



# Proposed Plan for Installation Restoration Site 24 Former NAS Alameda



Alameda, California

May 2009

## U.S. NAVY ANNOUNCES PROPOSED PLAN

The U.S. Navy requests public comments on the **Installation Restoration (IR)\* Site 24 Proposed Plan**. IR Site 24 is located on the former Naval Air Station (NAS) Alameda, in Alameda, California (Figure 1). The U.S. **Environmental Protection Agency (EPA)**, California EPA **Department of Toxic Substances Control (DTSC)**, and the **San Francisco Bay Regional Water Quality Control Board (Water Board)** worked with the Navy and concur with this Proposed Plan.

This Proposed Plan announces the preferred alternative to address contaminated sediment in the northeastern corner of IR Site 24, including sediment beneath a portion of the wharf road, and recommends no further action for the remainder of IR Site 24. IR Site 24, which is also referred to as the Pier Area, is an offshore site located along the southern edge of the former NAS Alameda, now referred to as Alameda Point (Figure 1). IR Site 24 includes near shore and open water areas in the vicinity of three piers (Figure 2). The sediment contaminants in the northeast corner of IR Site 24 are cadmium, lead, **total DDx** (defined as the sum of the pesticide DDT and its degradation products DDD and DDE), and total PCBs.

The **Remedial Investigation (RI)** Report, which summarized the results of the environmental investigation and risk assessment, recommended a **Feasibility Study (FS)** to evaluate remedial alternatives for a small area located in the northeastern corner of the IR Site 24 sediment shelf in the vicinity of the **quay wall** beneath the wharf road between storm drain Outfalls J and K (Figure 2).

The FS Report evaluated several remedial technologies and alternatives to address the contaminated sediments in the northeastern corner of IR Site 24. This Proposed Plan presents the preferred alternative of sediment removal/dredging to address these contaminated sediments.

This Proposed Plan summarizes the alternatives evaluated for the contaminated sediment portion of IR Site 24 per the **Comprehensive Environmental Response,**

**Compensation, and Liability Act (CERCLA)** and explains the basis for the preferred alternative. For the remainder of IR Site 24, no further action is recommended, and no land-use restrictions, environmental monitoring, or other cleanup actions are required.

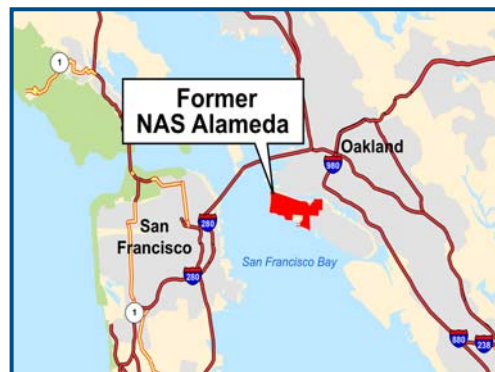


Figure 1. Former NAS Alameda Location



Figure 2. Layout of IR Site 24

- NOTICE -

**Public Comment Period**

**May 1, 2009  
through  
June 2, 2009**

**Public Meeting**

**May 13, 2009**

**Alameda Point  
Main Office Building, Room 201  
950 West Mall Square  
Alameda, California  
6:30 to 8:00 pm**

\*Words in **bold** are defined in the glossary on Page 10.

## THE CERCLA PROCESS

The Navy is issuing this Proposed Plan as part of its public participation responsibilities under Section 117(a) of CERCLA and Section 300.430(f) (2) of the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)**. The flowchart to the right illustrates the current phase of IR Site 24 in the CERCLA process.

This Proposed Plan summarizes information detailed in the RI report (August 2007), the FS report (September 2008), and other documents contained in the administrative record file for this site (see further information on Page 9). The Navy encourages the public to review these documents to gain an understanding of the environmental investigation activities and risk assessments that have been conducted at the site. The documents are available for public review at the locations listed on Page 9. Information about the public meeting for this Proposed Plan and on submitting public comments during the 30-day public comment period is also presented on Page 9.

In consultation with the regulatory agencies, the Navy may modify the preferred alternative or select another alternative remedy based on feedback from the community or on new information. Therefore, the community is encouraged to review and comment on this Proposed Plan. A final decision, documented in the **Record of Decision (ROD)**, will not be made until all comments are considered. The ROD will include a Responsiveness Summary that explains how the Navy considered each comment received during the public comment period.

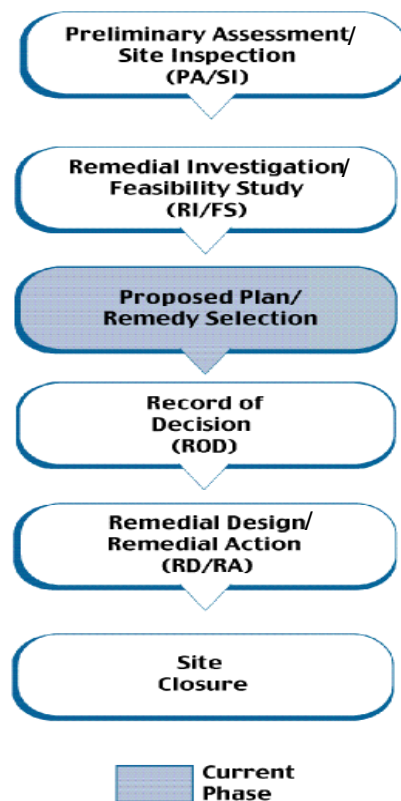
## SITE DESCRIPTION AND BACKGROUND

Alameda Point is located on the western tip of Alameda Island, which is on the eastern side of San Francisco Bay (Figure 1). NAS Alameda ceased operations in 1997. IR Site 24 is approximately 50 acres and includes offshore areas in the vicinity of three piers (Figure 2). The Navy used the piers to berth a variety of vessels, including destroyers, service ships, nuclear-powered ships, and occasionally submarines. Seaplane Lagoon (IR Site 17) adjoins IR Site 24 to the north and is a partially enclosed lagoon that was constructed in the 1930s by dredging a former tidal flat. Under the proposed reuse plan, IR Site 24 will be developed as a commercial marina along with the adjacent Seaplane Lagoon site, with no plans to remove the piers or the wharf road. The United States Ship (USS) Hornet is permanently berthed at Pier 3 as a Naval museum.

