Proposed Plan for Operable Unit 2B Installation Restoration Sites 3, 4, 11 and 21

Alameda, California ***April 2013***

U.S. NAVY ANNOUNCES PROPOSED PLAN

The U.S. Navy encourages the public to provide comments on its cleanup plan for ***Operable Unit (OU)**** 2B ***Installation Restoration*** Sites 3, 4, 11, and 21. OU-2B is located at the Former Naval Air Station (NAS) Alameda in Alameda, California (Figure 1). The ***U.S. Environmental Protection Agency, Region 9 (EPA),*** the ***San Francisco Bay Regional Water Quality Control Board (Water Board),*** and the ***California Department of Toxic Substances Control (DTSC)***, worked with the Navy and concur with this ***Proposed Plan***.

This Proposed Plan announces the ***preferred remedial alternatives*** for soil and groundwater cleanup at OU-2B. The preferred remedial alternatives for soil and groundwater follow:

Soil

Alternative S-3a: Excavation and Disposal of Impacted Soil – this remedy would be implemented at Sites 3, 4, and 11 to allow for unrestricted reuse at a majority of OU-2B. No actions are required for Site 21 soil.

Alternative S-2: ***Institutional Controls*** – this remedy would be implemented, in addition to S-3a, to prevent exposure to elevated levels of cobalt and ***hexavalent chromium*** that exist beneath buildings at Sites 3 and 4.

Groundwater

Alternative GM-3b: Hot Spots and Shallow Groundwater Treatment using In Situ Thermal Treatment, In Situ Bioremediation, Monitoring, and Institutional Controls – this remedy would be implemented to treat the OU-2B shallow groundwater ***volatile organic compound (VOC)*** plume. ***Institutional controls*** would be applied over the plume and a 100-foot lateral buffer until remediation goals are met.

This Proposed Plan summarizes the site history, environmental investigations, and cleanup (remedial) alternatives, and explains the basis for choosing the preferred remedial alternatives. The Navy will take into consideration public comments on this Proposed Plan before making a final cleanup decision.

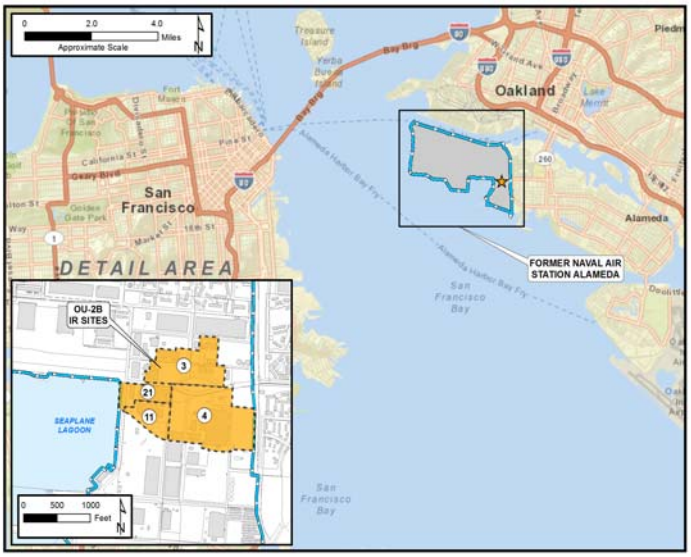

Figure 1: Former NAS Alameda and OU-2B Sites

- NOTICE -
Public Comment Period
April 30, 2013 through May 31, 2013

for more information: www.bracpmo.navy.mil

- Public Meeting -
May 15, 2013

Alameda Free Library
1550 Oak Street, Alameda, California
6:30 p.m. to 8:00 p.m.

* Words in ***bold italic type*** the first time they are used are defined in the Glossary of Terms on Page 25.

SCOPE AND ROLE: THE CERCLA PROCESS

The ***Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)***, also known as Superfund, requires that the public be involved in the decision-making process for cleanup of contaminated sites in their community. Figure 2 shows the steps in the CERCLA process and the current phase of OU-2B within the CERCLA process. Thirty-four CERCLA sites at Alameda Point were identified and are being addressed under the Navy's cleanup strategy. The four OU-2B sites in this Plan are part of this overall Alameda Point cleanup strategy.

The preferred remedial alternatives presented in this Proposed Plan are based on numerous studies that contain more detailed information about the sites and the cleanup alternatives under consideration. Reports of these studies are available to the public for review at the location listed on Page 24 of this Proposed Plan.

In response to feedback from the community or new information, and in consultation with regulatory agencies, the Navy may modify the preferred alternatives or select different remedies. Therefore, the community is encouraged to review and comment on this Proposed Plan. A final cleanup decision, documented in the ***Record of Decision (ROD)***, will not be made until all community comments are considered.

SITE DESCRIPTION AND HISTORY

Former NAS Alameda, now called Alameda Point, is located on the western tip of Alameda Island, on the eastern side of the San Francisco Bay. OU-2B is located on the eastern part of Alameda Point (Figure 1).

Alameda Point was created by artificial fill placed to approximately 18 feet below ground surface (bgs). Below the artificial fill are the Bay Sediment Unit, the Posey/Merritt/San Antonio Formation, the Yerba Buena Mud, and the Alameda Formation.

Groundwater underlying Alameda Point has been documented across the different geologic units. Groundwater at OU-2B generally flows from east to west toward Seaplane Lagoon and is subject to tidal forces.

NAS Alameda operations began in 1940. The facility served as a Navy air station, with runways, hangars, fuel storage, and aircraft maintenance and overhaul facilities. From the 1940s until 1997, standard activities associated with metal plating, paint stripping, aircraft and ship repair, fueling, and engine testing resulted in environmental contamination. NAS Alameda was closed in 1997 and operations within OU-2B ceased at that time.

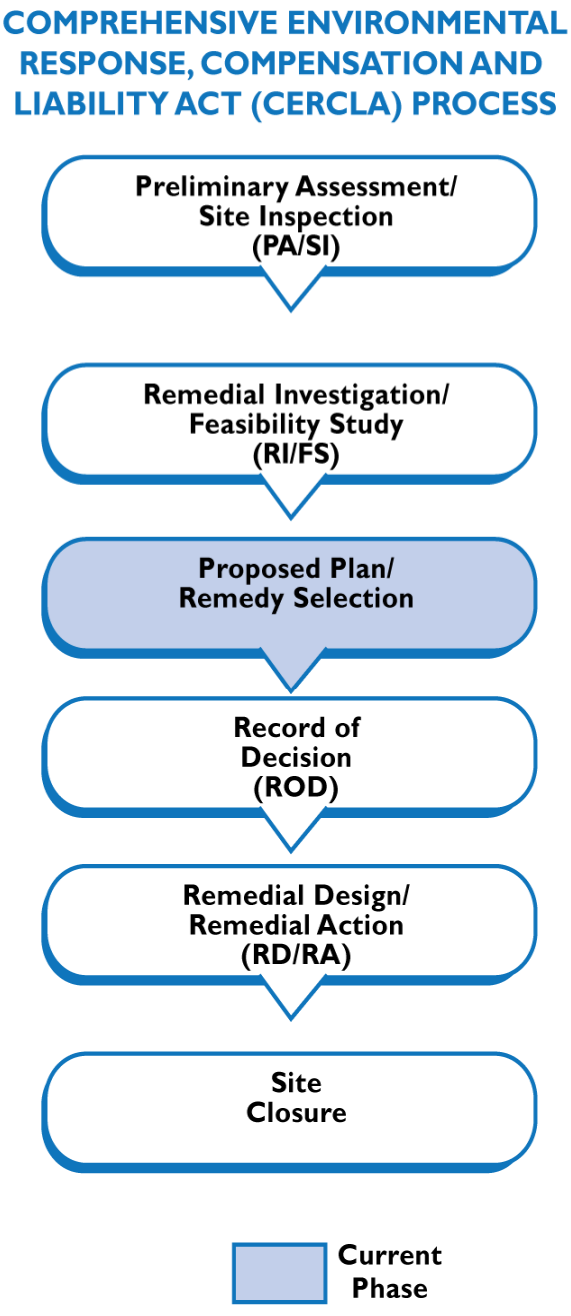

Figure 2. CERCLA Process

This Proposed Plan addresses four contaminated sites, which are grouped into OU-2B, as follows:

Site 3: Abandoned Fuel Storage Area

Site 4: Aircraft Engine Test Facility (Building 360)

Site 11: Engine Test Cell (Building 14)

Site 21: Ship Fitting and Engine Repair (Building 162)

Boundaries at Sites 3, 4, and 21 have been revised from the earlier documents to facilitate the City of Alameda's redevelopment plan.

SITE 3 – ABANDONED FUEL STORAGE AREA

Site 3 covers approximately 13.4 acres. Nearly 80 percent of the site is covered with asphalt and concrete in the form of buildings, roads, and parking lots. From the 1940s to the 1970s, aviation gasoline was stored in underground storage tanks. Site features and proposed remediation areas for soil are shown on Figure 3.

SITE 4 – AIRCRAFT ENGINE FACILITY

Site 4 covers approximately 22.7 acres. About 65 percent of the site is covered with asphalt and concrete in the form of buildings, roads, and parking lots.

Site 4 includes Building 360, which was used for aircraft engine and airframe overhaul. Multiple process shops performed sandblasting, cleaning, painting, welding, plating, repairs to various aircraft components, and non-destructive testing. Site features, proposed remediation areas for soil, and groundwater hot spots are shown on Figure 4.

SITE 11 – ENGINE TEST CELL

Site 11 covers approximately 5.4 acres. The site and its surrounding area are heavily developed with asphalt, concrete, buildings, roads and parking lots covering approximately 95 percent of the site. Site 11 includes Building 14, an engine test cell, constructed in 1940 and operated as an aircraft testing and repair facility. Site features, the proposed remediation area for soil, and the groundwater hot spot are shown on Figure 5.

