3 feet bgs.
<b>Remediation Area 28-21</b>				
BB14 (095038)	ELCR = $9 \times 10^{-5}$ HI = 3.2	The ELCR is largely due to potential exposure to arsenic and chromium VI in boring PA28B021 at 1.75 feet bgs.  The maximum child total segregated HI is largely due to potential exposure to manganese in boring PA28B021 at 6.25 feet bgs. Arsenic also contributes to a child total HI exceeding 1.0.	Arsenic and chromium VI were detected at concentrations of 20.0 mg/kg and 2.8 mg/kg. The source of contamination is unknown.  Manganese was detected at a concentration of 2,260 mg/kg, which is less than twice the HPAL and attributed to variations in background concentrations.	Remediate soil to a depth of 4 feet bgs.
<b>De Minimus Areas</b>				
AX12 (083034, 085032)	ELCR = $6 \times 10^{-6}$	The ELCR is largely due to potential exposure to arsenic and Aroclor-1260 in boring IR28B183 at 9.75 and 4.75 feet bgs, respectively.	Arsenic and Aroclor-1260 were detected at concentrations of 11.1 mg/kg and 0.2 mg/kg, respectively. The concentration of arsenic is equal to the HPAL and considered to be background.  The source of Aroclor-1260 is unknown.	Remediate soil to a depth of 7 feet bgs.
BA08 (092021, 093021, 093022, 094020)	ELCR = $2 \times 10^{-6}$	The ELCR is largely due to potential exposure to PAHs in boring IR28B096 at 6.25 feet bgs.	PAHs were detected at a concentration of 0.2 mg/kg.  The source of PAHs may be associated with heavy industrial machining activities conducted in Building 231.	Remediate soil to a depth of 8 feet bgs.

**TABLE D-3b (continued)**  
**ACTION REQUIRED FOR SOIL AT IR-28**  
**SOIL CLEANUP GOAL SCENARIO 2**  
**PARCEL C FEASIBILITY STUDY**  
**HUNTERS POINT SHIPYARD - SAN FRANCISCO, CALIFORNIA**

Exposure Area <sup>a</sup>	Soil Cleanup Goal Criteria Exceeded <sup>b</sup>	Risk Assessment Findings	Site Characterization Findings	Proposed Action <sup>c</sup>
<b>De Minimus Areas (continued)</b>				
BA12 (092033, 093034, 094032, 094034)	ELCR = $7 \times 10^{-6}$	The ELCR is largely due to potential exposure to arsenic in boring IR28B198 at 7.25 feet bgs.	Arsenic was detected at a concentrations of 15.3 mg/kg. The source of arsenic is unknown.	Remediate soil to a depth of 9 feet bgs.
BA13 (093036, 093037, 094035)	ELCR = $7 \times 10^{-6}$	The ELCR is largely due to potential exposure to arsenic in boring IR28B210 at 5.75 feet bgs and in soil associated with IR28MW312F at 0.75 feet bgs.	Arsenic was detected at a maximum concentration of 17.7 mg/kg. The source of arsenic is unknown.	Remediate soil at IR28B210 to a depth of 8 feet bgs and at IR28MW312F to a depth of 3 feet bgs.
BB07 (095018, 095019, 096017, 096018, 097019)	ELCR = $1 \times 10^{-6}$	The ELCR is largely due to potential exposure to PAHs in soil associated with PA28MW51A at 6.75 feet bgs.	PAHs were detected at a maximum concentration of 0.2 mg/kg.  The source of PAHs may be associated with heavy industrial machining activities conducted in Building 231.	Remediate soil to a depth of 9 feet bgs.
BB08 (095022, 096021, 096022, 097021, 097022)	ELCR = $3 \times 10^{-6}$	The ELCR is largely due to potential exposure to PAHs in borings IR28B111 and IR28B120 at 1.75 feet bgs.	PAHs were detected at a maximum concentration of 0.2 mg/kg.  The source of PAHs is unknown, but may be associated with former activities in Buildings 231 and 253.	Remediate soil at IR28B111 and IR28B120 to a depth of 4 feet bgs.
BB12 (095032, 096032, 096033, 097032)	ELCR = $9 \times 10^{-6}$ TPH-mo = 19,000 mg/kg TRPH = 1,590 mg/kg	The ELCR is largely due to potential exposure to arsenic, Aroclor-1248, and PAHs in boring IR28B243 up to 8.75 feet bgs.	Arsenic, Aroclor-1248, and PAHs were detected at maximum concentrations of 11.2 mg/kg, 0.2 mg/kg, and 0.4 mg/kg, respectively. The concentration of arsenic is only slightly higher than the HPAL and is attributed to variations in background concentrations.  The source of Aroclor-1248 may be associated with releases of PCB-containing oils from transformers. The source of TPH and PAHs may be associated with former ASTs that were observed leaking prior to removal.	Remediate soil to a depth of 10 feet bgs.