Until 1978, the pier areas were dredged periodically to allow for large naval ships and submarines to be docked. The water depth at the pier face ranges from approximately 12 to 28 feet. Berthing areas at the pier have been dredged to 46 feet for navigational purposes. The limited shallow habitat affects the fish population and makes it unlikely that there are a significant number of resident fish species. Fish that may be present at IR Site 24 are likely to be sport fish with relatively large foraging ranges.

The sediment shelf along and underneath the quay wall was not accessible to the dredging equipment. Due to the water depth, it is not possible to walk under the roadway from the

## COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT (CERCLA) PROCESS



pier. Access to the sediment shelf area under the wharf road by boat is largely blocked by pier pilings and cross members. Also, ships and/or barges are often docked along the shoreline. Only one entrance beneath the pier is available for access and only at low tide. As observed at low tide and documented in the RI Report, sediment in near shore areas and beneath Wharf Road at IR Site 24 was primarily sand covering rip rap (irregular rocks, up to boulder size, and debris); areas of sand covering mud were further from shore and always submerged. As a result, the intertidal mudflat habitat required to support clam beds is not present at IR Site 24.

Three storm drains (Outfalls J, K, and L) discharge into IR Site 24 (Figure 2) and may have historically contributed to contamination in the undredged sediment. The storm drain line leading to Outfall J received runoff and industrial wastewater from buildings located east of IR Site 24, including buildings historically used as aircraft maintenance hangars. Activities conducted in these buildings reportedly included painting, resin mixing, parts washing in solvent tanks, metals machining, paint stripping / sandblasting, aircraft defueling and refueling, and changing lubrication and hydraulic fluids.

During the 1990s, the Navy cleaned, repaired, and replaced a significant portion of the storm drain system. Storm drain lines discharging into IR Site 24 through Outfalls J, K, and L are still operational. A storm water pollution prevention program was initiated to ensure that only surface runoff is carried into the offshore areas. Therefore, continuing onshore sources of potential contaminants to IR Site 24 have been controlled.

## SITE INVESTIGATIONS AND REMOVAL ACTION

A number of investigations were conducted at IR Site 24 between 1966 and 2006, and a removal action was conducted in 1991. The RI report for IR Site 24 was combined with the RI report for IR Site 20. This was done because the 2005 RI sampling at both offshore sites was conducted in accordance with the same work plan. Separate risk assessments were conducted for each site and are presented in the RI report. The Final RI Report for IR Site 20 and IR Site 24 was issued in August 2007.

Radiological environmental monitoring was conducted at NAS Alameda from 1966 through early 1997. This radiological monitoring included the collection and analysis of sediment, water, and marine life (marine plants and animals) from IR Site 24 for radioactivity associated with naval nuclear propulsion. Samples were collected at locations that were based on berthing locations of nuclear-powered ships, as well as locations upstream and downstream of these berths. Based on these samples, the Navy concluded that the berthing of and work on nuclear-powered ships at Alameda Point had no adverse impact on human health or the environment.

In 1988, U.S. EPA conducted an independent study to assess whether the operation and maintenance of nuclear-powered ships at IR Site 24 at NAS Alameda resulted in elevated radioactivity. Results of this independent study also indicated no adverse effects.

IR Site 24 was investigated during the Initial Assessment Study conducted in 1983 at NAS Alameda. Because nearly annual dredging of the piers reduced the amount of previously impacted sediment in the area, this study recommended no further investigation at IR Site 24.

In 1991, a removal action was conducted for sewer lines J, K, and L, which have outfalls in IR Site 24. The sewer lines leading to Outfalls K and L were replaced, and the lines leading to Outfall J were cleaned and inspected in 1991.

In the mid-to-late 1990s, sediment investigations were conducted around discharge points of storm drains in IR Site 24. RI sampling was conducted at IR Site 24 in 2005 and 2006. Even though access to the IR Site 24 sediment shelf, including beneath Wharf Road, is difficult, the Navy collected sediment samples in these areas during low tide, and the results were used to estimate the potential risks at IR Site 24. RI sediment samples were collected and analyzed for **polycyclic aromatic hydrocarbons (PAHs)**, **polychlorinated biphenyls (PCBs)**, pesticides, and metals. In addition, selected samples near outfalls were analyzed for radium 226 and radium 228 to ensure that all potential radiological issues were addressed at IR Site 24. Activity levels of radium 226 and radium 228 were low or non-detect and do not indicate a release.

Results of investigations indicate that the highest concentrations of chemicals are in the northeastern corner of the site beneath the wharf road between storm drain Outfalls J and K (Figure 3). This northeastern corner of IR Site 24 comprises approximately 0.5 acre of the approximately 50-acre site. Table 1 presents the maximum concentrations for the **chemicals of concern (COCs)** at IR Site 24.



Figure 3. Area Proposed for Cleanup

Table 1. Maximum Concentrations for Chemicals of Concern

COC	Maximum Concentration in Site 24 Surface Sediment
Cadmium	39.3 mg/kg
Lead	498 mg/kg
Total DDx	0.166 mg/kg
Total PCBs	3.14 mg/kg

The RI Report concluded that there were no unacceptable risks in the remainder of IR Site 24, as concentrations of organic chemicals and metals in sediment were low in these areas. The RI report, which evaluated historical and RI data, recommended no further action except for the northeastern corner of the site. This northeastern area was evaluated in the FS and is proposed for cleanup (Figure 3). There is no evidence that the sediment in the northeastern corner of IR Site 24 is acting as a source of contamination to sediment located in the open water portions of IR Site 24.

## RISK ASSESSMENT

Within the context of environmental investigations and actions, "risk" is the likelihood or probability that a hazardous substance, when released to the environment, will cause adverse effects on exposed people and the environment. For people, risk is further classified as carcinogenic (causes cancer) or noncarcinogenic (causes other illnesses). Risk assessments are designed to provide a margin of safety to protect public health and the environment by using conservative assumptions that assure risks are not underestimated.

## HUMAN HEALTH RISK ASSESSMENT

The **human health risk assessment (HHRA)** in the RI report did not identify a complete **exposure pathway** for human receptors because of 1) the site characteristics, including sand over riprap in near shore areas that limit habitat for shellfish at the site, 2) the limited and difficult access to the water and shoreline for recreational and shellfish harvesting purposes, and 3) the proposed future use for this site.

