

5090
Ser T4A2EG/L4101
18 Jan 1994

From: Commander, Western Division, Naval Facilities Engineering Command
To: Distribution

Subj: REMEDIAL INVESTIGATION/FEASIBILITY STUDY FOR NAVAL STATION
TREASURE ISLAND, SAN FRANCISCO

Encl: (1) Monthly progress Meeting Minutes - December 4, 1993
(2) Restoration Advisory Board (RAB) Meeting Minutes - December 4, 1993

1. Enclosures (1) and (2) are provided for your information.
2. Thank you for your guidance and involvement in this project. For further information, please contact Mr. Ernesto M. Galang, Code T4A2EG, at (415) 244-2560.


MARCELO G. PASCUA, JR.
By direction

Distribution:

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TREASURE ISLAND, SAN FRANCISCO

Copy to:

US Environmental Protection Agency, Region IX (Attn: Rachel Simons) (encl 2)
US Environmental Protection Agency, Region IX (Attn: Deidre Nurre) (encl 2)
National Oceanic & Atmospheric Administration (Attn: John Lindsay) (encl 2)
NAVSTA Treasure Island (Attn: Jim Sullivan) (encls 1 and 2)
NAVSTA Treasure Island (Attn: LCDR Virginia Overstreet) (encl 2)
COMNAVBASE San Francisco (Attn: Randy Friedman) (encls 1 and 2)
San Francisco Department of Public Health (Attn: Scott Nakamura) (encl 2)
San Francisco Department of Public Health (Attn: Amy Brownell) (encl 2)
San Francisco Mayor's Office (Attn: Don Angus) (encl 2)
Michelle Dunne-Iverson, R.N., Residents Rep (encl 2)
PRC Environmental Management Inc. (Attn: Emily Pimentel) (encls 1 and 2)

Blind copy to:

T4A2, T4A2EG, T4CRG
Admin Records (3 copies)
Writer: E. Galang, T4A2EG, X-2560
File: NAVSTA Treasure Island
Chron, blue, pink, green

**INSTALLATION RESTORATION PROGRAM
MONTHLY PROGRESS MEETING
NAVAL STATION TREASURE ISLAND**

December 14, 1993

I. INTRODUCTION

On December 14, 1993, at 10:00 a.m., representatives from the California Environmental Protection Agency's Department of Toxic Substances Control (DTSC), San Francisco Regional Water Quality Control Board (RWQCB), Western Division Navy (Navy), and PRC Environmental Management, Inc. (PRC) held the monthly progress meeting for the remedial investigation/feasibility study (RI/FS) being conducted at Naval Station Treasure Island (NAVSTA TI). The meeting was held in the Building 369 dining room. A copy of the agenda and list of attendees are provided as attachments.

These minutes summarize the items discussed in the monthly progress meeting for NAVSTA TI relating to installation restoration (IR) program activities.

II. BRAC CLEANUP PLAN (BCP)

A. INFORMATION

A letter was sent to the Navy by PRC requesting information necessary to complete the BCP. The Navy will forward the requested information. The draft BCP is scheduled to begin internal review at PRC on January 7, 1994. The draft BCP will be submitted to the Navy on January 28, 1994.

B. CONCEPTUAL MODELS

Detailed conceptual models for each site, as described in the BCP guidebook, will not be included in this draft of the BCP. Existing information only will be included. The existing information will be summarized and a strategy for providing conceptual models will be developed. It was suggested that models be developed for areas (as opposed to individual sites) at NAVSTA TI. In addition, preparing individual models for complicated sites, such as Site 06, was discussed.

C. OPERABLE UNITS (OU)

Separating soil and groundwater into separate OUs was discussed and is not recommended for NAVSTA TI due to the shallow groundwater.

D. TARGET HUMAN HEALTH RISK RANGE

DTSC will contact their risk assessor in Sacramento regarding the use of the target cancer risk range of 10^{-4} to 10^{-6} rather than the NCP point of departure cancer risk of 10^{-6} .

E. BCP SCHEDULE SECTION

The suggestion was made to conduct "over-the-shoulder" reviews early in the document preparation process to assist in accelerating cleanup. The Navy and regulatory agencies would review documents concurrently, followed by public review. This is being done at Alameda for engineering evaluations/cost analyses (EE/CA) and could be considered for NAVSTA TI.

F. LEASE AGREEMENTS/PROPERTY ACQUISITION

Existing lease agreements are needed for inclusion in the BCP. For example, the San Francisco School District leases land and buildings at NAVSTA TI.

Property transfer for Treasure Island will probably be more straightforward than at Yerba Buena Island (YBI) because ownership of YBI is still uncertain. The BCP should have a real estate map showing property lines (for both submerged and dry land).

III. FORMATION OF RESTORATION ADVISORY BOARD (RAB)

A. SOLICITATION OF MEMBERS

The following suggestions were made to solicit and encourage membership on the RAB:

- Mail letters to those on the community relations mailing list
- Use DTSC's TRC formation guidance document
- Mail letters to original TRC formation mailing list

The organizations listed below will have or were suggested to have representation on the RAB:

- U. S. EPA
- DTSC Public Involvement (Shirley Buford)
- WESTDIV Public Relations (Roger Gee)
- Audubon Society
- Sierra Club
- ARC/Arms Control Research Center

B. COORDINATION OF REVIEW AND COMMENTS BY RAB

Concern about document review by the RAB was discussed. The suggestion was made to develop bylaws or a charter document for RAB members to sign agreeing to return comments within a specified time.

It was suggested to schedule the RAB meetings at the end of comment periods and use the meetings to obtain additional comments.

Comments are preferred in writing, but it may be necessary to allow verbal comments during the RAB meetings. These may need to be recorded by a court reporter or some other formal reporting method.

IV. RI PRESENTATION OUTLINE

Copies of the overheads to be used at the RAB meeting for presentation of the RI were distributed and reviewed.

DTSC and RWQCB requested that it be stressed during the RI presentation to the RAB that the document is still under review by regulatory agencies and the recommendations made are the opinion of the Navy only at this time.

Comments are due from the regulatory agencies on January 10, 1994 for the RI and the BHHRA, and on January 17, 1994 for the EA.

The RWQCB indicated they disagree with the interpretation of the water quality criteria used in the EA and the RI and will forward an explanation of their objection along with any other comments.