**TABLE D-3b (continued)**  
**ACTION REQUIRED FOR SOIL AT IR-28**  
**SOIL CLEANUP GOAL SCENARIO 2**  
**PARCEL C FEASIBILITY STUDY**  
**HUNTERS POINT SHIPYARD - SAN FRANCISCO, CALIFORNIA**

Exposure Area <sup>a</sup>	Soil Cleanup Goal Criteria Exceeded <sup>b</sup>	Risk Assessment Findings	Site Characterization Findings	Proposed Action <sup>c</sup>
<b>De Minimis Areas (continued)</b>				
BC07 (098017, 098019, 099017, 099019, 100017, 100018)	ELCR = $4 \times 10^{-6}$ TPH-mo = 1,300 mg/kg TRPH = 2,270 mg/kg	The ELCR is largely due to potential exposure to Aroclor-1260 in boring IR28B086 at 0.75 feet bgs and PAHs in boring IR28B121 up to 6.75 feet bgs.	Aroclor-1260 and PAHs were detected at maximum concentrations of 0.1 mg/kg and 0.2 mg/kg, respectively.  The source of contamination may be associated with former machining, welding, assembly, testing, and painting operations conducted in Building 211/253.	Remediate soil at IR28B086 to a depth of 3 feet bgs and at IR28B121 to a depth of 9 feet bgs.
BC08 (098020, 098021, 099020, 099021)	ELCR = $1 \times 10^{-6}$ TPH-d = 4,400 mg/kg TPH-mo = 2,700 mg/kg TRPH = 6,580 mg/kg	The ELCR is largely due to potential exposure to Aroclor-1260 in boring IR28B084 at 4.75 feet bgs.	Aroclor-1260 was detected at a maximum concentration of 0.3 mg/kg.  The source of contamination may be associated with former machining, welding, assembly, testing, and painting operations conducted in Building 211/253.	Remediate soil to a depth of 7 feet bgs.
BC09 (098024, 098025, 099024, 099025, 100023)	ELCR = $4 \times 10^{-6}$	The ELCR is largely due to potential exposure to PAHs in boring PA28B079 at 7.25 feet bgs.	PAHs were detected at a maximum concentration of 0.4 mg/kg.  The source of PAHs is unknown, but may be associated with former machining, welding, assembly, testing, and painting operations conducted in Building 211/253.	Remediate soil to a depth of 9 feet bgs.
BD02 (102004)	ELCR = $1 \times 10^{-6}$ TRPH = 1,500 mg/kg	The ELCR is largely due to potential exposure to PAHs in test pit PA49TA10 at 2.25 feet bgs.	PAHs were detected at a maximum concentration of 0.2 mg/kg. Samples were not analyzed for pesticides or PCBs.  The source of TPH and PAHs may be associated with leakage from a fuel line.	Confirmation sampling should be performed and if necessary remediate soil to a depth of 4 feet bgs.
BD05 (101012, 101013, 103011, 103012)	ELCR = $2 \times 10^{-6}$	The ELCR is largely due to potential exposure to PAHs in soil associated with monitoring well PA28MWS0A at 6.25 feet bgs.	PAHs were detected at a maximum concentration of 0.1 mg/kg.  The source of PAHs is unknown, but may be associated with heavy industrial machining activities conducted in Building 231.	Remediate soil to a depth of 8 feet bgs.