Access to the sediment shelf beneath the wharf road from the pier is difficult and only possible at low tide. IR Site 24 sediment observed at low tide was primarily sand covering rip rap; areas of sand covering mud were always submerged. A habitat that could support clam beds (i.e., intertidal mudflats) is not present and a resident shellfish population is not likely to exist. A small population of mussels has been noted on the



pier structures; however, the limited and difficult access to water and shoreline reduces the likelihood that people could harvest sufficient numbers of these mussels to make shellfish consumption a significant exposure pathway. The rip rap at IR Site 24 also makes the area less desirable for recreational purposes, as does the steep gradient to the dredged deep water depths (up to 46 feet) at the site. Due to the water depth, it is not possible to walk under the roadway from the pier.

These site characteristics greatly limit the possibility of direct exposure to sediment, including exposure through dermal contact and incidental ingestion. Based on the site conditions (deep water depths and limited access), limited habitat for shellfish, and the proposed reuse as a commercial marina, it is unlikely that people will access the area for recreational purposes in the future.

The RI report evaluated site-specific fish tissue concentrations using the RI sediment concentrations, including the sediment collected adjacent to the outfalls and beneath the wharf road. The limited shallow habitat makes it unlikely that there is a significant number of resident fish species. Therefore, fish targeted by anglers at the site are likely to be sport fish with relatively large foraging ranges, making it difficult to apportion site-specific risk. Site-specific sediment concentrations and predicted **bioaccumulation factors (BAFs)** were used to model fish tissue concentrations at the site, which then were compared to data collected from reference locations. The modeled fish tissue concentrations were lower than or similar to those reported for reference locations that represent **ambient** conditions. Therefore, the RI reported that potential risks to human health due to consumption of fish were low.

The few locations beneath the wharf road with higher sediment concentrations of cadmium, lead, total DDX, and total PCBs are within the area proposed for clean-up based on potential ecological risk. The RI report did not recommend further evaluation of human health.

## ECOLOGICAL RISK ASSESSMENT

The **ecological risk assessment (ERA)** presented in the RI report was conducted following EPA and Navy guidelines to estimate potential risk for adverse effects from chemicals at IR Site 24 to ecological receptors. Potential ecological receptors evaluated for this site included **benthic invertebrates**, fish, fish-eating birds (e.g. cormorant and least tern), and **benthic-feeding birds** (e.g. surf scoter), including potential **special status species**. The ecological risk assessment evaluated IR Site 24 data from sediment chemical analysis, sediment toxicity tests, and clam tissue analysis including both clams exposed to IR Site 24 sediment in the laboratory and modeled clam tissue data.

The ecological receptors evaluated at IR Site 24 are referred to as **ecological assessment endpoints** and are benthic invertebrates, fish, and birds. Most of IR Site 24 is protective of these three groups except for one small area identified as having a potential for adverse effects to the ecological receptors. This area is located in the northeastern corner of the site, specifically the sediment shelf eastward of the quay wall and beneath the wharf road

between storm drain Outfalls J and K. The RI report identified the key risk drivers in this area as cadmium, lead, total DDX (defined as the sum of the pesticide DDT and its degradation products DDD and DDE), and total PCBs. The ERA included a characterization of risk to address the potential uncertainties associated with the assessment. Table 2 summarizes the results of the risk assessments.

**Table 2. Summary of Risk Assessments**

<b>Risk Assessment Endpoint</b>	<b>Conclusion</b>
Human Health Risk:	No unacceptable risk to human health
Ecological Risk: Benthic invertebrate community	<ul style="list-style-type: none"> <li>• No unacceptable risk over majority of site</li> <li>• Potential impacts limited to northeastern corner</li> </ul>
Ecological Risk: Fish community	<ul style="list-style-type: none"> <li>• Potential impacts limited to northeastern corner</li> <li>• Fish tissue concentrations (modeled) did not exceed protective toxicity reference values in remainder of site</li> </ul>
Ecological Risk: Avian community (Least Tern, Surf Scoter, Double-Crested Cormorant)	<ul style="list-style-type: none"> <li>• No unacceptable risk over majority of site</li> <li>• Potential impacts limited to northeastern corner</li> </ul>

There were a number of uncertainties associated with the ERA. To provide a conservative estimate of exposure, the higher of either a measured or a modeled concentration was used in the IR Site 24 ERA. Additionally, it was assumed that all receptors had equal access to all areas of the site. However, due to the large ships berthed at the site, and the fact that the highest sediment concentrations were limited in area and generally restricted to the area in the northeastern part of the site beneath the wharf road between storm drain Outfalls J and K, an assumption of equal access overestimates actual exposure. There also was uncertainty in the toxicity evaluation. Because of uncertainties in the ERA, it was not possible to conclude definitively whether this small area of the sediment shelf presents an unacceptable risk to the three assessment endpoints evaluated. For the FS report, the Navy conservatively assumed that shallow sediment in the northeast corner of IR Site 24 in the vicinity of Outfall J, extending west from the wharf road to the sediment shelf, as shown in Figure 3, poses unacceptable ecological risks to benthic organisms, fish, and fish-eating birds.

## REMEDIAL ACTION OBJECTIVES

To evaluate remedial alternatives for sediment in the northeastern corner of IR Site 24, **remedial action objectives (RAOs)** were developed as part of the FS. The RAOs provide a means of identifying areas for potential remedial action, for screening the types of appropriate technologies, and for assessing whether a remedial alternative will achieve site cleanup.

The RAOs for IR Site 24 include:

- Protection of forage fish from unacceptable contact or ingestion exposure to COCs in sediment;

- Protection of fish-eating and benthic-feeding birds, including least terns, surf scoters, and double-crested cormorants, from unacceptable exposure to sediment cadmium, lead, total DDX, and total PCBs through ingestion of contaminated prey; and,
- Reduction of potential increases of total PCBs in organisms higher in the food chain.

**Preliminary remedial goals (RGs)** for IR Site 24 sediment are provided in this Proposed Plan, and the remediation goals will be finalized in the ROD. The goals selected in the ROD will be the basis for measuring the success of the cleanup in the northeastern corner of IR Site 24. The proposed risk-based remedial goals for sediment, as presented in the FS report for the remediation (clean up) area, are:

- Cadmium – 24.4 mg/kg
- Total DDX – 0.13 mg/kg
- Total PCBs – 1.13 mg/kg

The spatial distribution of lead concentrations in the sediment in the IR Site 24 remediation area is similar to the distribution of cadmium concentrations, so the preliminary RG for cadmium also will be protective for lead.