**NAVAL STATION TREASURE ISLAND
INSTALLATION RESTORATION PROGRAM**

MONTHLY PROGRESS MEETING

DECEMBER 14, 1993, 10:00 A.M.

**BUILDING 369, BACHELOR OFFICERS QUARTERS
DINING ROOM**

- I. BRAC CLEANUP PLAN - Update
- II. Formation of Restoration Advisory Board
- III. Presentation outline
- IV. Other

NAVAL STATION TREASURE ISLAND
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

REMEDIAL PROJECT MANAGERS MEETING
DECEMBER 14, 1993
(NAVSTA TI @ 10:00 A.M.)

PERSONNEL	ORGANIZATION	PHONE NO.
1. Ernie Galang	Navy - WESTDIV	(415) 244-2560
2. James Sullivan	NAVSTA TI	(415) 395-5456
3. Tom Lanphar	CAL-EPA DTSC	(510) 540-3809
4. Gina Kathuria	SFBay RWQCB	(510) 286-4267
5. Emily Pimentel	PRC Env. Mgt. Inc.	(415) 543-4880
6. Anne Ording	PRC Env. Mgt. Inc.	(415) 543-4880
7. Sharon Tobias	PRC Env. Mgt. Inc.	(415) 543-4880
8. Julie Howe	PRC Env. Mgt. Inc.	(415) 543-4880
9. Thorsten Anderson	PRC Env. Mgt. Inc.	(415) 543-4880

**INSTALLATION RESTORATION PROGRAM
RESTORATION ADVISORY BOARD MEETING
NAVAL STATION TREASURE ISLAND**

December 14, 1993

On December 14, 1993, at 1:30 p.m., the restoration advisory board (RAB) held a meeting for the remedial investigation/feasibility study (RI/FS) being conducted at Naval Station Treasure Island (NAVSTA TI). The meeting was held in the Building 369 dining room. A copy of the agenda and list of attendees are provided as attachments.

These minutes summarize the items discussed during the RAB meeting for NAVSTA TI.

I. INTRODUCTION

Jim Sullivan opened the meeting. Introductions were made by each person present. Captain Tom Burns made opening remarks.

II. BASE CLOSURE

A. FORMATION OF NEW COMMUNITY AND TECHNICAL GROUPS - RAB AND BRAC CLEANUP TEAM (BCT)

As the BRAC environmental coordinator (BEC), Jim Sullivan, Navy, will coordinate the formation of the RAB and BCT. Jim explained the purpose of the RAB is to provide recommendations to the BCT. He asked that each member present provide suggestions on who should be members, how additional members should be solicited, how often meetings should be held, and whether meetings should be held in the morning, afternoon, or evening.

The RAB is currently cochaired by the BEC and a representative from the City of San Francisco. The cochairs will develop a draft RAB charter to be signed by all RAB members and present it at the next RAB meeting.

III. STATUS OF RI/FS

A. TECHNICAL DOCUMENTS UNDERGOING REGULATORY REVIEW

Regulatory agencies are currently reviewing several documents. Comments are due from the agencies by January 10, 1994, on the remedial investigation (RI) and baseline human health risk assessment (BHHRA) reports and by January 17, 1994, on the ecological risk assessment (EA).

B. OTHER TECHNICAL DOCUMENTS

The draft initial screening of technologies (IST) is being reviewed by the Navy. It will be submitted to the regulatory agencies following incorporation of the Navy's comments.

C. SHORT-TERM SCHEDULE

Although base closure activities are projected to go on for several years, in the short term, the feasibility study (FS) document will be one of the next major documents to be completed, scheduled for 1995.

D. COMMUNITY RELATIONS/PARTICIPATION

Public meetings or open houses will be held to encourage public participation in the base closure process. Fact sheets will be published in conjunction with these meetings.

IV. PRESENTATIONS

The information contained in the RI, BHHRA, and EA reports was presented. Since these documents are currently being reviewed by the regulatory agencies, the information presented has not had the benefit of their comment. (Copies of the materials distributed during the RAB meeting are attached to these minutes.)

A. BACKGROUND AND DATA QUALITY

The presentation included a summary of previous investigations, an explanation of how sampling locations and analyses performed were determined, a description of the data quality procedures that were followed, and a summary of how the data was used.

B. BASELINE HUMAN HEALTH RISK ASSESSMENT

The presentation included a discussion of how ambient levels were determined for metals and how these levels were used for the BHHRA. A summary of the BHHRA results were presented for both current industrial land use and future residential land use.

C. ECOLOGICAL RISK ASSESSMENT

The presentation included a summary of the methodology used for the EA. The EA was performed according to EPA guidance published in 1992. The NAVSTA TI EA corresponds to the problem formulation phase of the EPA guidance and presents recommendations for the next steps to take in the EA process.

D. REMEDIAL INVESTIGATION

The presentation summarized the results of the RI and the Navy's recommendations for further action.

V. OTHER ITEMS

RAB meetings will be held every two months until it is determined the meetings need to be held more or less often.

The draft BCP will be presented at the next RAB meeting.

Comments received from regulatory agencies for the RI, BHHRA, and EA documents will be presented at the next RAB meeting.

DTSC published a guidance document for creating the RABs. Any groups interested in joining the NAVSTA TI RAB may contact the Navy, DTSC, or the RWQCB.

The RAB cochairs will develop a draft charter document before the next RAB meeting.

The environmental baseline survey (EBS) for NAVSTA TI is being prepared. Its primary purpose is to identify clean parcels. The BCP will also contain a map showing whether sites are clean or not. The status of the EBS will be presented at the next RAB meeting.

NAVSTA TI plans to conduct asbestos, lead-based paint, and basewide RCRA surveys in 1994 to determine the status of their compliance with regulatory standards.

VI. NEXT MEETING

**Tuesday, February 15, 1994
9:30 a.m.**

The next RAB meeting will be held in the Building 369 dining room (unless notified otherwise).