**TABLE D-3b (continued)**  
**ACTION REQUIRED FOR SOIL AT IR-28**  
**SOIL CLEANUP GOAL SCENARIO 2**  
**PARCEL C FEASIBILITY STUDY**  
**HUNTERS POINT SHIPYARD - SAN FRANCISCO, CALIFORNIA**

Exposure Area <sup>a</sup>	Soil Cleanup Goal Criteria Exceeded <sup>b</sup>	Risk Assessment Findings	Site Characterization Findings	Proposed Action <sup>c</sup>
<b>De Minimus Areas (continued)</b>				
BD08 (101022, 102020)	ELCR = $8 \times 10^{-6}$	The ELCR is largely due to potential exposure to arsenic in boring IR28B231 up to 6.75 feet bgs.	Arsenic was detected at a maximum concentration of 17.9 mg/kg. The source of arsenic is unknown.	Remediate soil to a depth of 9 feet bgs.
BD11 (103029)	ELCR = $2 \times 10^{-6}$	The ELCR is largely due to potential exposure to Aroclor-1260 and PAHs in test pit IR49TA21 at the surface.	Aroclor-1260 and PAHs were detected at concentrations of 0.3 mg/kg and 0.08 mg/kg, respectively.  The source of Aroclor-1260 and PAHs is unknown.	Confirmation sampling should be performed and if necessary remediate soil to a depth of 2 feet bgs.
BE05 (104011, 104012, 104013, 106012, 106013)	ELCR = $7 \times 10^{-6}$	The ELCR is largely due to potential exposure to arsenic in boring IR28B117 up to 6.25 feet bgs, Aroclor-1260 in surface sample PA51SS13 at 0.75 feet bgs, and PAHs in boring IR28B088 at 1.75 feet bgs.	Arsenic, Aroclor-1260, and PAHs were detected at maximum concentrations of 15.5 mg/kg, 0.3 mg/kg, and 0.1 mg/kg, respectively.  The source of contamination is unknown, but may be associated with storage of chemicals in Building 219.	Remediate soil at IR28B117 to a depth of 4 feet bgs.
<b>De Minimus Areas in Other IR Sites</b>				
AW11 (0800029, 081030, 081031)	ELCR = $3 \times 10^{-6}$ TPH-mo = 4,400 mg/kg TRPH = 6,400 mg/kg	The ELCR is largely due to potential exposure to beryllium in boring IR58B018 at 1.75 feet bgs and PAHs in boring IR28B257 at 0.75 feet bgs.	PAHs were detected at a concentration of 0.3mg/kg. Beryllium was detected at a concentration of 1.1 mg/kg. The concentration of beryllium is only slightly higher than the HPAL and is attributed to variations in background concentrations.  The source of TPH and PAHs may be associated with long-term storage of equipment and debris at IR-58.	See Table D-3f, IR-58.
AX09 (084024, 084025, 085024)	ELCR = $8 \times 10^{-6}$	The ELCR is largely due to potential exposure to arsenic and PAHs in boring IR58B011 at 6.75 feet bgs.	Arsenic and PAHs were detected at concentrations of 14 mg/kg and 0.2 mg/kg, respectively. The concentration of arsenic is only slightly higher than the HPAL and is attributed to variations in background concentrations.  The source of PAHs may be associated with long-term storage of equipment and debris at IR-58.	See Table D-3f, IR-58.

**TABLE D-3b (continued)**  
**ACTION REQUIRED FOR SOIL AT IR-28**  
**SOIL CLEANUP GOAL SCENARIO 2**  
**PARCEL C FEASIBILITY STUDY**  
**HUNTERS POINT SHIPYARD - SAN FRANCISCO, CALIFORNIA**

Notes:

bgs	Below ground surface
COPC	Chemical of potential concern
ELCR	Excess lifetime cancer risk
EPC	Exposure point concentration
HI	Hazard index
HPAL	Hunters Point Ambient Level
mg/kg	Milligrams per kilogram
PAH	Polyaromatic hydrocarbon
PCB	Polychlorinated biphenyl
TOG	Total oil and grease
TRPH	Total recoverable petroleum hydrocarbon

- a The first number corresponds to the industrial exposure area. The number in parenthesis corresponds to the residential exposure area.
- b The noncarcinogenic screening criterion used is the maximum child total segregated HI for a target organ.
- c The criterion used for assessing remediation actions is discussed in Appendix D.
- d Soil remediation areas 28-13 and 28-21 identified under soil cleanup goal scenario 3 (residential  $10^{-6}$ ) are located in an area proposed for mixed reuse. Therefore, they are retained under soil cleanup goal scenario 2. The ELCR and HI information are for soil cleanup scenario 3.