## REMEDIAL ALTERNATIVES

Six alternatives were developed and evaluated in the IR Site 24 FS report. During the screening process in the FS, Alternative 6, *in situ* grouting, was eliminated from further evaluation because of its uncertain effectiveness (i.e., early stages of development and limitation in delivery methods that

are commercially available). A brief description of the five remedial alternatives evaluated in detail in the FS is provided in Table 3. **Institutional Controls (ICs)** are included in each remedial alternative except for the “no action” and “sediment removal/dredging” alternatives. Institutional controls are actions, such as legal controls, that help minimize the potential for exposure to contamination by ensuring appropriate land or resource use.

## COMPARISON OF ALTERNATIVES

Identification of the preferred alternative is based on the NCP criteria (see Table 4, Page 6). Alternatives are rated “high”, “medium”, or “low”, based on their performance under each criterion. For example, an alternative that is substantially easier to implement than other alternatives is rated high in implementability. Similarly, an alternative that would be significantly lower in cost than the other alternatives is rated high because it would perform most favorably under the cost comparison. The alternatives are ranked based on their protectiveness and on their ability to meet the RAOs. A discussion of the five remedial alternatives as they relate to the nine criteria follows and is summarized in Table 5 (Page 7).

1. **Overall Protection of Human Health and the Environment.** The Navy’s evaluation indicates that all of the alternatives, except Alternative 1, meet the threshold criterion of overall protection of human health and the environment through the implementation of ICs, capping, or removal of

**Table 3. Remedial Alternatives**

Alternative	Description	Cost (millions)
1. No Action	The No Action Alternative is required by CERCLA to be evaluated as an alternative to establish a baseline from which to compare the other alternatives. For this alternative, no actions are performed.	0
2. Institutional Controls	Alternative 2 – ICs – implemented to prevent disturbance and dispersion of impacted sediment from the remediation area underneath the wharf road into the open water area. ICs would remain in place (estimated as 30 years) until the Navy and regulatory agencies agree that the site no longer posed an unacceptable risk to ecological receptors. Five year reviews would be included to evaluate the continued protectiveness of the ICs.	0.4
3. Monitored Natural Recovery (MNR) with Institutional Controls	Alternative 3 – MNR with ICs – rely on natural recovery processes to continue to isolate impacted sediment and reduce exposure of ecological receptors to COCs in sediment over time. A pre-design investigation and a long-term monitoring program, including 5-year reviews, are part of this alternative. This alternative is assumed to be in place for 30 years or until the sediment monitoring results indicate that RAOs are achieved and that ICs are no longer warranted.	1.1
4. Thin-layer Capping with Institutional Controls	Alternative 4 – Thin-layer capping with ICs – consists of installation of a thin-layer of clean sand or other material (up to 12 inches thick) to “cap” areas where concentrations of COCs in sediment are above preliminary RGs. A pre-design investigation, long-term monitoring, including 5-year reviews, and ICs are included in this alternative. A proposed cap thickness of 12 inches (30 cm) would provide physical isolation of contaminated sediment from potential ecological receptors (typical biologically active zone of 4 to 6 inches [10 to 15 cm]). The thin-layer cap would also accelerate natural recovery processes and reduce ecological exposure to contaminated sediments. This alternative is assumed to be in place for 30 years or until the sediment monitoring results indicated that RAOs were achieved.	2.0
5. Sediment Removal/Dredging	Alternative 5 – Sediment removal/dredging – dredging or a similar technology would be employed to remove sediment with COC concentrations exceeding preliminary RGs. A predesign investigation, possibly including a stability analysis of the structures (e.g., wharf road, quay wall, piers, foundations, and pilings) in and near the proposed remediation area, is included in this alternative. After waste profiling, the removed sediment would be transported and disposed in an appropriate off-site landfill. Confirmation sampling would be conducted to confirm removal of contaminated sediment, and then clean, washed, granular backfill would be imported to restore the structural stability in the area where contaminated sediment was removed. No ICs would be implemented under this alternative. The duration of the sediment removal/dredging is expected to be approximately 1 year.	3.3

**Table 4. NCP Evaluation Criteria**

1. **Overall protection of human health and the environment** addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled.
2. **Compliance with ARARs** addresses whether or not a remedy will meet all applicable or relevant and appropriate federal and state environmental laws and regulations or provide grounds for a waiver.
3. **Long-term effectiveness and permanence** refers to the ability of a remedy to provide reliable protection of human health and the environment over time.
4. **Reduction of toxicity, mobility, or volume through treatment** refers to preference for a remedy that reduces health hazards, the movement of contaminants, or the quantity of contaminants at the site through treatment.
5. **Short-term effectiveness** addresses period of time needed to complete remedy and any adverse effects to human health and the environment that may be caused during construction and implementation of the remedy.
6. **Implementability** refers to the technical and administrative feasibility of the remedy, including availability of materials and services needed to carry out the remedy and coordination of federal, state, and local governments to work together to clean up the site.
7. **Cost** evaluates estimated capital and operation and maintenance costs of each alternative in comparison to other equally protective measures.
8. **State agency acceptance** indicates whether the state agrees with, opposes, or has no comment on the alternative.
9. **Community acceptance** includes determining which components of the alternatives are supported by, have reservations about, or opposed by (not complete until public comments on proposed plan are received) interested persons in the community.

NCP evaluation criteria are divided into three categories:

- **Threshold.** These criteria (1 and 2) must be satisfied for an alternative to be eligible.
- **Primary balancing.** These criteria (3, 4, 5, 6, and 7) are used to weigh major trade-offs among alternatives.
- **Modifying.** Once all comments are evaluated, state and community acceptance (8 and 9) may prompt modifications of the final remedy and are thus designated modifying criteria.

sediment with COCs that might pose unacceptable ecological risk. Under Alternative 1, impacted sediment would be left in place without any mitigation, treatment, or monitoring; therefore, potentially unacceptable risks to ecological receptors would remain. Therefore, Alternative 1 is not considered protective of human health and the environment. Because Alternative 1 does not meet this criterion, an evaluation against the primary balancing and modifying criteria is not necessary and was not performed. The no action alternative provides a basis of comparison and is required by the NCP. EPA does not consider Alternative 2 to meet the threshold criterion of overall protection.