NAVAL STATION TREASURE ISLAND
INSTALLATION RESTORATION PROGRAM
RESTORATION ADVISORY BOARD MEETING AGENDA
DECEMBER 14, 1993, 1:30 P.M.
BUILDING 369, BACHELOR OFFICERS QUARTERS
DINING ROOM

I. INTRODUCTION

II. BASE CLOSURE

Formation of New Community and Technical Groups

- Restoration Advisory Board
- BRAC Cleanup Team

Preparation of BRAC Cleanup Plan (BCP)

- Purpose
- Schedule of completion of plan
- Review process

Base Closure Status

III. STATUS OF RI/FS

Technical Documents undergoing Regulatory Review

- Baseline Human Health Risk Assessment
- Ecological Risk Assessment
- Remedial Investigation

Other Technical Documents

- Initial Screening of Technologies - Navy Review

Short Term Schedule

- Feasibility Study

Community Relations/Participation

- Public meetings or open house
- Fact Sheet

NAVAL STATION TREASURE ISLAND
INSTALLATION RESTORATION PROGRAM
RESTORATION ADVISORY BOARD MEETING AGENDA

IV. PRESENTATIONS

Background/Data Quality - Thorsten Anderson
Baseline Human Health Risk Assessment - Christina Kabitzke
Ecological Risk Assessment - Emily Pimentel
Remedial Investigation - Sharon Tobias

V. OPEN DISCUSSION

VI. NEXT MEETING

NAVAL STATION TREASURE ISLAND

RESTORATION ADVISORY BOARD

DECEMBER 14, 1993 1:30 PM

NAME or Organization

Phone #

1) ERNIE GALANG	USNAVY - WESTDIV	(415) 244-2560
Emily Pimentel	PRC	415 543-4880
James Sullivan	NAVSTA TREASURE ISLAND	415-395-5456
LCDR Virginia Overstreet	"	415-395-5049
Capt Tom Berns	CO, "	415-395-5001
Gina Kuthuria	San Francisco Bay Regional Water Quality Control Board	5102864261
Tom Lanphar	Cal-EPA, DTSC	510-540-3809
Rachel Simons	USEPA	415-744-2405
Deirdre Nurve	USEPA	415 744 2410
Michelle Dunne-Iverson	A.N. BASE Comm Rep.	415 986-5769
Don Angus	SF MAJOR'S OFFICE	415/550-6632
David Wells	SF DPH	(415) 554-2796
Denise Klimas	NOAA/Natural Resource Trustee	(415) 744-3126
John Lindsay	NOAA	(617) 573 9699
ANNE ORDING	PRC EMU	415-543-4880
Christina G. Kabitzyke	PRC	415-543-4880
Sharon Tobias	PRC	415-543-4880
Thorsten Anderson	PRC	415-543-4880
SCOTT NAKAMURA	SF DPH	(415) 554-2789
Amy Brownell	SF DPH	415 - 554 - 2778
ROGER GEE	NAVY. WESTDIV (BRAC PAD)	(415) 244-2599
Julie Howe	PRC	(415) 543-4880

REMEDIAL INVESTIGATION BACKGROUND

- **Goals of Remedial Investigation**
- **Use of Information from Previous Investigations and Other Sampling Events**
- **Sampling Objectives**
- **Evaluation of Data Quality**

WESTDIV / PRC EMI

GOALS OF REMEDIAL INVESTIGATION

- Characterize Nature and Extent of Contamination
- Characterize Geology, Hydrogeology, and Physical Features
- Identify Contaminant Migration Pathways and Receptors
- Determine Fate and Transport Mechanisms
- Collect Data to Support:
 - Baseline Human Health Risk Assessment
 - Ecological Assessment
 - Feasibility Study
- Identify Removal Opportunities Early in the RI/FS Process

WESTDIV / PRC EMI

RECOMMENDATIONS FOR ACTION

- **Category 1:**

Prepare No Further Action
Record of Decision

- **Category 2:**

Evaluate the need to consider
potential ecological risks
predicted by current or future use
scenario

- **Category 3:**

- Conduct Removal Actions of soil
hot spots at Sites 01 and 09
followed by no further action

WESTDIV / PRC EMI

RECOMMENDATIONS FOR ACTION

(Continued)

- **Category 3 (Continued):**
 - Conduct Removal Actions of soil hot spots and for floating product at Sites 06, 14, and 22, but groundwater will still require remediation
 - Further characterize or evaluate potential remedies in Feasibility Study
 - Phase II RI workplan preparation
 - Phase II Ecological Risk Assessment

WESTDIV / PRC EMI

CONCLUSIONS (Continued)

- **Category 3: Further
Characterization, Risk Evaluation,
or Feasibility Study Evaluation**

Sites 01, 04/19, 06, 09, 10, 11,
13/13A, 14, 15, 16, 17, 20, 22, 24,
and 25

WESTDIV / PRC EMI

CONCLUSIONS

- **Category 1: No Further Action**

Sites 03 and 05 (RI results identified no constituents of concern at these sites)

Sites 07 and 21 (No human health risk, and no ecological risk if land use scenario defaults to current use)

- **Category 2: No Human Health Risk, but Potential Ecological Concerns based on Current Use Scenario**

Sites 08 and 12 (RI results identified no constituents of concern above human health PRGs or TBC values, but there exists a potential ecological risk)

WESTDIV / PRC EMI

**TABLE ES-1
SUMMARY OF REMEDIAL INVESTIGATION FINDINGS BY MEDIA**

STORMWATER AND SEDIMENT MEDIA		
Site Name	COPC Exceed AWQC or SQC	COPC
13/13A Stormwater ⁽²⁾ (Consists of 7 stations)	Yes	Inorganics, Pesticides, TPH
13/13A Sediment ⁽³⁾ (Consists of 15 stations)	Yes	Inorganics, Pesticides, SVOCs, TPH

- (1) Currently site has limited habitat value, under a future use scenario site may be a concern.
- (2) Base nonpoint sources and IR sites
- (3) Base nonpoint sources, IR sites, and bay-wide sediment transport

AWQC - Ambient Water Quality Criteria
 COPC - Chemical of Potential Concern
 N/A - Not Applicable
 PAHs - Polynuclear Aromatic Hydrocarbons
 PRG - Human Health-Based Preliminary Remediation Goal
 SQC - Sediment Quality Criteria
 SVOCs - Semivolatile Organic Compounds
 TPH - Total Petroleum Hydrocarbons
 WWTP - Wastewater Treatment Plant
 YBI - Yerba Buena Island