SITE 21 – SHIP FITTING AND ENGINE REPAIR

Site 21 is about 5.1 acres in size. The site and its surrounding area are heavily developed. About half of Site 21 is covered with asphalt and concrete, and includes buildings, roads, and parking lots.

Site 21 includes Building 162, which was constructed in 1945 as a ship and aircraft maintenance shop. Site features and the groundwater hot spot are shown on Figure 6.

SITE INVESTIGATIONS

Various environmental investigations have been performed for soil and groundwater at OU-2B. These studies not only investigated contamination as required by the CERCLA cleanup program, but also investigated contamination regulated under the ***Petroleum Program*** and the ***Resource Conservation and Recovery Act (RCRA).*** These investigations have included:

- Testing and analyses of groundwater and soil
- Determining the nature (what) and extent (where) of contamination
- Determining the risk that might be posed to people and the environment
- Determining which areas can be eliminated from further investigation because the risks are low
- Determining the feasibility and costs of various cleanup options

The results of these studies have been collectively used to develop and refine the conceptual site model for OU-2B soil and groundwater contamination. A conceptual site model helps explain how contaminants from a site can move through soil, groundwater, and air and come into contact with humans, animals, and sensitive environments (for example, wetlands).

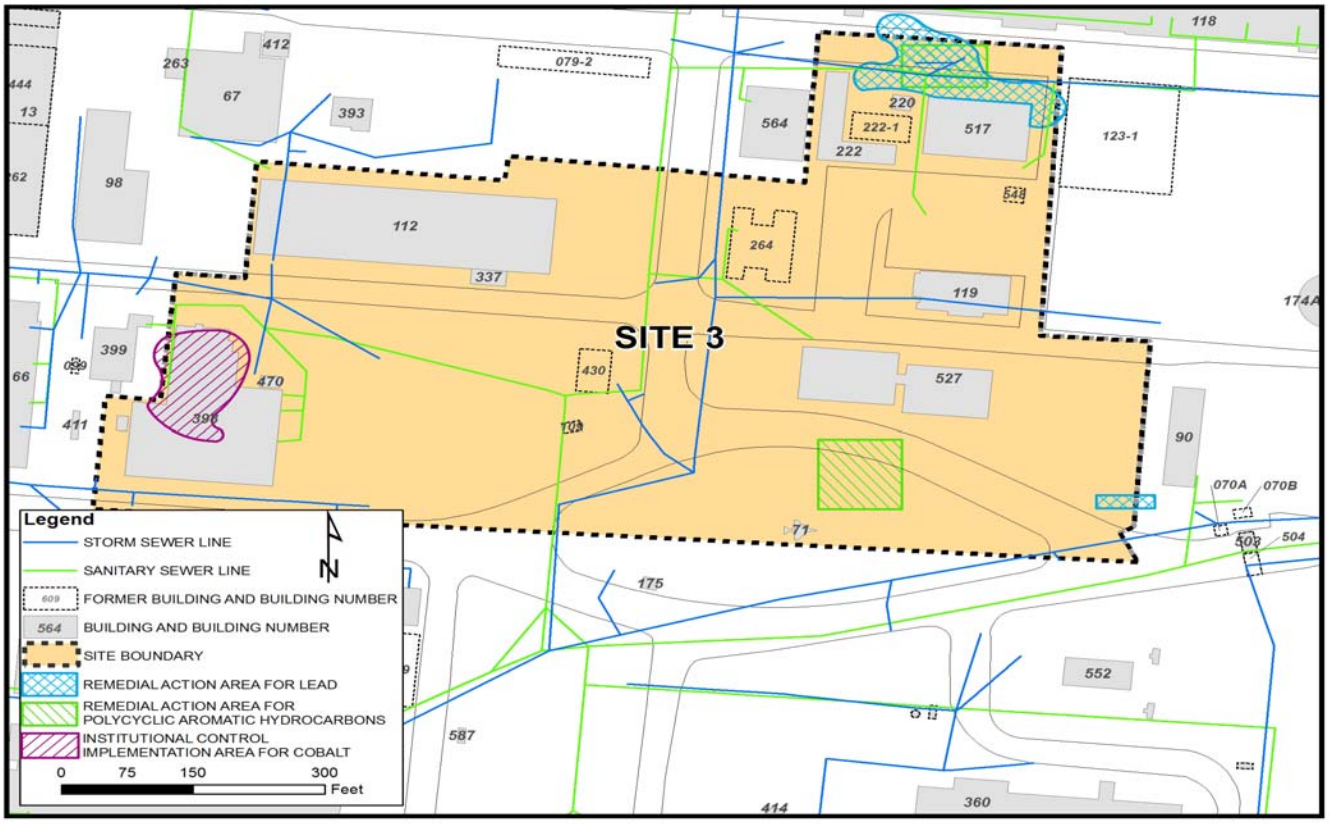

Figure 3: Site 3 Features and Proposed Remediation Areas for Soil

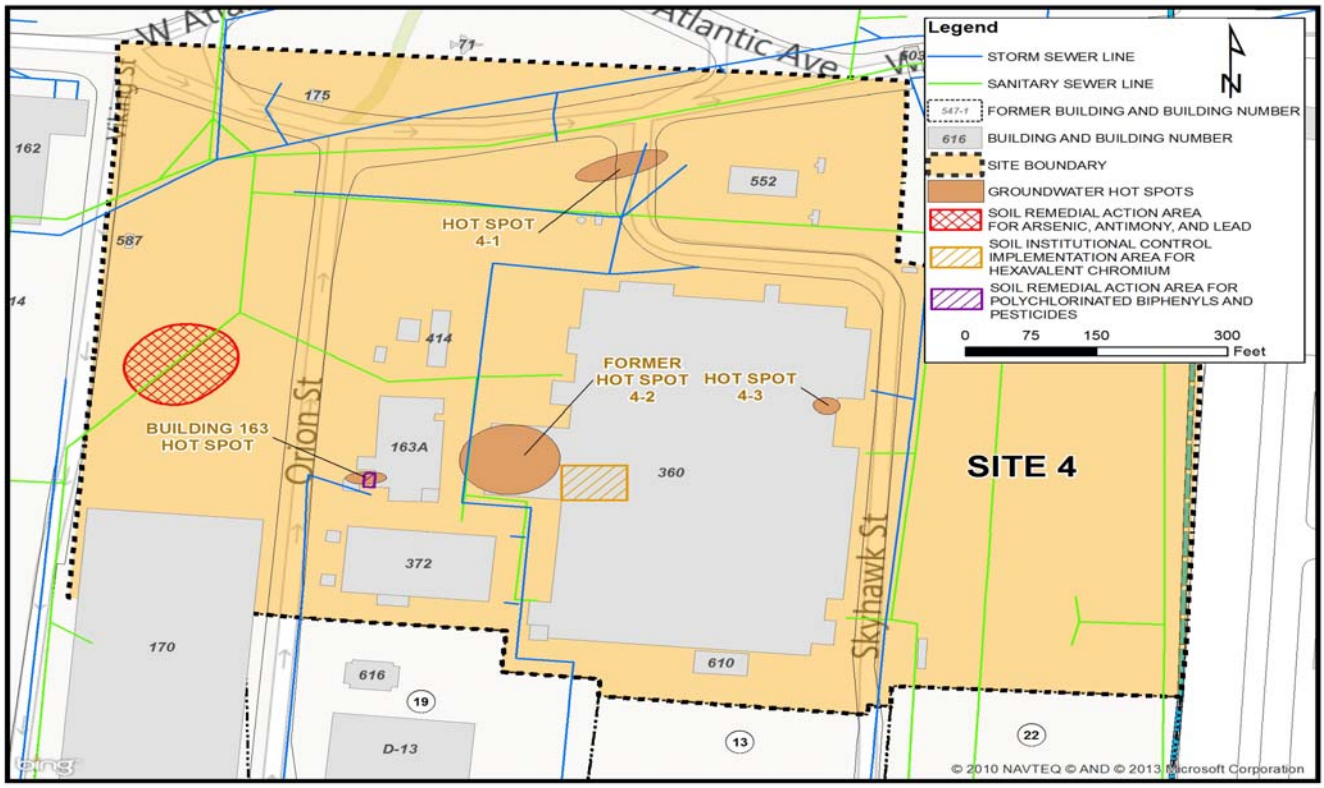

Figure 4: Site 4 Features, Groundwater Hot Spots, and Proposed Remediation Areas for Soil