2. **Compliance with ARARs (See Table 6, Page 8).** Alternatives 2 through 5 meet the threshold criterion of compliance with Applicable or Relevant and Appropriate Requirements (ARARs). Alternative 1 does not trigger ARARs because there is no action.
3. **Long-Term Effectiveness and Permanence.** Alternative 5 is rated high in long-term effectiveness and permanence because it would permanently remove sediment with COC concentrations exceeding preliminary RGs. Once the remedial action was completed, this alternative would eliminate unacceptable exposure to impacted sediment. Alternative 4 is rated medium for this criterion because it would require long-term sediment monitoring and periodic reviews to confirm the protectiveness of the thin-layer cap over time. The long-term effectiveness of the ICs included in this alternative would depend on continued adherence to them. Alternative 2 is rated low because sediment concentrations and the effectiveness of the natural recovery processes would not be verified and

sediment concentrations would not be monitored. Alternative 3 is also rated low because it would require long-term sediment monitoring and periodic reviews to evaluate the progress of monitored natural recovery (MNR) in reducing ecological risk. The long-term effectiveness of the ICs included in these alternatives would depend on continued adherence to them.

4. **Reduction of Toxicity, Mobility, or Volume through Treatment.** None of the alternatives include treatment as a component of the remedy. Alternative 5 is rated medium for this criterion because it would involve removal of all dredged sediment and transportation to an appropriate off-site waste disposal facility. Any treatment required to meet **Resource Conservation and Recovery Act (RCRA)** land disposal restrictions would be performed at the disposal facility prior to disposal. Alternatives 2, 3, and 4 do not involve any treatment and are therefore rated low. The toxicity, mobility, or volume of COCs in sediment would be reduced with time through passive natural processes, but no active treatment would be provided. However, the thin-layer cap (Alternative 4) would be expected to reduce the mobility of the impacted sediment.
5. **Short-Term Effectiveness.** Alternative 4 is rated high in short-term effectiveness because the thin-layer cap and ICs would achieve protectiveness in a short amount of time, and would have slightly lower short-term impacts to the community than Alternative 5. Placement of the thin-layer cap is expected to take approximately 5 months for completion following approval of remedial design documents. For Alternative 4, the benthic habitat in the remediation area would be covered with sand when the cap is

Table 5. Comparative Analysis of Alternatives for IR Site 24\*

NCP Criteria	1 No Action	2 IC***	3 MNR with ICs	4 Thin-layer Capping with ICs	5 Sediment Removal/ Dredging
1. Overall protection of human health and the environment	No**	Yes	Yes	Yes	Yes
2. Compliance with ARARs	NA	Yes	Yes	Yes	Yes
3. Long-term effectiveness and permanence	NA	○	○	◐	●
4. Reduction of toxicity, mobility, or volume through treatment	NA	○	○	○	◐
5. Short-term effectiveness	NA	◐	◐	●	◐
6. Implementability	NA	●	●	◐	◐
7. Cost (\$M)	NA	●	◐	○	○
8. State agency acceptance	To be considered during finalization of this Proposed Plan and during the ROD				
9. Community acceptance	To be evaluated after the Public Comment Period				

\* Only applies to northeast part of the site beneath the wharf road between storm drain Outfalls J and K.

\*\* Alternative 1 does not meet the protectiveness criterion; therefore, an evaluation against the other criteria is not necessary and was not performed.

\*\*\* EPA does not consider Alternative 2 to meet the threshold criterion of overall protection.

**Alternative 5 is the Preferred Alternative.**

NA Not applicable      ○ = low      ◐ = moderate      ● = high

placed. However, it would be expected to be reestablished in the granular cap material fairly quickly. Alternatives 2, 3, and 5 are rated medium for this criterion. For Alternative 2, ICs could be put in place in a short period of time to prohibit disturbance of sediment, and there is no impact to the community. ICs do not involve construction or transportation of contaminated sediment, so do not pose potential health and safety risks to site workers or the public. The length of time until protection is achieved under Alternative 3 is expected to be longer than Alternative 5, but Alternative 3 would pose no short-term risks to the community and would have minimal impact to the benthic habitat. Under Alternative 5, removal of impacted sediment is expected to take up to 6 months for completion following approval of remedial design documents, so the time until protection is achieved would be short. Alternative 5 would involve more short-term impacts during implementation than Alternatives 3 and 4, because it would involve dredging (or a similar technology) and transporting impacted sediment through the community en route to the approved disposal facility. The benthic community would be destroyed by this alternative, but would be expected to reestablish in the clean backfill sand fairly quickly. There are no endangered or threatened species in the benthic community at IR Site 24.

- 6. Implementability.** Alternatives 2 and 3 are rated high in implementability because ICs and MNR involve very limited activities. ICs and sediment sampling activities have been implemented in the past at Alameda Point and can be easily accomplished. Alternatives 4 and 5 are rated medium in implementability because they involve the design and implementation of remediation activities in small work areas with limited access between piers underneath the wharf road.
- 7. Cost.** All costs are estimated as the net present value cost. Alternative 2 is estimated to cost less than \$1 million. Alternative 3 is estimated between \$1 million

and \$2 million. Alternatives 4 and 5 are estimated at or above \$2 million.

- 8. State Agency Acceptance.** The State of California as a participant in the decision-making team has reviewed the Proposed Plan and supports the preferred alternative of sediment removal/dredging.
- 9. Community Acceptance.** This will be evaluated after the public comment period ends. A responsiveness summary in the ROD will document responses to public comments.

### PREFERRED ALTERNATIVE

The preferred alternative for cleanup of the northeastern corner of IR Site 24 is Alternative 5, sediment removal/dredging. This alternative meets the threshold criteria for current and anticipated future land uses and is rated highest overall in satisfying the balancing criteria. This alternative is considered the most effective and permanent of the alternatives evaluated. It would permanently remove sediment with COC concentrations exceeding preliminary RGs. Once the remedial action was completed, this alternative would eliminate unacceptable exposure to impacted sediment. No ICs would be implemented and no long-term monitoring would be required. Confirmation sampling would ensure that the remediation was complete. Clean backfill material would be placed in the remediation area to restore the stability of the structures in this area.