**TABLE ES-1
SUMMARY OF REMEDIAL INVESTIGATION FINDINGS BY MEDIA**

GROUNDWATER MEDIA		
Site Name	COPC Exceed Modified AWQC	COPC
01 Medical Clinic	No	N/A
04/19 Hydraulic Training School/Refuse Transfer Area	No	N/A
06 Fire Training Area	No	N/A
11 YBI Landfill	Yes	Silver
14 New Fuel Farm	No	N/A
17 Tanks 103/104	No	N/A
20 Auto Hobby Shop and Transportation Center	No	N/A
22 Navy Exchange Service Station	No	N/A
24 Fifth Street Fuel Releases/Dry Cleaning Facility	No	N/A
25 Seaplane Maintenance Area	No	N/A

**TABLE ES-1
SUMMARY OF REMEDIAL INVESTIGATION FINDINGS BY MEDIA (Continued)**

SOIL MEDIA			
Site Name	Potential Sources	COPC Exceed Human Health-Based PRGS/COPC	COPC Exceed Ecological Criteria/COPC
22 Navy Exchange Service Station	Gas station, underground storage tanks	Yes/Benzene	Yes ⁽¹⁾ , Inorganics, TPH-gasoline, TPH-diesel, SVOCs (future use scenario)
24 Fifth Street Fuel Releases/Dry Cleaning Facility	Abandoned pipelines, former dry cleaners	No	Yes ⁽¹⁾ , Inorganics, TPH-gasoline, SVOCs, TPH-diesel (future use scenario)
25 Seaplane Maintenance Area	Gasoline tanks, underground storage tanks, pipelines to pier 21	No	Yes ⁽¹⁾ , Inorganics, TPH-diesel (future use scenario)

ESTIMATED THE VOLUME OF POTENTIALLY CONTAMINATED SOIL

The contaminant concentrations at each sample location were compared to the human health-based PRGs or TBC values for TPH.

- Concentrations at each sample location
- Depth of contamination
- Distances from sample locations varied proportionally to TPH concentration
- Used combination of criteria

WESTDIV / PRC EMI

**TABLE ES-1
SUMMARY OF REMEDIAL INVESTIGATION FINDINGS BY MEDIA**

SOIL MEDIA			
Site Name	Potential Sources	COPC Exceed Human Health-Based PRGS/COPC	COPC Exceed Ecological Criteria/COPC
01 Medical Clinic	X-ray developer	Yes/Silver	Yes/Silver
03 PCB Equipment Storage Area	Transformer storage area	No (contaminants not detected)	No
04/19 Hydraulic Training School/Refuse Transfer Area	Outside waste storage area, refuse staging	Yes/PAHs	Yes/Inorganics
05 Old Boiler Plant	Buried debris from demolished boiler plant	No (contaminants not detected)	No
06 Fire Training School	Fire training area, underground storage tanks	Yes/PAHs, Benzene	Yes ⁽¹⁾ , TPH-diesel, Inorganics, TPH-gasoline (future use scenario)
07 Pesticide Storage Area	Storage and mixing area for paints, pesticides, and herbicides; spread area for WWTP sludge	No	Yes ⁽¹⁾ , Pesticides (future use scenario)
08 Army Point Sludge Disposal Area	Spread area for WWTP sludge	No	Yes/Inorganics, Pesticides
09 Foundry	Paint shop, forge, foundry	Yes/Lead	Yes ⁽¹⁾ , Lead (future use scenario)
10 Bus Painting Shop	Bus paint shop, storage and mixing area for pest control	Yes/PAHs	Yes ⁽¹⁾ , Inorganics, Pesticides, TPH-diesel (future use scenario)

**TABLE ES-1
SUMMARY OF REMEDIAL INVESTIGATION FINDINGS BY MEDIA (Continued)**

SOIL MEDIA			
Site Name	Potential Sources	COPC Exceed Human Health-Based PRGS/COPC	COPC Exceed Ecological Criteria/COPC
11 Yerba Buena Island Landfill	Disposal area	Yes/PAHs, Lead, Nickel	Yes/Inorganics, SVOCs, TPH-diesel
12 Old Bunker Area	Ammunition bunkers, disposal area	No	Yes/Inorganics, TPH-diesel
13/13A Stormwater Outfalls	Stormwater discharge vessel discharge	N/A	N/A
14 New Fuel Farm	Fuel storage	Yes/Benzene	Yes ⁽¹⁾ , Inorganics, TPH-gasoline, TPH-diesel (future use scenario)
15 Old Fuel Farm	Fuel storage, undrained abandoned lines	Yes/PAHs	Yes ⁽¹⁾ , Inorganics, SVOCs (future use scenario)
16 Clipper Cove Tank Farm	10 fuel storage tanks, spread area for sludge from dismantled tanks	Yes/PAHs	Yes/Inorganics, TPH-diesel
17 Tanks 103/104	Fuel storage tanks (accidental release)	Yes/SVOCs	Yes ⁽¹⁾ , Inorganics, TPH-gasoline, SVOCs (future use scenario)
20 Auto Hobby Shop and Transportation Center	Transportation Center	Yes/Lead	Yes ⁽¹⁾ , Inorganics, TPH-diesel (future use scenario)
21 Vessel Waste Oil Recovery	Waste oils from vessel waste oil recovery	No	Yes ⁽¹⁾ , Inorganics, TPH-diesel (future use scenario)

**TO BE CONSIDERED (TBC) VALUE
FOR TPH BASED ON
ENVIRONMENTAL FACTORS**

- Degradation
- Adsorption (to soil)
- Dilution at soil-groundwater interface
- Dilution at groundwater-surface water interface
- Groundwater movement is moderate to slow (15 to 150 years for groundwater at the closest site to contact the bay)

WESTDIV / PRC EMI

**TOTAL PETROLEUM HYDROCARBONS DETECTED
AT SEVERAL SITES**

- Sites 04/19, 06, 10, 11, 12, 14, 16, 17, 20, 21, 22, 24, and 25
- Developed To Be Considered (TBC) value for protection of surface water via groundwater
- TBC criteria for TPH-diesel and TPH-gasoline were based on best professional judgement

WESTDIV / PRC EMI

INTERPRETATION AND EVALUATION OF DATA

- Results of the Baseline Human Health Risk Assessment
- Results of the Ecological Risk Assessment
- Evaluation of contamination by location
- Preliminary Remediation Goals