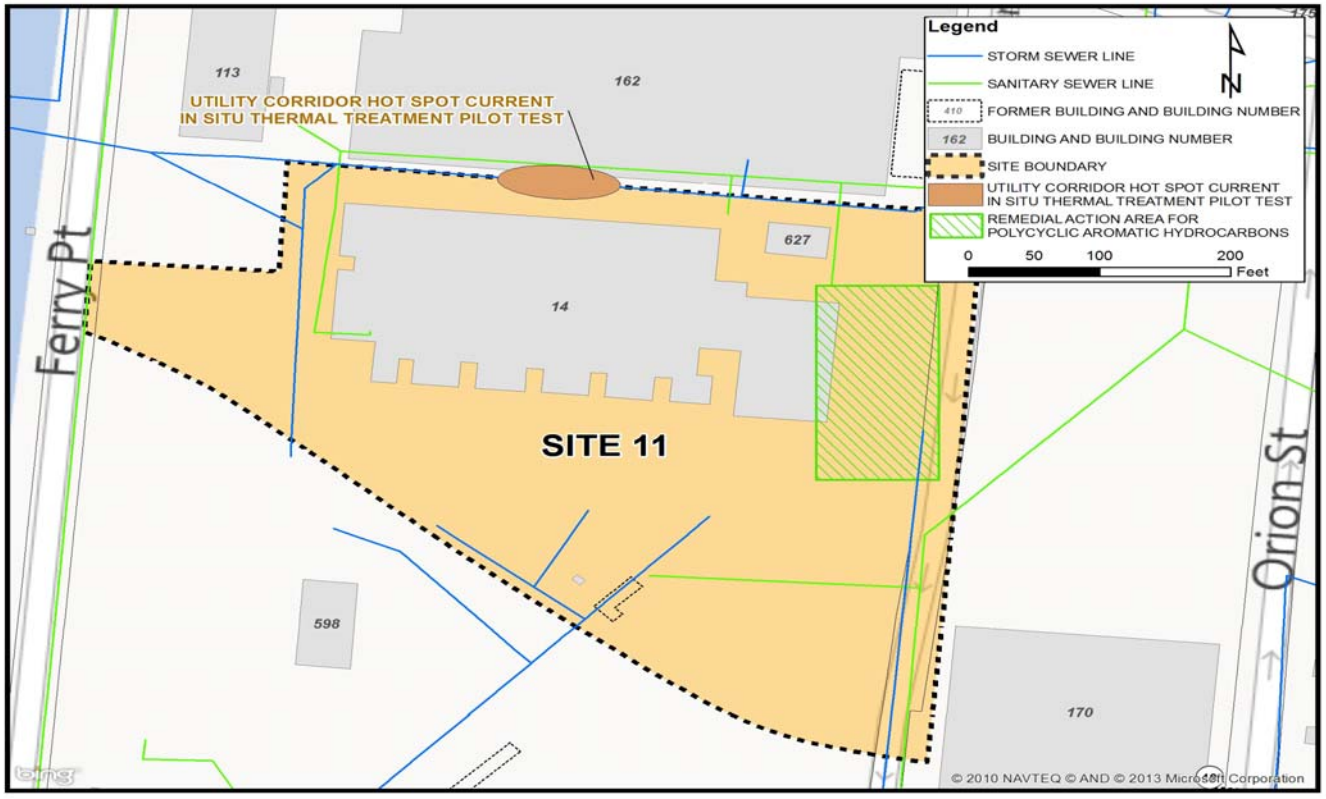

Figure 5: Site 11 Features, Groundwater Hot Spot, and Proposed Remediation Area for Soil

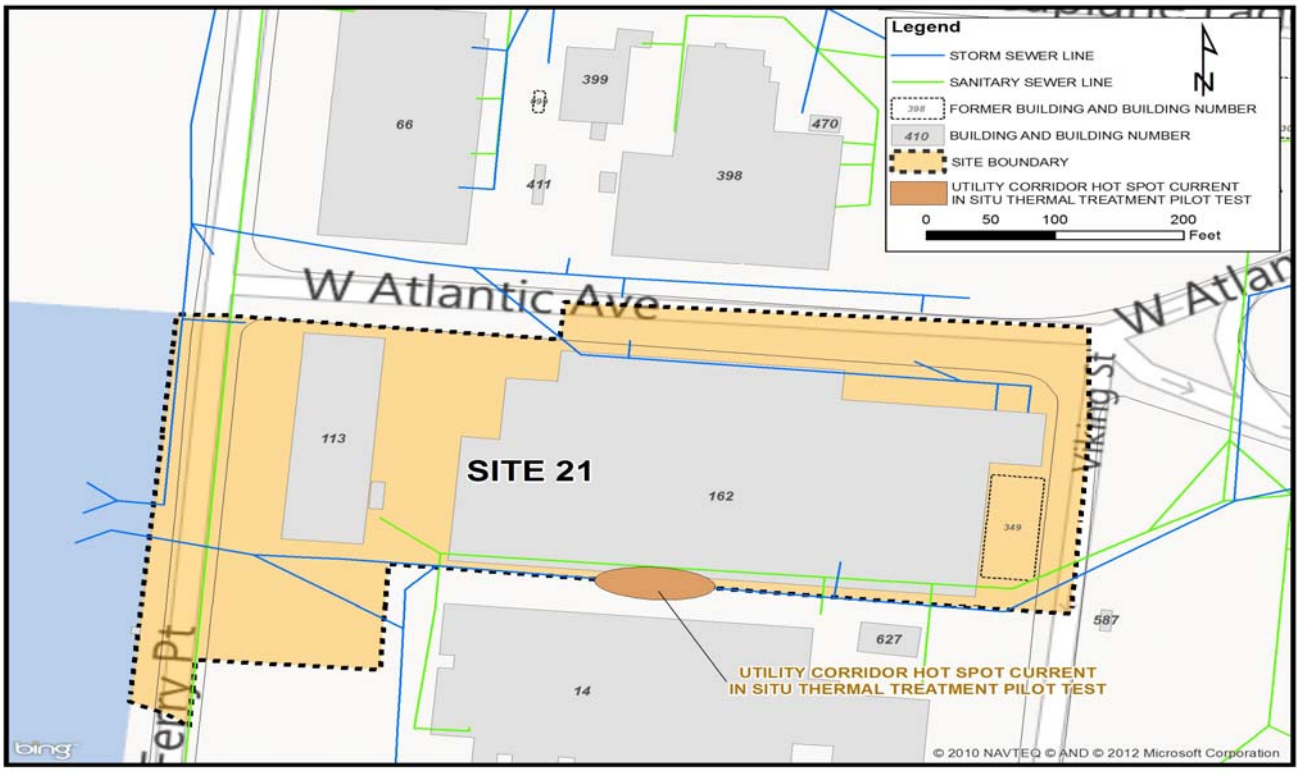

Figure 6: Site 21 Features and Groundwater Hot Spot

In addition, seven treatability pilot studies and one response action (a removal action) have been conducted since 1999 for "hot spots" in OU-2B groundwater.

Reports of the investigations, pilot studies, and removal actions conducted to date at OU-2B are available in the Information Repository (see Page 24 for more detail).

Investigation Results Summary — Soil

The investigations for soil at Sites 3, 4, 11, and 21 were conducted from 1989 to 2010. The investigations included collection of soil samples for various chemical analyses, including:

- Volatile organic compounds (VOCs)
- ***Semi-volatile organic compounds (SVOCs)***
- Metals, including lead, cobalt, and hexavalent chromium
- Pesticides
- ***Polychlorinated biphenyls (PCBs)***
- ***Polycyclic aromatic hydrocarbons (PAHs)***
- ***Total petroleum hydrocarbons (TPH)***

Chemicals analyzed in OU-2B soil are consistent with historical activities conducted at each site.

Site 3

Contaminants identified for Site 3 soils are cobalt, lead, and PAHs. Cobalt is present in one localized area. Lead and PAHs were identified for remediation in two localized areas (Figure 3).

Site 4

The metals arsenic, antimony, hexavalent chromium, and lead were reported at levels requiring remediation. In addition, pesticides and one PCB (Aroclor 1254) were reported in soil at concentrations requiring remediation (Figure 4).

Site 11

Contaminants identified for Site 11 soils are PAHs. PAHs identified for remediation in this plan are in one localized area east of Building 14 (Figure 5).

Site 21

Potential soil contaminants were thoroughly investigated. No remedial action is required for Site 21 soil to protect human health and the environment.

Investigation Results Summary — Groundwater

Groundwater underneath OU-2B was assessed across all of OU-2B, rather than site by site, as was done with soil. Groundwater samples were collected from monitoring wells and other groundwater sampling locations, and analyzed for VOCs, SVOCs, metals, TPH, PAHs, and general chemistry (e.g., pH, temperature, conductivity, and total dissolved solids).

The contaminants in OU-2B shallow groundwater (less than or equal to 30 feet bgs) are the chlorinated VOCs trichloroethene and vinyl chloride. The presence of elevated levels of trichloroethene and vinyl chloride in groundwater are referred to as a VOC "plume."

VOCs have been identified in groundwater deeper than 30 feet bgs at several locations within OU-2B. However, groundwater at Alameda Point is not a source of drinking water and deep groundwater does not represent a complete pathway for vapor intrusion-related risk. Therefore, groundwater below 30 feet bgs is not included in the remedy.

For the OU-2B groundwater cleanup, "hot spots" in the VOC plume are defined as areas that would require in situ thermal treatment or other active treatment prior to further groundwater treatment (for example, Alternative GM-3b uses in situ bioremediation following thermal treatment).

Three of the hot spots historically have been identified as Hot Spots 4-1, 4-2, and 4-3. Hot Spot 4-1 originates north of Building 360, Former Hot Spot 4-2 originates in the western center of Building 360, and Hot Spot 4-3 is located in an area on the east side of Building 360 at the oil/water separator. Two additional OU-2B VOC plume hot spots were also identified at the following locations:

- A utility corridor between Building 162 and Building 14 (Site 11)
- An area near a former oil-water separator in the southern portion of Building 163 (Site 4)

Figure 7 shows the OU-2B-wide groundwater plume and hot spots for the OU-2B remediation.

PILOT STUDIES AND RESPONSE ACTIONS

A pilot study is a small-scale experiment conducted to determine whether a specific cleanup technology will work at a site. A response action is a cleanup activity. Seven pilot studies and one response action (in situ thermal treatment at Former Hot Spot 4-2) were conducted at OU-2B, as follows:

In Situ Thermal Treatment: This technology for the treatment of VOCs uses electrodes or thermal wells to deliver heat via electric resistivity and conduction. This volatilizes VOCs and the contaminant-laden vapors generated in the sub-surface are extracted and can be treated aboveground through several technologies, or thermally destroyed. Two pilot tests and one response action were performed between 2002 and the present using In Situ Thermal Treatment at OU-2B.