#### Multi-Agency Environmental Team Concur with Preferred Remedy

The environmental team, which has been working cooperatively to address remedial decisions for Alameda Point IR Site 24 and will sign the ROD, consists of:

- The Navy
- United States Environmental Protection Agency (EPA), Region 9
- California Department of Toxic Substances Control (DTSC)
- California Water Board



**Table 6. Applicable or Relevant and Appropriate Requirements**

CERCLA requires that remedial actions meet federal or state (if more stringent) environmental standards, requirements, criteria, or limitations that are determined to be applicable or relevant and appropriate requirements (ARARs). Significant potential ARARs that must be met by the preferred remedy are listed below.

**Potential Federal ARARs**

- Wastes generated during the remedial action will be characterized prior to disposal off-site. Therefore, substantive provisions of Cal. Code Regs. tit. 22, § 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100 that define RCRA hazardous waste are applicable for characterizing waste prior to offsite disposal. Since the sediment is known to have PCBs, substantive provisions of 40 C.F.R. § 761.61(c)(2) for risk-based sampling, cleanup, and disposal are potentially relevant and appropriate. Because there may be a discharge to surface water during dredging, the water quality standards, National Toxics Rule and California Toxics Rule at 40 C.F.R. § 131.36(b) and 131.38 are applicable to the discharge to surface water for the chemicals of concern. The National Ambient Water Quality Criteria at 33 U.S.C. ch. 26, § 1314(a) and 42 U.S.C., ch. 103, § 9621(d)(2) are potentially relevant and appropriate for potential discharges of cadmium to the surface water during dredging.
- The substantive provisions of BAAQMD Regulations 6-1-301, 11-1-301, 11-1-302 that limit the emissions of dust and lead are applicable for the handling of dredged material prior to offsite disposal.
- Substantive provisions of 16 U.S.C. § 662 that require that action taken should protect fish or wildlife are applicable for the dredging and filling.
- Federal agencies may not jeopardize the continued existence of any listed species or cause the destruction or adverse modification of critical habitat. The Endangered Species Committee may grant an exemption for agency action if reasonable mitigation and enhancement measures such as propagation, transplantation, and habitat acquisition and improvement are implemented. Substantive provisions at 16 U.S.C. §§ 1531-1543 are applicable for the California least tern, a state and federal listed endangered species, that may use IR Site 24 as a foraging area. There are no endangered or threatened species in the benthic community at IR Site 24.
- Substantive provisions 16 U.S.C. § 1372 (a)(2) that protect any marine mammal in the U.S. except as provided by international treaties from unregulated “take” are applicable because marine mammals are known to be present near IR Site 24. The dredging and filling will be conducted in a manner so as not to “take” a marine mammal.
- Substantive provisions of 16 U.S.C. § 703 are relevant and appropriate because migratory birds are known to be present near IR Site 24. Almost all species of migrating birds in the U.S. are protected from unregulated “take,” which can include poisoning at hazardous waste sites. The Navy has concluded that the selected remedy will not affect any migratory birds.
- Coastal Zone Management Act at 16 U.S.C § 1456(c) and 15 C.F.R pt. 930 requires activities that affect the coastal zone be conducted in a manner consistent with approved state management programs. The substantive provisions at 16 U.S.C.§ 1456(c) and 15 C.F.R. pt. 930 are relevant and appropriate because IR Site 24 is considered to be within the coastal zone.
- Substantive provisions of Cal. Code Regs. tit. 22, § 66262.10(a), 66262.11 and Cal. Code Regs. tit. 22, § 66264.13 (a) and (b) are applicable for the determination of whether sediments constitute hazardous waste that will be made after they are dewatered. The substantive provisions of Cal. Code Regs. tit. 22, § 66262.34 are applicable for any operation where hazardous waste is generated and transported in containers but is not an ARAR for staging piles.
- On-site hazardous waste accumulation is allowed for up to 90 days as long as the waste is stored in containers in accordance with § 66262.171–178 and is labeled and dated.
- The substantive provisions of Cal. Code Regs. tit. 22, § 66264.171, 66264.172, 66264.173, 66264.174, 66264.175(a) and (b), 66264.177, 66264.178 and alternative requirements at Cal. Code Regs. tit. 22, § 66264.553 (b), (d), (e), and (f) are applicable for storing generated waste in containers if it is hazardous. These container storage requirements may be relevant and appropriate if the waste is not hazardous.
- Substantive provisions of 40 C.F.R. § 264.554(d)(1) (i–ii) and (d)(2), (e), (f), (h), (i), (j), and (k), Cal. Code Regs. tit. 22, § 66264.111, and Cal. Code Regs. tit. 22, § 66264.258(a) are potentially applicable if staged waste is hazardous. These provisions are the design, operation, and closure requirements for staging piles. They allow generators to accumulate solid remediation waste in a pile for storage only, up to 2 years, during remedial operations without triggering land disposal restrictions (LDRs). These provisions may be relevant and appropriate if the waste sediment is not hazardous.
- Substantive provisions of the guidelines for dredging and filling at 40 C.F.R.§ 230.10(a), (c), and (d), 40 C.F.R. § 230.11, 40 C.F.R. § 230.20–230.25, 40 C.F.R. § 230.31 and 230.32, 40 C.F.R. § 230.53, and 33 C.F.R. § 320.4 are considered applicable for the proposed dredging and filling.