WESTDIV / PRC EMI

REMEDIAL INVESTIGATION RESULTS

- Interpretation and Evaluation of Data
- Total Petroleum Hydrocarbons (TPH)
- Estimated the Volume of Potentially Contaminated Soil
- Summary of Investigation Findings by Media
- Conclusions
- Recommendations for Action

WESTDIV / PRC EMI

RECOMMENDATIONS FOR FURTHER STUDY AND REMEDIAL OPTION CONSIDERATIONS

SOIL

Further Study

- Conduct bioassays
- Assess bioavailability of metals
- Characterize contamination

Remedial Options

- No action
- Deed restrictions
- Hot spot removal
- Remove or treat

STORMWATER

Further Study

- Evaluate non-point sources

Remedial Options

- No action
- NPDES permit w/ seasonal treatment
- Remove sources
- Remove or treat soil

**RECOMMENDATIONS FOR FURTHER STUDY
AND REMEDIAL OPTION CONSIDERATIONS
(continued)**

GROUNDWATER

Further Study

- Model groundwater discharge

Remedial Options

- No action
- Treatment

SEDIMENTS

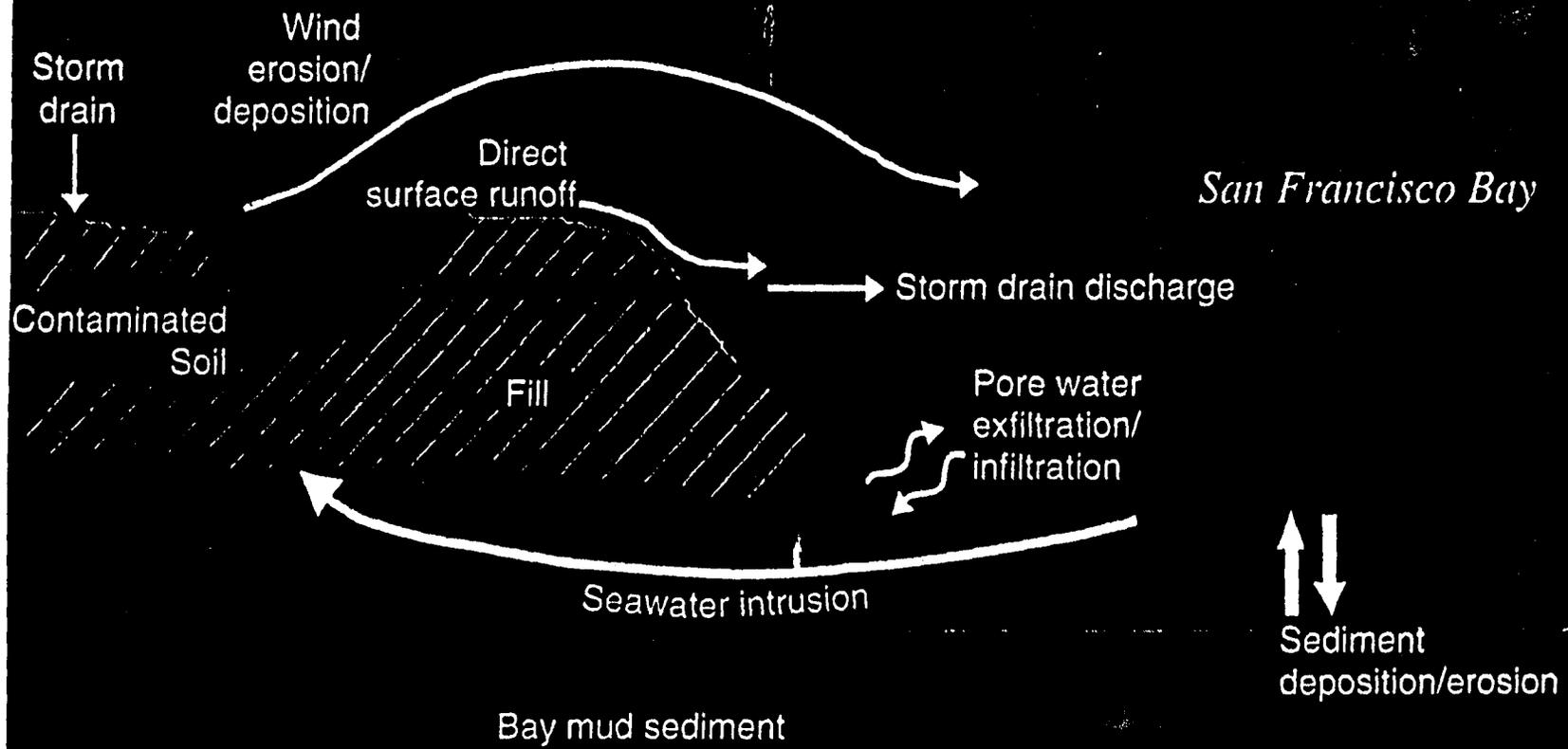
Further Study

- Characterize contamination
- Estimate sediment transport
- Assess marine community
- Assess contaminant toxicity
- Assess contaminant bioaccumulation