- A pilot test was conducted in 2002 to treat high levels of VOCs in groundwater at Hot Spot 4-1. However, underground utilities present did not allow for high-temperature heating due to safety concerns. Therefore, low-temperature heating was performed, resulting in both increases and decreases of VOCs within the treatment area. It was concluded that low-temperature heating is not effective for VOC removal at Site 4.
- A removal action using this technology was implemented in the western portion of Building 360 at Site 4 Former Hot Spot 4-2 from 2006 to 2007. Electrical resistance heating was performed to an approximate depth of 40 feet. Post-treatment results showed a median decrease of 99 percent in contaminant concentrations in the treatment area.
- A pilot study using this technology is being evaluated for effectiveness at the VOC Hot Spot in the Utility Corridor between Building 162 and Building 14 (Site 11) (shown on Figures 5 and 6 as "Six-Phase Heating," one type of In Situ Thermal Treatment). This thermal pilot test treated to a depth of 30 feet and is the closest test to San Francisco Bay.

In Situ Chemical Oxidation: This technology treats VOCs in groundwater, in place, without above-ground pumping. Chemicals called oxidants are injected or pumped directly into the groundwater and cause VOCs to break down into harmless chemicals (such as water and carbon dioxide). Two pilot tests were performed using this technology.

- During a 2002 pilot test conducted at Site 21, TCE concentrations initially decreased but rebounded to near starting concentrations about four weeks post-injection.
- A pilot test was performed at Site 4 Hot Spot 4-1 from 2003-2004. Concentrations of VOCs were reduced, but the amount of contaminant mass suggested in situ chemical oxidation would be a more cost-effective secondary treatment option, once hot-spot concentrations were reduced.

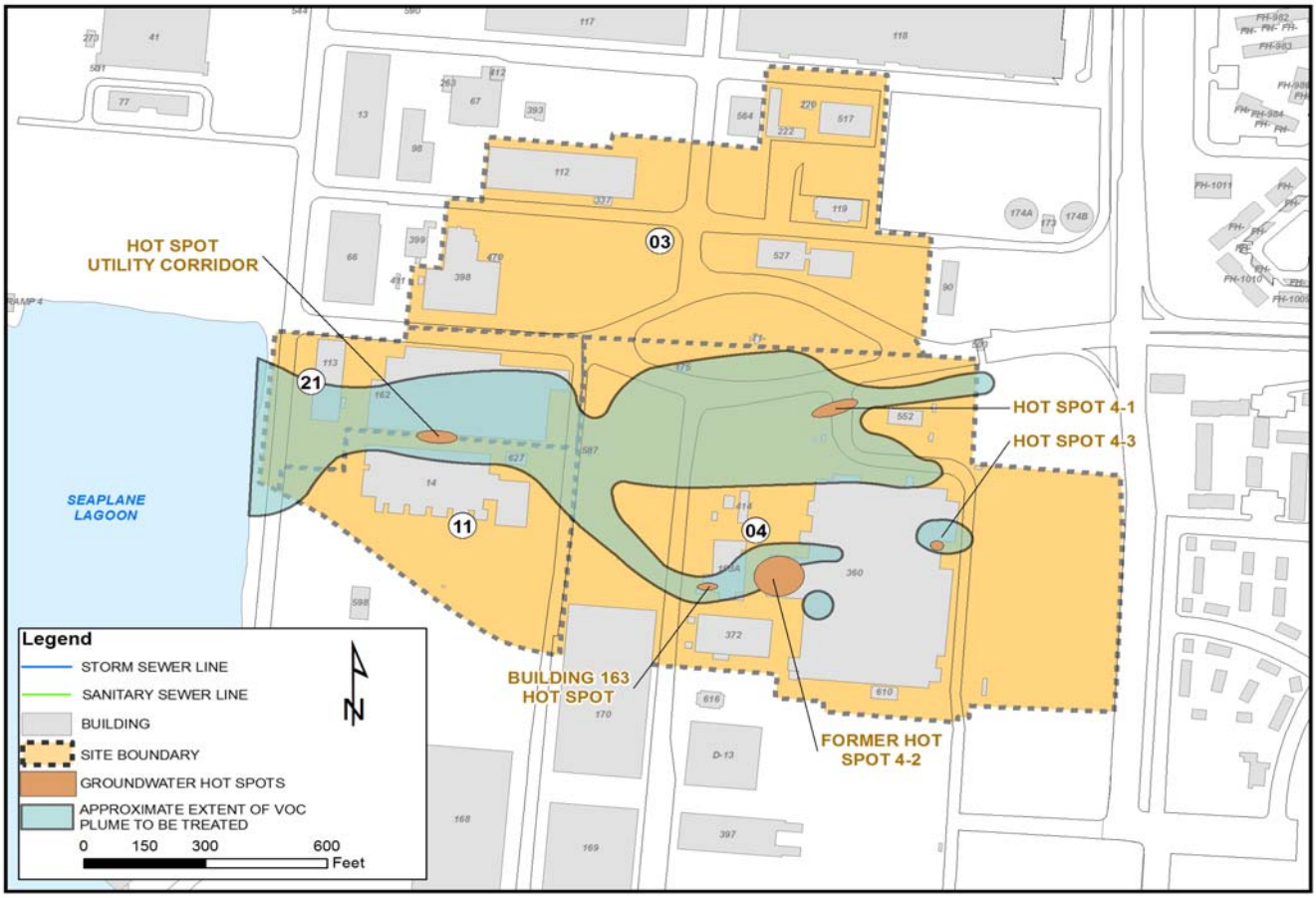

Figure 7: Extent of Operable Unit 2B Volatile Organic Compound (VOC) Groundwater Plume

Zero-Valent Iron: This technology uses very small iron particles injected into groundwater to reduce VOC levels.

- A pilot test using this technology was implemented at Site 4 in 2009-2010 following removal of an oil/water separator near Building 163.

  Subsequent groundwater monitoring results indicated that zero-valent iron was not a cost-effective treatment option for contaminant hot-spot reduction at Site 4.

In Situ Bioremediation: This technology uses naturally occurring microbes (microscopic "bugs") that live in soil and groundwater to destroy contaminants. The microbes act on contaminants and change them into harmless chemicals such as carbon dioxide.

- A pilot study using this technology was performed in 1999-2000 at Hot Spot 4-1. The results indicated this technology was feasible for treating Hot Spot 4-1.
- An additional pilot study is currently underway at Hot Spot 4-1 to evaluate the effectiveness of this technology for OU-2B.

PRESENT AND FUTURE SITE USE

Past and present site use is industrial/ commercial. For the areas of OU-2B that require remediation, the expected future use is commercial mixed-use, which includes residential.

Groundwater beneath Alameda Point (including OU-2B) is not currently used for drinking water, irrigation, or industrial supply.

Drinking water is supplied to Alameda Point by the East Bay Municipal Utilities District.

In September 2012, the State Water Board, and partner agencies EPA and DTSC, concurred with the Navy's request for a Groundwater Use Exception for OU-2B. This determination resulted from an evaluation of the current use and the anticipated future use of groundwater beneath OU-2B and the quality of shallow groundwater at OU-2B. The evaluation showed that the level of total dissolved solids (TDS) in groundwater exceeds the maximum levels set by both the EPA and California for groundwater to be considered for beneficial municipal use.

As a result of this evaluation, remediation plans at OU-2B reflect that OU-2B shallow groundwater is not considered a municipal source. Additionally, the City of Alameda has informed the Navy and regulatory agencies that it does not intend to use shallow groundwater at OU-2B for municipal use.

RISK ASSESSMENT PROCESS

A human health risk assessment and an ecological risk assessment were conducted for OU-2B to estimate a theoretical level of risk to humans and the environment from contamination at Sites 3, 4, 11, and 21. Regulatory requirements were used to define what is considered acceptable and unacceptable risk. These risk assessments were used, along with other studies completed for OU-2B, to develop cleanup strategies that protect human health and the environment.

HUMAN HEALTH RISK ASSESSMENT

The human health risk assessment for OU-2B estimated potential health risks to future users of the area if the site is not remediated. A human health risk assessment does not measure actual health effects at a site. In fact, people will not necessarily become sick even if they are exposed to materials at higher doses than those estimated by the risk assessment. Rather, a human health risk assessment estimates a theoretical level of risk to the most sensitive people in a population (children and the elderly), and assumes conservative safety margins for how long and how much these sensitive populations might be exposed.

Several groups of people were assumed to use the OU-2B sites based on the current reuse plan for Alameda Point. These include a mix of residents, construction workers, and commercial users. Exposure routes were mapped that describe how contaminants in soil and groundwater could come into contact with future site users. Soil risk was evaluated separately for Sites 3, 4, 11, and 21, while groundwater risk was evaluated for all of OU-2B.

Residential User. Residential risk was comprehensively evaluated. Groundwater beneath OU-2B does not meet California's minimum water quality criteria for municipal use due to high salinity caused by its proximity to San Francisco Bay. Therefore, groundwater would not be used for municipal purposes. The most likely theoretical future residential exposure scenario is that homes would be built on the sites, and a resident in the home could be exposed to contamination in soils and groundwater in the following ways: inhalation of vapors in indoor and outdoor air; ingestion of soil and homegrown produce; inhalation of particulates from soil in outdoor air; and skin contact with soil.

Commercial User. In this scenario, exposure to commercial users was evaluated for ingestion of soil, inhalation of vapors in indoor and outdoor air, inhalation of soil particulates in outdoor air, and skin contact with soil. This scenario assumes groundwater will not be used for municipal purposes.

Construction Worker. In this scenario, exposure to construction workers was evaluated for soil ingestion, skin soil contact, and inhalation of particulates and vapors in outdoor air.

HUMAN HEALTH RISK ASSESSMENT RESULTS

Chemicals of concern posing risk were identified by site, based on the following: 1) the results of the human health risk assessment; 2) the fact that groundwater is not used now and will not be used in the future as a drinking water source; and 3) the planned future reuse of the OU-2B sites.