**Potential State of California ARARS**

- Substantive provisions of Cal. Code Regs. tit. 22, § 66261.3(a)(2)(C) or 66261.3(a)(2)(F), 66261.22(a)(3) and (4), 66261.24(a)(2)–(a)(8), 66261.101 and Cal. Code Regs. tit. 27, §§ 20210, 20220(a), and 20230(a) that define waste categories are applicable for characterizing waste prior to offsite disposal.
- Substantive provisions of Comprehensive Water Quality Control Plan for the San Francisco Bay (Basin Plan) (Cal. Water Code § 13240) Chapter 2, Beneficial Uses, for San Francisco Bay Lower Chapter 3, Water Quality Objectives, for turbidity and suspended sediment with the exception of nuisance are applicable for potential discharges to the surface water during dredging.
- Substantive provisions of SWRCB Res. 68-16 are applicable for new discharges associated with the dredging and dewatering effluent. The Navy’s position is that SWRCB Res. No. 68-16 is not a chemical-specific ARAR for setting sediment cleanup levels. The state does not agree with the Navy’s position on Res. 68-16.
- Substantive provisions of the McAteer-Petris Act (California Government Code §§ 66600 through 66661 as authorizing legislation for the San Francisco Bay Plan) and the San Francisco Bay Plan at Cal. Code Regs. tit. 14, §§ 10110 through 11990 regulating activities that affect the San Francisco Bay are relevant and appropriate for the remedial action at IR Site 24, which is within the jurisdiction of the San Francisco Bay Plan. The substantive provisions include: reduce fill and disposal of dredged material in San Francisco Bay, maintain marshes and mudflats to the fullest extent possible to conserve wildlife, abate pollution, and protect the beneficial uses of the Bay. The Navy has determined that the selected remedial action is consistent with the San Francisco Bay Plan.



## SUMMARY STATEMENT

Based on information currently available, the preferred alternative, Alternative 5 – Sediment Removal/Dredging, for the northeastern corner of the site beneath the wharf road between storm drain Outfalls J and K, meets the NCP threshold criteria and satisfies the following statutory requirements of CERCLA 121(b):

1. Protective of human health and the environment
2. Compliant with ARARs
3. Cost-effective
4. Utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable
5. Satisfies the preference for treatment

Results of the risk assessments show that the remainder of IR Site 24 does not pose an unacceptable risk to human health or the environment. Therefore, no further action is proposed for IR Site 24 with the exception of the northeastern corner of the site.

## SITE CONTACTS

Community involvement in the decision-making process is encouraged. If you have any questions or concerns about environmental activities at IR Site 24, please feel free to contact any of the following project representatives:

- **Mr. George Patrick Brooks**  
BRAC Environmental Coordinator  
Department of the Navy  
BRAC Program Management Office West  
1455 Frazee Road, Suite 900  
San Diego, CA 92108-4310  
(619) 532-0907
- **Ms. Xuan-Mai Tran**  
Project Manager  
U.S. EPA, Region 9  
75 Hawthorne Street  
San Francisco, CA 94105  
(415) 972-3002
- **Ms. Dot Lofstrom**  
Project Manager  
Department of Toxic Substances Control  
8800 California Center Drive  
Sacramento, CA 95826  
(916) 255-6449
- **Mr. John West**  
Project Manager  
San Francisco Bay Water Board  
515 Clay Street, Suite 1400  
Oakland, CA 94612  
(510) 622-2438
- **Mr. Marcus Simpson**  
Public Participation Specialist  
Department of Toxic Substances Control  
8800 California Center Drive  
Sacramento, CA 95826  
(916) 255-6683 or toll free at (866) 495-5651
- **Mr. David Cooper**  
Community Involvement Coordinator  
US EPA, Region 9  
75 Hawthorne Street  
San Francisco, CA 94105  
(415) 972-3245 or toll-free (800) 231-3075

## OPPORTUNITIES FOR PUBLIC INVOLVEMENT

### Information Repository

Individuals interested in the full technical details beyond the scope of this Proposed Plan can visit the local Information Repository in Alameda:

- Alameda Point – 950 West Mall Square, Building 1, Room 240

Supporting documents include the 2007 Final RI Report and the 2008 Final FS Report for IR Site 24. In addition, the Alameda Public Library maintains new environmental documents during review periods and is located at 1550 Oak Street, Alameda, CA 94501.

### Administrative Record

The **Administrative Record (AR)** is the collection of reports and historical documents used by the decision-making team in the selection of the cleanup or environmental management alternatives for a site. The AR file includes the 2007 Final RI Report (AR File # 2900) and 2008 Final FS Report (AR File # 3235) for IR Site 24 discussed in this Proposed Plan. You may view these documents by appointment during working hours (Monday through Friday, 8 a.m. to 5 p.m.). Please contact Ms. Diane Silva at the number provided to make an appointment. The AR file is located at:

- **Naval Facilities Engineering Command, Southwest**  
1220 Pacific Highway  
San Diego, CA 92132-5190  
ATTN: Ms. Diane Silva,  
FISC Building 1, 3rd Floor  
Phone: (619) 532-3676

### PUBLIC COMMENT PERIOD

The 30-day public comment period for the IR Site 24 Proposed Plan is May 1 through June 2, 2009.

#### Submit Comments

There are two ways to provide comments during this period:

- Offer verbal comments during the public meeting on May 13, 2009
- Provide written comments by mail, e-mail, or fax (postmarked no later than June 2, 2009)



#### Public Meeting

The public meeting will be held on May 13, 2009 at Alameda Point, 950 West Mall Square, Room 201 from 6:30 pm to 8:00 pm. It will be an opportunity to hear the Navy's presentation of its Proposed Plan and discuss the information presented in this Proposed Plan. Navy representatives will provide visual displays and information on the environmental investigations that have occurred at the site. You will have an opportunity to ask questions and formally comment on this Proposed Plan.

#### Send Comments to:

Mr. George Patrick Brooks  
BRAC Environmental Coordinator  
Department of the Navy  
BRAC Program Management Office West  
1455 Frazee Road, Suite 900  
San Diego, CA 92108-4310  
Phone (619) 532-0907  
Fax (619) 532-0940  
[george.brooks@navy.mil](mailto:george.brooks@navy.mil)

For more information:  
[www.bracpmo.navy.mil](http://www.bracpmo.navy.mil)



## GLOSSARY OF TECHNICAL TERMS

**Administrative Record (AR)** – The reports and historical documents used in selection of cleanup or environmental management alternatives.

**ambient** – Sediment concentrations considered normal in San Francisco Bay based primarily on values developed by the Water Board.

**Applicable or Reasonable and Appropriate Requirements (ARARs)** – A Federal or state law or regulation that is required to be protective of human health and the environment during remedial actions at a site.

**Base Realignment and Closure (BRAC) Program** – Program established by Congress, under which Department of Defense installations undergo closure, environmental cleanup, and property transfer to other federal agencies or communities for reuse.