Remedial Options

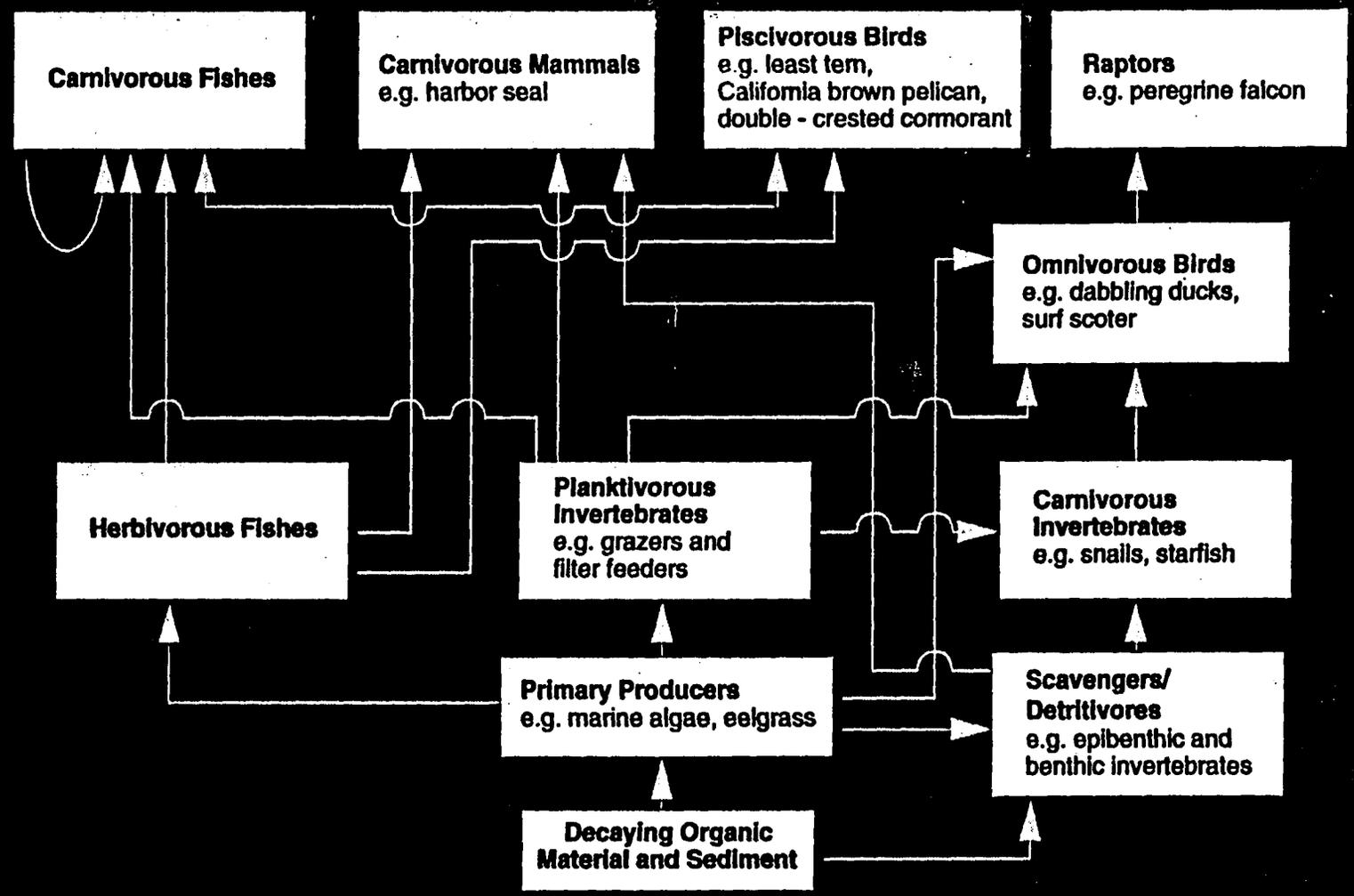
- No action
- Cap sediments
- Remove sediments
- Treat sediments

CONCEPTUAL SITE SCENARIO

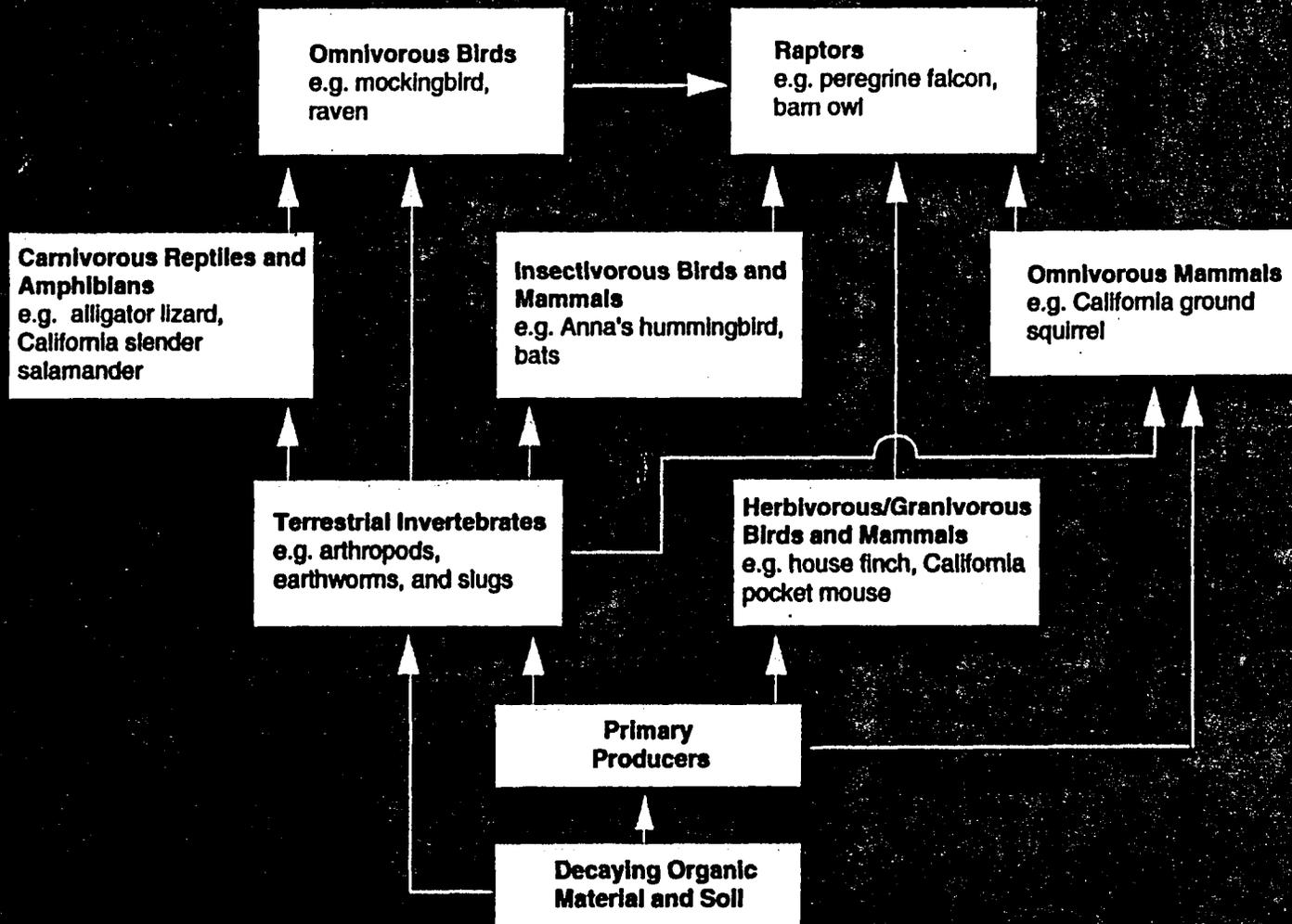


Media of Concern	Presence or Potential for Endangered Species	Types and Abundance of Receptors	Direct or Indirect Exposure Pathway(s)	Magnitude and Extent of Contamination	Exceeds ARARs or TBCs
SOIL					
SEDIMENT	SCREENING PARAMETERS TO EVALUATE				