The chemicals of concern for soil are: PAHs, cobalt, and lead for Site 3; the pesticides aldrin and dieldrin, PCBs, hexavalent chromium, arsenic, antimony, lead, and heptachlor epoxide for Site 4; and PAHs for Site 11. While cobalt was originally a chemical of concern in Site 21 soil, a post-Feasibility Study site boundary change to facilitate the City of Alameda's reuse plan moved the cobalt-impacted soil area to Site 3 (Figure 3). The chemicals of concern for OU-2B groundwater are trichloroethene and vinyl chloride.

ECOLOGICAL RISK ASSESSMENT

An ecological risk assessment was conducted at OU-2B to estimate potential effects to the environment if the sites are not remediated. Effects on animals and plants were evaluated. For OU-2B, the primary concern is the potential for impacts to Seaplane Lagoon from contaminated groundwater that may flow into the lagoon. Animals living in the sediment, fish, and water birds are the primary species that may be affected. Metals were found to have the highest potential for adverse effects to ecological receptors. The potential for adverse effects from metals were evaluated for the following exposures:

- Direct toxicity - when an organism comes in contact with or ingests contaminated water and sediments
- Bioaccumulation - when metals accumulate in an organism from direct ingestion of water and sediments

The ecological risk assessment also included a background evaluation for metals. Results indicated that although lead in OU-2B groundwater could cause potential adverse effects in Seaplane Lagoon, the potential risk due to background levels of lead is similar to potential risk from OU-2B groundwater. Therefore, in accordance with EPA risk assessment methodology, no remedial action for lead in groundwater is warranted.

FEASIBILITY STUDY SUMMARY

The purpose of the Feasibility Study Report is to ensure the development and evaluation of appropriate remedial alternatives to address risks to human health and the environment. The Feasibility Study Report for OU-2B (December 2011) identified cleanup goals and developed and evaluated remedial alternatives for OU-2B soil and groundwater. This study used all of the data and studies conducted to date, took into account the results of the human health and ecological risk assessments, and considered comments from the regulatory agencies and the City of Alameda.

The remedial alternatives developed in the Feasibility Study were evaluated against seven of the nine CERCLA criteria, which are shown in Figure 8. The comparison of the remedial alternatives against the first seven criteria (the threshold criteria and the primary balancing criteria) was presented in the Feasibility Study Report. The two final criteria (modifying criteria) are State Acceptance and Community Acceptance. The State's acceptance is documented in this Proposed Plan, while community acceptance will be evaluated based on comments received from the public on this Proposed Plan (see Page 27). The Feasibility Study concluded that remedial action at OU-2B is required to address the following:

- Site 3: PAHs, cobalt, and lead in soil (the cobalt was in Site 21 prior to revision of site boundaries)

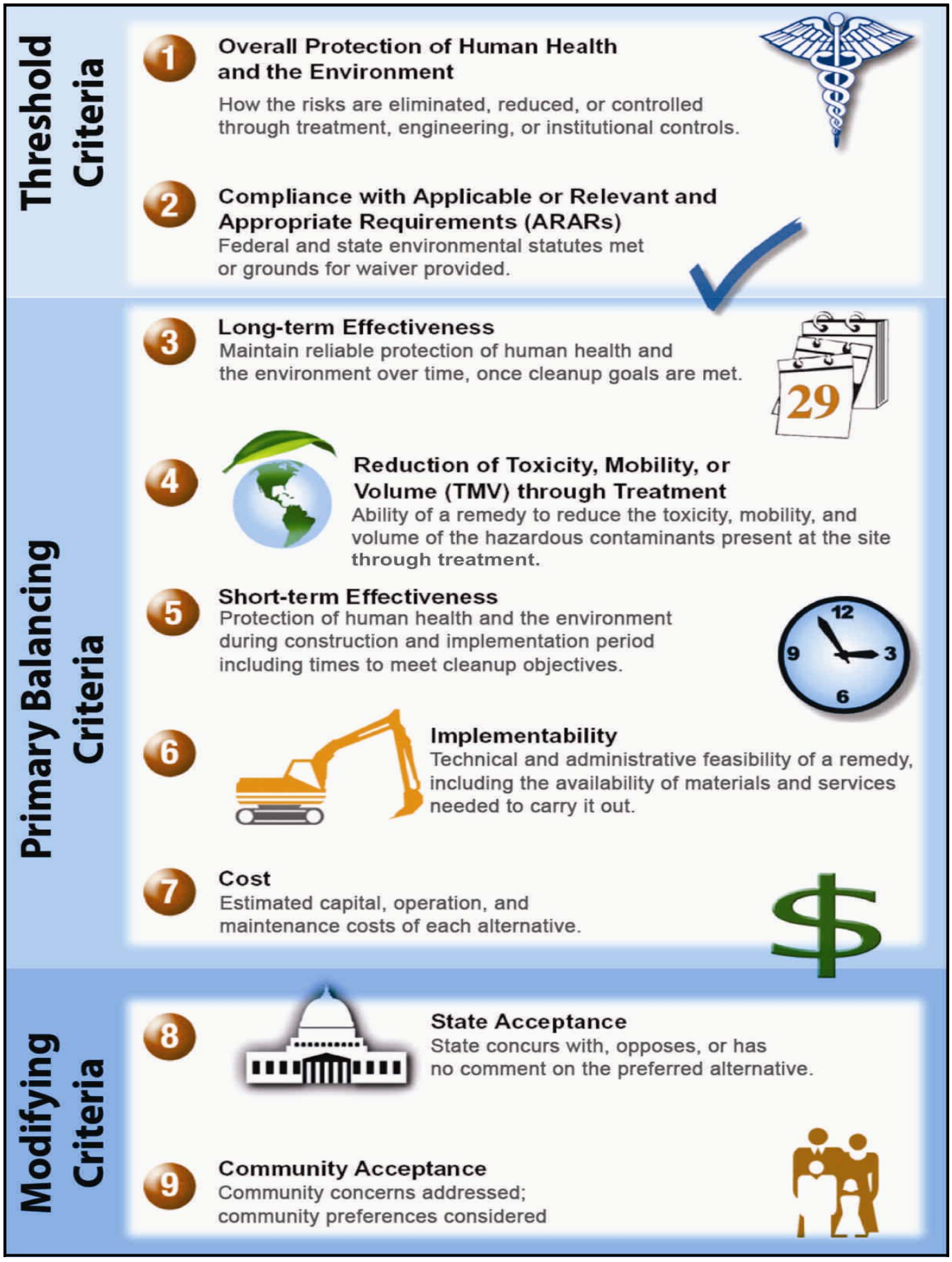

Figure 8. Criteria for Comparison of Cleanup Alternatives

- Site 4: hexavalent chromium, lead, Aroclor 1254 (a PCB), antimony, arsenic, aldrin, dieldrin, and heptachlor epoxide in soil
- Site 11: PAHs in soil
- OU-2B-wide groundwater: VOC plume

FEASIBILITY STUDY ADDENDUM

A Feasibility Study Addendum for OU-2B (October 2012) evaluated an additional groundwater cleanup alternative for commercial reuse only of the OU-2B sites, and future use of shallow groundwater (30 feet or less bgs) as a non-drinking-water source. The route of exposure considered under the additional scenario is inhalation of VOC vapors from groundwater that may migrate to indoor air. The receptors considered under the additional scenario are commercial workers.

The Addendum also evaluated data against the recently updated EPA screening levels (November 2011) and assessed risk based on the updated toxicity factors. Risk-based concentrations for the chemicals of concern were calculated using the most current EPA toxicity values.

REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives are statements containing a cleanup goal for the protection of human or ecological receptors from contaminants in one specific medium, such as soil, groundwater, or air. Remedial Action Objectives provide the foundation for the cleanup alternatives that are presented in this Proposed Plan.

The Remedial Action Objectives that were established in the Feasibility Study and Addendum for soil and groundwater at OU-2B are protective of human health and the environment. The following Remedial Action Objectives were developed for cleanup of contaminated soil at Sites 3, 4, and 11 to protect human health:

- Reduce the risks associated with PAHs in soil to levels that are consistent with the Alameda Point background levels (Sites 3 and 11); and
- Reduce the potential for exposure to contaminants in soil that would result in unacceptable risks to future receptors

Proposed remediation goals for soil are presented in Table 1.

The following Remedial Action Objectives were developed for cleanup of groundwater at OU-2B to protect human health and the environment. These are consistent with the assumptions that groundwater beneath OU-2B is not a potential drinking water source, and that the reuse of OU-2B will be restricted to commercial use:

- Minimize the potential for exposure of on-site receptors to constituents of concern vapors from shallow groundwater at concentrations exceeding their respective remediation goals for protection against indoor air risks.
- Minimize the potential for migration of impacted groundwater into Seaplane Lagoon at concentrations that may not be protective of plants and animals.

The proposed remediation goals for groundwater are presented in Table 2.

REMEDIAL ALTERNATIVES: SOIL

Remedial alternatives for soil evaluated in the Feasibility Study are provided below.

Alternative S-1: No Action (required by CERCLA as a baseline for comparison)

Alternative S-2: Institutional Controls for Hexavalent Chromium and Cobalt

Alternative S-3a: Excavation and Offsite Disposal of Impacted Soil (Residential reuse)

Alternative S-3b: Excavation and Offsite Disposal of Soil with Institutional Controls for Site 4 (Hexavalent Chromium) (Commercial reuse)

Table 1. Proposed Remediation Goals for Soil Chemicals of Concern by Site

Chemical of Concern	Remediation Goal (milligrams per kilogram of soil)
Site 3	
Polycyclic aromatic hydrocarbons (PAHs)[a]	0.62
Lead[b]	208
Cobalt[c]	300
Site 4	
Aroclor 1254[e]	0.22
Hexavalent chromium[c]	5.6
Lead[b]	208
Arsenic[d]	16.55
Antimony[d]	7.71
Aldrin[e]	0.029
Dieldrin[e]	0.03
Heptachlor Epoxide[e]	0.053
Site 11	
PAHs[a]	0.62

[a] Based on site-specific determination

[b] For residential reuse based on DTSC lead spreadsheet (January 2009)

[c] Based on EPA 2011 industrial risk screening level (RSL)

[d] Based on the Alameda Point background value

[e] Based on EPA 2009 residential risk screening level (RSL)

Table 2. Proposed Remediation Goals for OU-2B Groundwater Chemicals of Concern Consistent with Non-Beneficial Use of Groundwater and Future Commercial Use

Chemical of Concern	Remediation Goal for Protection Against Unacceptable Indoor Air Risks (values in micrograms per liter of water)	Remediation Goal for Discharge into Seaplane Lagoon (values in micrograms per liter of water)
Trichloro-ethene	116	810
Vinyl chloride	31.4	Not Applicable

REMEDIAL ALTERNATIVES: GROUNDWATER

Remedial alternatives for shallow groundwater evaluated in the Feasibility Study Addendum are provided below. See Table 3 for a description of some of these technologies.