**benthic-feeding birds** – Birds that dive and eat bottom-dwelling (benthic) organisms.

**benthic invertebrates** – Bottom-dwelling marine organisms such as worms, sand dollars, and crustaceans.

**bioaccumulation factors (BAFs)** – The ratio of a chemical concentration in fish tissue (single species) to the chemical concentration found in either water or sediment

**chemicals of concern (COCs)** – Chemicals that were identified in the remedial investigation or feasibility study as a concern and requiring further investigation

**Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)** – Also known as Superfund, this federal law regulates environmental investigation and cleanup of sites in a manner that is protective of human health and the environment.

**Department of Toxic Substances Control (DTSC)** – A department within the California Environmental Protection Agency charged with overseeing the investigation and cleanup of hazardous waste sites; herein referred to as DTSC.

**ecological assessment endpoints** – An ecological entity (e.g., least terns) and its measureable attributes (e.g., reproduction) that may be impacted by a risk-management action. Three selection criteria to be considered are: ecological relevance, susceptibility (exposure plus sensitivity), and relevance to management goals.

**ecological risk assessment (ERA)** – The evaluation of potential harmful effects to plants, animals, and habitat as a result of exposure to chemicals in the environment.

**Environmental Protection Agency (EPA)** – The Federal agency established to protect human health and the environment.

**exposure pathway** – The way that a chemical comes into contact with a living organism.

**feasibility study (FS)** – One of the two major studies that must be completed before a decision can be made about how to clean up a site. (An RI is the first step to identify the nature and extent of contamination at the site and the associated risk.) The FS uses the RI information to calculate remedial objectives and goals and it screens and evaluates possible remedial technologies and alternatives for cleanup options at a site.

**human health risk assessment (HHRA)** – The estimate of potential harmful effects humans may experience as a result of exposure to chemicals.

**Installation Restoration (IR) Program** – The Department of Defense's comprehensive program to investigate and clean up environmental contamination at military facilities in full compliance with CERCLA.

**Institutional Controls (ICs)** – Actions, such as legal controls, that help minimize the potential for exposure to contamination by ensuring appropriate land or resource use. They are used when contamination is first discovered, when remedies are ongoing, and when residual contamination remains onsite at a level that does not allow for unrestricted use and unlimited exposure after cleanup

**National Oil and Hazardous Substances Pollution Contingency Plan (NCP)** – The federal regulation that guides the CERCLA (Superfund) program.

**polycyclic aromatic hydrocarbons (PAHs)** – Specific class or group of semivolatile organic compounds whose molecules consist of multiple benzene rings. Some are suspected as cancer-causing compounds. PAHs are commonly associated with noncombusted fuels and waste oil.

**polychlorinated biphenyls (PCBs)** – Category of organic compounds in which a biphenyl molecule has been chlorinated to varying degrees. In the past, PCBs were often used in industry in electrical transformers because of their insulating properties.

**preliminary remedial goals (RGs)** – A chemical concentration that provides a quantitative means of identifying areas for potential remedial action, screening the types of appropriate technologies, and assessing the potential of each remedial alternative to achieve the RAOs.

**quay wall** – A platform that runs along the edge of a port or harbor where boats are typically loaded and unloaded.

**record of decision (ROD)** – A legal document that explains the selected site remedy. It is signed by the Navy and regulatory agencies and is a binding agreement regarding the final remedy.

**remedial action objectives (RAO)** – Medium-specific (e.g., sediment, soil, groundwater, or air) or site-specific goals for protecting human health and the environment. These objectives focus the FS and define the scope of potential remedial activities, thereby guiding the development and evaluation of remedial alternatives that are consistent with anticipated future use.

**remedial investigation (RI)** – One of the two major studies that must be completed before a decision can be made about how to clean up a site. The RI is conducted to determine the nature and extent of contamination at the site and the associated risk. (The feasibility study is a second study that is only conducted when the RI recommends development of cleanup options for a site.)

**Resource Conservation and Recovery Act (RCRA)** – Enacted in 1976, RCRA is a Federal law that governs the disposal of solid and hazardous waste.

**risk** – Likelihood or probability that a hazardous substance released to the environment will cause adverse effects on exposed human or biological receptors. Risk is classified as carcinogenic or noncarcinogenic.

**special status species** – Plants and animals that are legally protected under the Endangered Species Act or other regulations, and species that are considered sufficiently rare by the scientific community to qualify for such listing.

**Total DDx** – A summation of the pesticide 4,4'-dichlorodiphenyl-trichloroethane (DDT) and its degradation products 4,4'-dichlorodiphenyldichloroethane (DDD) and 4,4'-dichlorodiphenyldichloroethylene (DDE).

**Water Board (San Francisco Bay Regional Water Quality Control Board)** – The California water quality authority; a department within the California Environmental Protection Agency. California is covered by nine regional boards; Alameda is within the San Francisco Bay Region (Region 2).

# Proposed Plan Comment Form

## *Alameda Point IR Site 24*

The public comment period for the Proposed Plan for IR Site 24, Former NAS Alameda at Alameda Point, Alameda, California is from May 1, 2009 through June 2, 2009. A public meeting to present the Proposed Plan will be held at the Alameda Point Main Office Building, Room 201, 950 West Mall Square, Bldg. 1 Alameda, California on May 13, 2009 from 6:30 to 8:00 p.m. You may provide your comments verbally at the public meeting where your comments will be recorded by a stenographer. Alternatively, you may provide written comments in the space provided below or on your own stationery. All written comments must be postmarked no later than June 2, 2009. You may also submit this form to a Navy representative at the public meeting. Comments are also being accepted by e-mail. Please address email comments to: [george.brooks@navy.mil](mailto:george.brooks@navy.mil).

Name: \_\_\_\_\_

Representing:  
(if applicable) \_\_\_\_\_

Phone Number:  
(optional) \_\_\_\_\_

Address:  
(optional) \_\_\_\_\_

Please check here if you would like to be added to the Navy's Environmental Mailing List for Alameda Point.

Comments:

Mail to:

Mr. George Patrick Brooks  
BRAC Environmental Coordinator  
Department of the Navy  
Program Management Office West  
1455 Frazee Road, Suite 900  
San Diego, CA 92108-4310



Ms. Tommie Jean Dannel  
Tetra Tech EMI  
135 Main Street, Suite 1800  
San Francisco, CA 94105



## Proposed Plan for Installation Restoration Site 24 Former NAS Alameda