MARINE AQUATIC FOOD WEB



TERRESTRIAL FOOD WEB



WEIGHT OF EVIDENCE SCREENING-LEVEL PARAMETERS TO DETERMINE NEED FOR FURTHER STUDY

- ❖ **Presence or Potential Presence of Endangered or Listed Species**
- ❖ **Types and Relative Abundance of Ecological Habitat and Receptors**
- ❖ **Potential Exposure Pathways**
- ❖ **Magnitude and Extent of Contamination**
- ❖ **Contaminants which Exceed Regulations, Guidance, or Literature Toxicity Values**

ECOSYSTEMS POTENTIALLY AT RISK

TERRESTRIAL

Treasure Island:

- Managed landscape with little ecological diversity

Yerba Buena Island:

- Natural diverse woodlands, brushlands, and grasses

MARINE

- Intertidal: Sand cove riprap shoreline

- Subtidal: Soft silt/clay sediments

ECOLOGICAL VALUES TO PROTECT

- San Francisco Bay Estuary
Fisheries
Marine Mammals

- Pacific Flyway
Migratory Birds

SOURCES, MEDIA, AND CONTAMINANTS OF CONCERN

Range of Sources for 22 Sites

- fire training school
- fuel farms
- landfill
- bus painting

Media of Concern

- soils
- groundwater
- storm water
- sediments

Analysis and Contaminants Detected

- diesel
- gasoline
- metals
- pesticides
- polycyclic aromatic hydrocarbons (PAH)
- benzene, ethylbenzene, toluene, xylene (BETX)

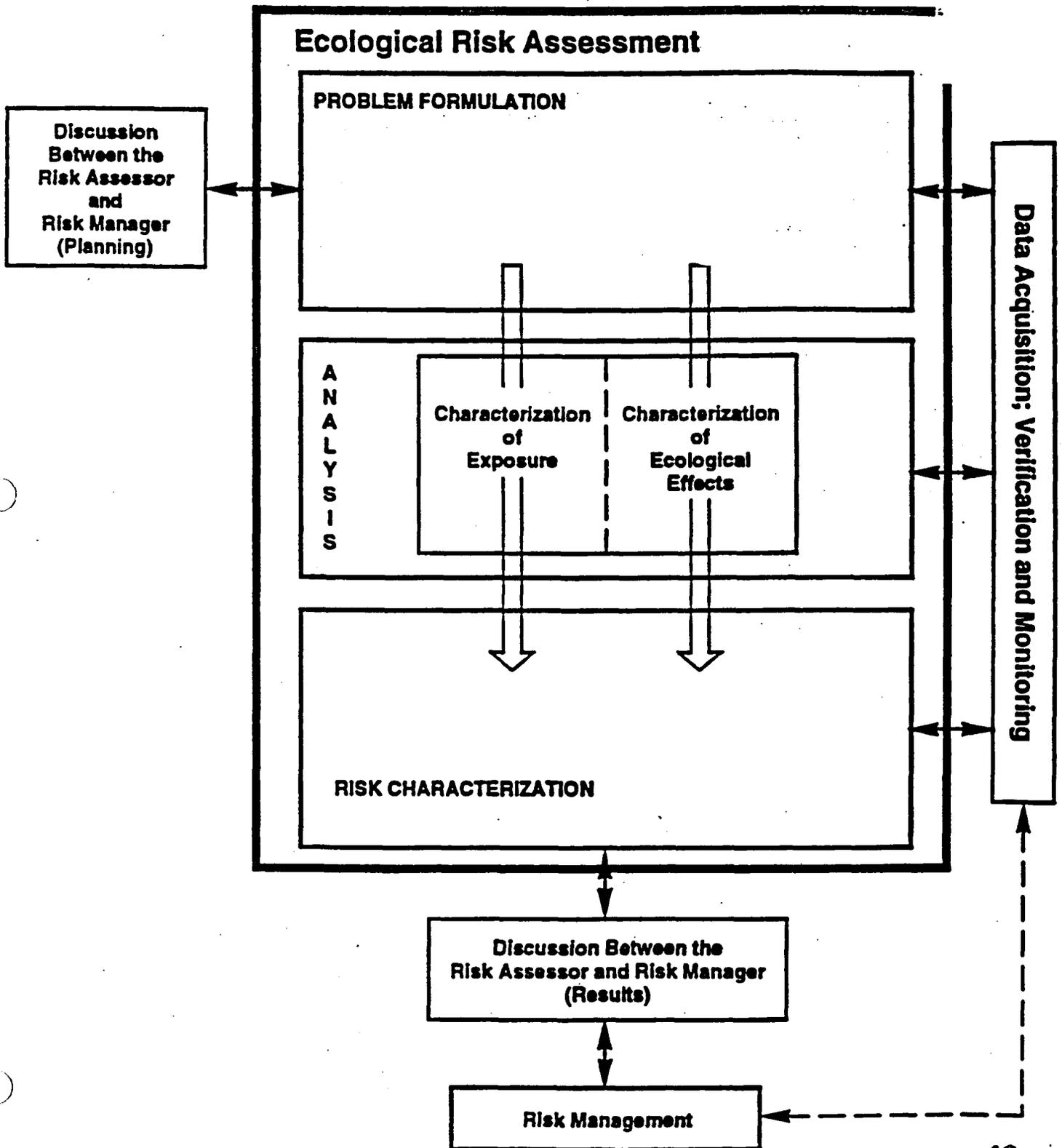
ECOLOGICAL RISK ASSESSMENT SCREENING-LEVEL EVALUATION GOALS

- ❖ **Evaluate Analytical Chemical Data Associated with the Various Media**
- ❖ **Describe the Contaminants of Potential Concern**
- ❖ **Characterize Terrestrial and Aquatic Receptors**
- ❖ **Make a Preliminary Evaluation of the Adverse Effects Associated with the Potential Receptors**
- ❖ **Refine Conceptual Site Model, Prioritize Concerns, and Determine Need for Additional Study**