Alternative GM-1: No Action (required by CERCLA as a baseline for comparison)

Alternative GM-2: In Situ Thermal Treatment of Hot Spots, Control and Treatment at the Seaplane Lagoon using a Permeable Reactive Barrier, Monitored Natural Attenuation, and Institutional Controls

Alternative GM-3a: In Situ Thermal Treatment of Hot Spots; Shallow Groundwater Treatment using In Situ Chemical Oxidation, Monitoring, and Institutional Controls

Table 3. Description of OU-2B Groundwater Technologies Evaluated in the Feasibility Study Report and Addendum	
In Situ Bioremediation	This proven technology uses in-place (in situ) treatment of groundwater without requiring above-ground pumping, and relies on naturally occurring microbes (microscopic "bugs") that live in soil or groundwater to destroy contaminants. Chemicals are injected into the subsurface that stimulate the activity of microbes and help them grow and multiply. The microbes act on contaminants and change them into water and harmless gases such as carbon dioxide.
In Situ Chemical Oxidation	This proven technology treats volatile organic compounds in groundwater, in place, without requiring above-ground pumping. Chemicals called oxidants are injected or pumped directly into the groundwater and cause volatile organic compounds to break down into harmless chemicals (such as water).
In Situ Thermal Treatment	This proven technology for treatment of volatile organic compounds uses electrodes or thermal wells to deliver heat via electric resistivity or conduction. This volatilizes the compounds and the contaminant-laden vapors generated in the sub-surface are extracted and can be treated above ground through several technologies, or thermally destroyed.
Institutional Controls	These are administrative and legal controls, established and administered to restrict property use to limit exposure to contaminated soil, sediment, or groundwater, and to protect the integrity of the remedy.
Monitored Natural Attenuation	A proven technology used to monitor or test the progress of natural attenuation (breakdown) processes that can degrade contaminants in soil or groundwater. These processes may include biological degradation by naturally occurring microbes, sorption (sticking) to soil, or dilution due to mixing with clean water.
Permeable Reactive Barrier	A developing technology recognized as cost effective for in situ groundwater cleanup. Permeable reactive barriers allow groundwater to flow through while removing contaminants. Such barriers can be placed in groundwater treatment zones that passively capture contaminants and remove or break down contaminants, releasing uncontaminated water. Removal methods may include injection of zero-valent iron and/or organic carbon to destroy, immobilize, or remove contaminants from groundwater by physical, chemical, or biological means.

Alternative GM-3b: Hot Spots and Shallow Groundwater Treatment using In Situ Thermal Treatment, In Situ Bioremediation, Monitoring, and Institutional Controls

Alternative G-4: Treatment of the Entire Plume using Groundwater Recirculation with Permeable Reactive Barriers and Institutional Controls

The Institutional Controls will apply over the VOC plume plus a 100-foot lateral buffer area. The remainder of OU-2B (i.e., the area outside of the VOC plume and buffer area) is safe for unrestricted use, including residential, except for the soil areas where Institutional Controls would be applied. Once the soil excavations are complete, the majority of OU-2B will be safe for unrestricted use.

COMPARISON OF SOIL ALTERNATIVES

Table 4 presents the soil remedial alternatives. The alternatives were compared using the criteria shown in Figure 8. Alternatives are rated "poor," "fair," or "good," based on these criteria. A detailed comparison of alternatives, as well as a detailed discussion of each technology, can be found in the Feasibility Study, which is available at the Information Repository (see Page 24 of this document). See Table 5 for summary of the soil alternatives comparison.

"No Action" is not protective of human health and the environment. All remaining alternatives are rated poor for reduction in toxicity, mobility, or volume through treatment since no alternatives include treatment. Excavation and institutional controls are rated fair to good for the other Figure 8 criteria.

As part of the evaluation of remedial alternatives for short-term effectiveness, the sustainability of each alternative was evaluated with respect to criteria such as energy consumption, greenhouse gas generation, pollutant emissions, water consumption, and worker safety.

COMPARISON OF GROUNDWATER ALTERNATIVES

Table 6 presents the shallow groundwater remedial alternatives for groundwater less than or equal to 30 feet bgs. The alternatives were compared using the criteria shown in Figure 8. Alternatives are rated "poor," "fair," or "good," based on these criteria. A detailed comparison of the alternatives, as well as a detailed discussion of each technology, can be found in the Feasibility Study Addendum, which is available at the Information Repository (see Page 24 of this document). See Table 7 for summary of the groundwater alternatives comparison.

As documented in the Feasibility Study Addendum, remedy durations were estimated based on assumptions regarding remedy construction and implementation and, thus, involve uncertainty. Therefore, the cleanup times in this Proposed Plan are estimates, as shown in Table 6, "Estimated Remediation Duration (yrs)."

"No Action" is not protective of human health and the environment. All remaining alternatives are rated fair to good for reduction in toxicity, mobility, or volume through treatment. Institutional controls are part of each groundwater remedy and are rated fair to good for the other Figure 8 criteria.

As part of the evaluation of remedial alternatives for short-term effectiveness, the sustainability of each alternative was evaluated with respect to criteria such as energy consumption, greenhouse gas generation, pollutant emissions, water consumption, and worker safety.

PREFERRED SOIL REMEDIAL ALTERNATIVES: SITES 3, 4, AND 11

The preferred remedial alternatives for soil are S-3a and S-2 for Sites 3, 4, and 11.

S-3a: Excavation and Disposal of Impacted Soil. This remedy would be implemented at OU-2B for unrestricted reuse, except for localized

Table 4. Feasibility Study Summary of Soil Remedial Alternatives – Sites 3, 4, 11, and 21			
Remedial Alternatives	**Estimated Remediation Duration (years)**	**Total Cost (millions)**	**Description**
S-1: No Action	0	-	The Comprehensive Environmental Response, Compensation and Liability Act requires the evaluation of a no-action alternative to establish a baseline for comparison with other alternatives. Under this scenario, no action would be performed to remediate soil at Sites 3, 4, 11, and 21.
S-2: Institutional Controls	30	$398,000 (Sites 3 and 4)	Alternative S-2 would rely on institutional controls to minimize the potential for exposure to cobalt-impacted soil at Site 3 and hexavalent chromium-impacted soil at Site 4 that would result in risks to human health and the environment. Institutional controls implemented as part of cobalt-impacted soil at Site 3 would ensure that the planned future reuse of the site remains commercial. In addition to restricting residential reuse, institutional controls implemented as part of Alternative S-2 for hexavalent chromium-impacted soil at Site 4 would prohibit intrusive activities without prior approval by the Navy/Base Realignment and Closure Cleanup Team. Institutional controls to prohibit unrestricted reuse would remain in place indefinitely; however, the cost comparison assumes that institutional controls would last 30 years.
S-3a: Excavation and Disposal Of Impacted Soil (for Residential Reuse)	4	$2,520,000 (Site 3); $4,151,000 (Site 4); $648,000 (Site 11); Total is $7,319,000	Alternative S-3a involves excavating soil containing chemicals of concern with concentrations above the remediation goals, dewatering and chemical profiling of the excavated soil, loading and transporting the impacted soil to an approved disposal facility, and backfilling the excavation areas with clean fill. The Navy may consider on-site use of soil from other Alameda Point areas (Sites 1 and 2) if the soil meets reuse criteria. The volume of excavated soil from Site 3 (cobalt, lead, and polycyclic aromatic hydrocarbons [PAHs]), Site 4 (polychlorinated biphenyls [PCBs], pesticides, arsenic, antimony, hexavalent chromium, and lead), and Site 11 (PAHs) is estimated to total approximately 19,900 bank (in place) cubic yards. Upon completion of excavation, soil samples would be collected from the sidewalls and bottom of the excavated areas to confirm that the remedial action objectives for residential reuse have been met.
S-3b: Excavation and Disposal Of Hexavalent Chromium-Impacted Soil and Institutional Controls at Site 4	33	$1,073,000 (Site 4)	Similar to Alternative S-3a, soil containing hexavalent chromium with concentrations above the remediation goals would be excavated and the same steps under the first paragraph of S-3a (dewatering, chemical profiling, loading and transporting, etc.) would be done. The volume of hexavalent chromium-impacted soil at Site 4 is estimated at approximately 770 bank cubic yards. Excavation would be performed to approximately 5.5 feet. Upon completion of excavation, soil samples would be collected from the sidewalls and bottom of the excavated area to ensure that the 2011 EPA regional screening level of 5.6 milligrams per kilogram is not exceeded. Institutional controls would be implemented to ensure that the planned future reuse of Site 4 remains commercial.