RISK ASSESSMENT'S PURPOSE AND RELATIONSHIP TO THE SUPERFUND PROCESS

- ❖ **Installation Restoration Program and Base Realignment and Closure Programs**
- ❖ **Remedial Investigations to Determine Nature and Extent of Contamination**
 - **Evaluate Risk to Human Health and the Environment**
 - **Evaluate Need and Feasibility of Remediation**

EPA's framework for Ecological Risk Assessment



PREVIOUS INVESTIGATIONS

Investigator	Report Date	Sites Sampled
Navy	1986	14
Harding Lawson Associates	1987	06
ERM-West	1987	06
BSK Associates	1987	20
Dames and Moore - Preliminary Assessment/ Site Inspection	1988	01, 03, 04/19, 16, 20, 24
PRC - Additional Site Inspections	1991	08, 19, 25
PRC - Preliminary Risk Assessment	1992	12
PRC - Floating Product Removal	1992 (ongoing)	06, 14
PRC - UST Removal	1993 (ongoing)	06, 22, 25

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SITES WITH NO PREVIOUS SAMPLING DATA

- 05 Old Boiler Plant
- 07 Pesticide Storage Area
- 09 Foundry
- 10 Bus Painting Shop
- 11 Yerba Buena Island Landfill
- 13 Stormwater Outfalls
- 15 Old Tank Farm
- 17 Tanks 103/104
- 21 Vessel Waste Oil Recovery Area

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SAMPLING OBJECTIVES

- Sites requiring soil sampling only
 - 03 PCB Equipment Storage Area
 - 05 Old Boiler Plant
 - 06 Fire Training School
 - 07 Pesticide Storage Area
 - 08 Army Point Sludge Disposal Area
 - 09 Foundry
 - 10 Bus Painting Shop
 - 15 Old Tank Farm
 - 16 Clipper Cove Tank Farm
 - 21 Vessel Waste Oil Recovery Area

- Sediment and Stormwater Sampling
 - 13 Stormwater Outfalls

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SAMPLING OBJECTIVES

- Sites requiring soil and groundwater sampling

- 01 Medical Clinic
- 04/19 Hydraulic Training School/Refuse
Transfer Area
- 11 Yerba Buena Island Landfill
- 12 Old Bunker Area
- 14 New Fuel Farm
- 17 Tanks 103/104
- 20 Auto Hobby Shop and
Transportation Center
- 22 Navy Exchange Service Station
- 24 Fifth Street Fuel Release/Dry
Cleaning Facility
- 25 Seaplane Maintenance Area

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SAMPLING OBJECTIVES

- **Analyses performed for soil and water**

Volatile Organic Compounds

(including BTEX)

Semivolatile Organic Compounds

(including PAHs)

Pesticides

Polychlorinated Biphenyls (PCB)

Metals

pH

Explosives

Chlorinated Herbicides

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EVALUATION OF DATA QUALITY

- **Data Validation**
- **Data Useability**
 - **Evaluation of Precision, Accuracy, Representativeness, Comparability, and Completeness (PARCC)**
 - **Data Quality Summary Report**
- **Data From Previous Investigations (primarily the PA/SI)**

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IDENTIFICATION OF COPCs

Previous data

- **Site 12 Final Preliminary Risk Assessment**

Blank contaminants

Background

- **Metals were considered ambient when**
 - (1) **site UCL < literature mean, or**
 - (2) **site max < literature max**
- **Metals were considered site related when**
 - (1) **site max > literature max, or**
 - (2) **site max fell at high end of literature background range, especially when site UCL > literature mean**

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EXPOSURE ASSESSMENT

BHHRA evaluates average exposure

Pathways evaluated

- **Ingestion of soil**
- **Inhalation of dust**
- **Dermal contact with soil**

Pathways semi-quantitatively evaluated

- **Inhalation of volatiles in indoor air from groundwater**

Pathways reviewed but not evaluated

- **Ingestion of home-grown produce**
- **Ingestion of fish**

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PRELIMINARY REMEDIATION GOALS (PRGs)

NCP definition:

"The preliminary remediation goals are concentrations of contaminants ... that are believed to provide adequate protection of human health and the environment ... remediation goals are revised throughout the RI/FS process as additional information becomes available"

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PRELIMINARY REMEDIATION GOALS (PRGs)

How PRGs calculated

- **Risk calculation:**

$$\text{Risk} = \text{Conc.} \times \text{Tox.} \times \text{Exp. Factor}$$

- **PRG calculation:**

$$\text{Conc.} = \text{Risk} / (\text{Tox.} \times \text{Exp. Factor})$$

How PRGs used

Hot spots were identified by comparing individual sample concentrations to PRGs

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COPCS WITHOUT TOXICITY VALUES

Polyaromatic hydrocarbons (PAHs)

- **Benzo(a)pyrene's slope factor was used as a surrogate for carcinogenic PAHs**

- **U.S. EPA uses the following potency factors for carcinogenic PAHs:**

benzo(a)pyrene	1.0
benzo(a)anthracene	0.1
benzo(b)fluoranthene	0.1
benzo(k)fluoranthene	0.01
chrysene	0.001
dibenz(a,h)anthracene	1.0
indeno(1,2,3-cd)pyrene	0.1

- **Naphthalene's reference dose was used as a surrogate for noncarcinogenic PAHs**

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COPCS WITHOUT TOXICITY VALUES

Diesel and gasoline

- **Toxic constituents of these fuel mixtures were evaluated when detected**
 - **PAHs for diesel**
 - **BETX for gasoline**
- **When PAHs and BETX were not present, fuels were considered likely to be weathered**
- **Other constituents of diesel and gasoline**
 - (1) do not have toxicity values**
 - (2) are generally thought to be less toxic than PAHs and BETX**
 - (3) are not CLP compounds**

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RISK CHARACTERIZATION

Pathways driving BHHRA risks:

- **Dermal contact with soils**
- **Inhalation of volatiles in indoor air from groundwater**

COPCs driving BHHRA risks:

- **PAHs**
- **Lead**
- **Arsenic**

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