Table 5: Comparative Analysis of Soil Remedial Alternatives – Sites 3, 4, 11, and 21*

Remedial Alternative	Overall Protection of Human Health and the Environment	Compliance with ARARs	Long-Term Effectiveness and Permanence	Reduction in Toxicity, Mobility, or Volume through Treatment	Short-Term Effective-ness	Implement -ability	Cost[a] ($M)
S-1: No Action	Not Satisfied	Since Alternative S-1 is not protective of human health and the environment, no ratings have been assigned to the other criteria.					
S-2: Institutional Controls	Satisfied	Satisfied	◑	○	●	◑ to ●	● 0.39
S-3a: Excavation and Disposal of Impacted Soil (Residential reuse)	Satisfied	Satisfied	●	○	◑	◑	◑ 7.32
S-3b: Excavation and Disposal of Hexavalent Chromium-impacted Soil with Institutional Controls (Site 4)	Satisfied	Satisfied	◑ to ●	○	◑ to ●	○ to ◑	◑ to ● 1.07

Notes: ○ = Poor ◑ = Fair ● = Good

[a] Cost evaluation is based on the net present value. The lower cost receives a high rating because it is more cost effective. Cost estimates are shown as total cost. M = million.

*Note that Criteria 8 and 9, State and Community Acceptance, are not included on this table. The State has reviewed and commented on the alternatives and supports S-3a and S-2 as the preferred soil alternatives. Community acceptance will be determined following the close of the public comment period and comments received on this Proposed Plan.

Table 6. Summary of Groundwater Remedial Alternatives for OU-2B

Remedial Alternatives	Estimated Remediation Duration (yrs)	Total Cost (millions)	Description
GM-1: No Action	0	-	The Comprehensive Environmental Response, Compensation and Liability Act requires the evaluation of a no-action alternative to establish a baseline for comparison with other alternatives. Under this scenario, no action would be performed to remediate groundwater at OU-2B.
GM-2: In Situ Thermal Treatment of Hot Spots, Control/ Treatment at the Seaplane Lagoon using Permeable Reactive Barrier, Monitored Natural Attenuation, and Institutional Controls	27	$14,419,000	Alternative GM-2 includes remediation of hot spots to treat relatively high concentrations of volatile organic compounds (VOCs) in groundwater. Treated areas would include Plume 4-1 north of Building 360 (Site 4); Plume 4-2 at the western portion of Building 360 (Site 4); Plume 4-3 at the northeast portion of Building 360, adjacent to oil/water separator 360 (Site 4); Building 163 (Site 4); and Building 162/Building 14 Utility Corridor (Sites 21 and 11). The different hot spots may be remediated using a different in situ thermal treatment technology such as electric resistance heating, conductive heating, or steam flushing. If groundwater monitoring results indicated that control/ treatment is necessary at the Seaplane Lagoon, a permeable reactive barrier would be installed immediately upgradient of Seaplane Lagoon to control potential discharge of contaminants of concern into the Lagoon. This may be a trench permeable reactive barrier where treatment media are placed in engineered trenches, or a trenchless permeable reactive barrier where treatment media are injected into the subsurface using direct push, injection wells, or other technologies. Natural attenuation processes would be monitored, as would remediation of VOC-impacted groundwater downgradient of the source areas. Institutional controls would be implemented to restrict reuse to commercial and industrial uses once commercial risk-based concentrations were reached in shallow groundwater (less than or equal to 30 feet below ground surface). Monitored natural attenuation and institutional controls would be implemented until concentrations of contaminants of concern decrease below their respective commercial risk-based concentrations in shallow groundwater. The institutional controls would remain in place until groundwater monitoring demonstrated that shallow groundwater was below the risk-based concentration for residential use and/or that contaminants of concern were not discharging to the Seaplane Lagoon.
GM-3a: In Situ Thermal Treatment of Hot Spots; Shallow Groundwater Treatment using In Situ Chemical Oxidation, Monitoring, and Institutional Controls	18	$14,786,000	Alternative GM-3a includes implementation of in situ thermal treatment to treat relatively high VOC concentrations at five hot spot/source areas. The different hot spots may be remediated using a different in situ thermal treatment technology such as electric resistance heating, conductive heating, or steam flushing. In situ chemical oxidation would be implemented to treat shallow groundwater (less than or equal to 30 feet below ground surface) in hot spot areas upon completion of in situ thermal treatment to further reduce VOC concentrations. In situ chemical oxidation would be implemented for the remaining portion of OU-2B to treat shallow groundwater to further reduce VOC concentrations.

Table 6. Summary of Groundwater Remedial Alternatives for OU-2B, continued

Remedial Alternatives	Estimated Remediation Duration (yrs)	Total Cost (millions)	Description
GM-3a, continued			In situ thermal treatment would be implemented as discussed under GM-2, above. In situ chemical oxidation would include injection of chemical reagent/oxidant into the subsurface using direct-push technology, groundwater wells, or other specialized technology. The injected oxidant would oxidize VOCs into innocuous end products such as carbon dioxide and water. The remedial design will finalize the areas and depths of shallow groundwater treatment to address vapor intrusion. VOCs in shallow groundwater are responsible for the potential vapor intrusion concerns, rather than VOCs at deeper intervals. Institutional controls would be implemented to restrict reuse to commercial and industrial uses once commercial risk-based concentrations were reached in shallow groundwater (less than or equal to 30 feet below ground surface). Monitoring and institutional controls would be implemented until concentrations of contaminants of concern decrease below their respective commercial risk-based concentration in shallow groundwater. The institutional controls would remain in place until groundwater monitoring demonstrated that contamination in shallow groundwater was below the risk-based concentration for residential use and/or that contaminants of concern were not discharging to the Seaplane Lagoon.
GM-3b: Hot Spots and Shallow Groundwater Treatment using In Situ Thermal Treatment, In Situ Bioremediation, Monitoring, and Institutional Controls	20	$12,421,000	Alternative GM-3b includes implementation of in situ thermal treatment and/or in situ bioremediation to treat relatively high VOC concentrations at five hot spot/source areas. Each hot spot/source area may be remediated using a different remediation technology including in situ thermal treatment only, in situ bioremediation only, or a combination of in situ thermal treatment and in situ bioremediation. In situ bioremediation would be implemented to treat shallow groundwater in the hot spot areas upon completion of or in conjunction with in situ thermal treatment to further reduce VOC concentrations. In situ bioremediation would be implemented for the remaining portion of OU-2B to treat shallow groundwater to further reduce VOC concentrations. The remedial design will finalize the areas and depths of shallow groundwater treatment to address vapor intrusion.

Table 6. Summary of Groundwater Remedial Alternatives for OU-2B, concluded			
Remedial Alternatives	**Estimated Remediation Duration (yrs)**	**Total Cost (millions)**	**Description**
GM-3b, continued			Institutional controls would be implemented to restrict reuse to commercial and industrial uses once commercial risk-based concentrations were reached in shallow groundwater (less than or equal to 30 feet below ground surface). Monitoring and institutional controls would be implemented until concentrations of contaminants of concern decrease below their respective commercial risk-based concentration in shallow groundwater. The institutional controls would remain in place until groundwater monitoring demonstrated that contamination in shallow groundwater was below the risk-based concentration for residential use and/or that contaminants of concern were not discharging to the Seaplane Lagoon.
GM-4: Treatment of the Entire Plume using Groundwater Recirculation, Permeable Reactive Barriers, and Institutional Controls	26	$16,752,000	Alternative GM-4 would include treatment of VOCs in OU-2B groundwater using multiple groundwater recirculation loops and permeable reactive barriers until the remediation goals (vapor intrusion risk-based concentrations) are met. Under Alternative GM-4, groundwater would be simultaneously extracted and injected to induce hydraulic gradients that mobilize VOCs and/or dense non-aqueous phase liquids towards extraction wells. The exact locations and designs of recirculation systems and permeable reactive barriers would be determined as part of remedial design/remedial action. The Feasibility Study assumed that two groundwater recirculation loops and two permeable reactive barriers would be installed for OU-2B groundwater remediation. In addition, groundwater monitoring and institutional controls would be implemented until concentrations of contaminants of concern decrease below their respective commercial risk-based concentrations and/or that contaminants of concern were not discharging to the Seaplane Lagoon. Following attainment of commercial risk-based concentrations, institutional controls would be continued to prevent residential use of the area overlying OU-2B groundwater until concentrations of contaminants of concern decrease below their respective residential risk-based concentrations and/or that contaminants of concern were not discharging to the Seaplane Lagoon, and the institutional controls could be terminated.

Table 7: Comparative Analysis of Groundwater Remedial Alternatives – OU-2B*

Remedial Alternative	Overall Protection of Human Health and the Environment	Compliance with ARARs	Long-Term Effectiveness and Permanence	Reduction in Toxicity, Mobility, or Volume through Treatment	Short-Term Effectiveness	Implementa-bility	Cost[a] ($M)
GM-1: No Action	Not satisfied	Since Alternative GM-1 is not protective of human health and the environment, no ratings have been assigned to the other criteria.					
GM-2: In Situ Thermal Treatment of hot spots, control/ Treatment at Seaplane Lagoon using Permeable Reactive Barriers, Monitored Natural Attenuation, and Institutional Controls	Satisfied	Satisfied	◑	◑ to ●	○	◑	◑ 14.42
GM-3a: In Situ Thermal Treatment of hot spots shallow groundwater treatment using In Situ Chemical Oxidation, Monitoring, and Institutional Controls	Satisfied	Satisfied	●	◑	○ to ◑	◑ to ●	○ to ◑ 14.79
GM-3b: Hot spots and shallow groundwater treatment using In Situ Thermal Treatment, In Situ Bioremediation, Monitoring, and Institutional Controls	Satisfied	Satisfied	●	◑	○ to ◑	◑ to ●	● 12.42
GM-4: Treatment of Entire Plume using Groundwater Recirculation, Permeable Reactive Barriers, and Institutional Controls	Satisfied	Satisfied	●	●	◑	○	○ 16.75

Notes: ○ = Poor ◑ = Fair ● = Good

[a] Cost evaluation is based on the net present value. The lower cost receives a high rating because it is more cost effective. Cost estimates are shown as total cost. M = million.

*Note that Criteria 8 and 9, State and Community Acceptance, are not included on this table. The State has reviewed and commented on the alternatives and supports GM-3b as the preferred groundwater alternative. Community acceptance will be determined following the close of the public comment period and comments received on this Proposed Plan.

areas containing cobalt at Site 3 and hexavalent chromium at Site 4, where the soils are under buildings not slated for demolition. Contaminated soil will be removed to levels that are protective of human health and meet the remedial action objectives.

S-2: Institutional Controls. Following implementation of S-3a, institutional controls would be implemented to prevent residential use at Site 3 in the area of elevated cobalt concentrations in soil and at Site 4 in the area of elevated hexavalent chromium concentrations in soil (underneath buildings). In addition, the institutional controls for hexavalent chromium-impacted soil at Site 4 would prohibit intrusive activities without prior approval by the Navy/Base Realignment and Closure Cleanup Team.

No actions are needed for Site 21 soils, since the post-Feasibility Study boundary change moved the cobalt-impacted soil area from Site 21 to Site 3.

PREFERRED GROUNDWATER REMEDIAL ALTERNATIVE: OU-2B

As groundwater is not a source of drinking water within OU-2B at Alameda Point, the preferred groundwater remedial alternative is GM-3b.

Alternative GM-3b: Hot Spots and Shallow Groundwater Treatment using In Situ Thermal Treatment, In Situ Bioremediation, Monitoring, and Institutional Controls.

In situ bioremediation would be implemented to treat the groundwater in the hot-spot areas upon completion of, or in conjunction with, in situ thermal treatment. In situ bioremediation would be implemented for the remaining portion of the OU-2B plume to further reduce VOC concentrations. The remedial design will finalize the areas and depths of the shallow groundwater treatment to address vapor intrusion.

Based on data for the treatability studies, in situ thermal treatment of the hot spots will be completed prior to the Record of Decision, with in situ bioremediation, monitoring, and institutional controls to then be implemented in accordance with Alternative GM-3b.

Institutional controls will be applied over the VOC plume plus a 100-foot lateral buffer area. As groundwater is not a source of drinking water at Alameda Point, this remedy addresses potential vapor intrusion risk posed by VOCs in shallow groundwater.

Institutional controls for shallow groundwater will protect human health within the plume and 100-foot lateral buffer area until the groundwater meets the remedial goals for commercial receptors. During the remediation, land use controls would include no well drilling, no disturbance of remedy components, and no potable groundwater use. Engineered vapor intrusion mitigation systems would be required for all buildings constructed on the area overlying the impacted groundwater unless it is established that VOC concentrations do not pose an unacceptable risk due to the vapor intrusion pathway.

Following completion of cleanup to commercial use requirements, institutional controls would be continued to prohibit domestic use of groundwater and to prevent residential use of the plume area where the groundwater concentrations exceed residential risk-based levels, or require engineered vapor intrusion mitigation controls (such as vapor barriers and/or active or passive venting systems) for any residential use within the plume and buffer area. Areas outside the plume and buffer area will be available for unrestricted use.

COMMUNITY PARTICIPATION

The Navy, EPA, DTSC, and Water Board encourage the public to gain a more thorough understanding of Sites 3, 4, 11, and 21 located within OU-2B and the CERCLA activities that have been conducted at Alameda Point by visiting the information repository, reviewing the administrative record file, attending public meetings, and getting on the mailing list to receive regular project information. Restoration Advisory Board meetings are held on the first Thursday evening of every other month and are open to the public. For more information, visit the Navy's website, www.bracpmo.navy.mil.

There are two ways for you to provide your comments on this Proposed Plan:

1. Public Comment Period. During the public comment period from **April 30 to May 31, 2013,** you may use the comment form included with this Proposed Plan to send written comments to the BRAC Environmental Coordinator, Navy BRAC Program Management Office West, at 1455 Frazee Road, Suite 900, San Diego, California 92108-4310. You may also submit comments electronically via e-mail to the BRAC Environmental Coordinator (derek.j.robinson1@navy.mil) or via fax to (619) 532-0995.

2. Public Meeting. You may provide written or oral comments during the public meeting on **May 15, 2013,** which will be held in the Alameda Free Library, 1550 Oak Street, Alameda, California. A stenographer will be at the meeting to record all public comments.

After the public comment period is over, the Navy will review and consider the comments and in consultation with the regulatory agencies, the Navy may modify the preferred remedial alternative or select another cleanup remedy based on feedback from the community or on new information. Therefore, the community is strongly encouraged to review and comment.

A final decision will not be made until all comments are considered. Community acceptance will be evaluated after the public comment period for this Proposed Plan. The Navy will address these comments in a responsiveness summary presented in the ROD. All relevant site-related documents are available for review at the locations shown on Page 24.

PUBLIC COMMENT PERIOD

The 30-day public comment period for the Proposed Plan is from **April 30 to May 31, 2013.**

Submit Comments

There are two ways to provide comments during this period:

- Offer oral or written comments during the public meeting.
- Provide written comments by mail, e-mail, or fax (no later than **May 31, 2013**).

Public Meeting

The public meeting will be held on **May 15, 2013,** at Alameda Free Library, 1550 Oak Street, Alameda, California, from 6:30 pm to 8:00 pm. Navy representatives will provide visual displays and information on the environmental investigations and the remedial alternatives evaluated. You will have an opportunity to formally comment on this Proposed Plan.

Or you can send comments to:

Derek Robinson
BRAC Environmental Coordinator
Department of the Navy
BRAC Program Management Office West
1455 Frazee Road, Suite 900
San Diego, CA 92108-4310
Phone (619) 532-0951/Fax (619) 532-0995
derek.j.robinson1@navy.mil

INFORMATION REPOSITORIES

The Alameda Public Library and Alameda Point Information Repository provide public access to technical reports and other Alameda Point environmental information that supports this Proposed Plan.

Alameda Public Library

1550 Oak Street,
Alameda, CA 97501
Telephone: (510) 747-7777

Alameda Point Information Repository

Room 240, 950 West Mall Square, Bldg 1
(Alameda City Hall West)
Alameda, CA 94501
(both locations maintain new environmental documents during review periods)

Administrative Record File

Contact: Ms. Diane Silva, Records Manager
Naval Facilities Engineering Command Southwest
Naval Base San Diego, Building 3519
2965 Mole Road
San Diego, California 92132-5190
Telephone: (619) 556-1280

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Oakland, CA 94612
(510) 622-2438

Ms. Dana Barton

Section Chief, Community Involvement Section
U.S. EPA, Region 9
75 Hawthorne Street
San Francisco, CA 94105
(415) 972-3087

BRAC CLEANUP TEAM

The Base Realignment and Closure (BRAC) Cleanup Team (BCT) includes Remedial Project Managers from the Navy, EPA, DTSC, and Water Board. The primary goals of the BCT are to protect human health and the environment, coordinate environmental investigations, and expedite the environmental restoration of Alameda Point. The BCT Remedial Project Managers have collectively overseen all documents and investigations associated with OU-2B, including the Remedial Investigation and the Feasibility Study. Based on reviews and discussions of key documents, the regulatory agencies concur with the preferred soil and groundwater remedies for OU-2B as put forth in this Proposed Plan.

GLOSSARY OF TERMS

Applicable or Relevant and Appropriate Requirements (ARARs): Federal, state, and local regulations and standards determined to be legally applicable or relevant and appropriate to remedial (cleanup) actions at a CERCLA site.

California Department of Toxic Substances Control (DTSC): A part of the California Environmental Protection Agency and California's lead environmental regulatory agency. Its mission is to protect public health and the environment from toxic substances. DTSC is represented on the Navy's Base Realignment and Closure Cleanup Team for Alameda Point.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): Also known as "Superfund," this federal law was passed in 1980 and regulates environmental investigation and cleanup of sites identified as possibly posing a risk to human health and the environment.

Hexavalent Chromium: A form of chromium with industrial use as chromate pigments in dyes, paints, inks, and plastics, and as anti-corrosive agents in paints, primers, and other surface coatings.

Institutional Controls: Administrative and legal controls, established and administered to restrict use of property to limit human exposure to contaminated waste, soil, sediment, or groundwater, and protect the integrity of the remedy.

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

Operable Unit (OU): Term for each of a number of separate activities undertaken as part of a CERCLA cleanup. As a management tool to accelerate site investigation, cleanup, and reuse, the 34 CERCLA sites at Alameda Point are divided into ten OUs.

Petroleum Program: The program at Alameda Point to investigate and cleanup environmental contamination due to releases of petroleum products such as gasoline and jet fuel. By law, the petroleum releases cannot be addressed under CERCLA.

Polychlorinated biphenyls (PCBs): a group of man-made chemicals formerly (pre-1979) widely used in electrical capacitors and transformers, hydraulic fluids, heat transfer fluids, lubricants, and plasticizers.

Polycyclic Aromatic Hydrocarbons (PAHs): a class or group of semi-volatile organic compounds (see below) whose molecules consist of multiple benzene rings.

Preferred Remedial Alternatives: The remedial alternatives selected by the Navy, in conjunction with the regulatory agencies, based on the evaluation of remedial (cleanup) alternatives presented in the Feasibility Study.

Proposed Plan: The document that reviews the remedial alternatives presented in the Feasibility Study, summarizes the proposed preferred remedial alternative, explains the reasons for recommending the alternative, and notifies the community of the preferred alternative.

Record of Decision (ROD): A decision document that identifies the remedial alternatives chosen for implementation at a CERCLA site; the ROD is based on information from previous reports, the Proposed Plan, and on public comments and community concerns.

Resource Conservation and Recovery Act (RCRA): A federal law passed in 1976 that established the framework for treatment, storage, transportation, and disposal of solid and hazardous wastes.

San Francisco Bay Regional Water Quality Control Board (Water Board): The California Water Quality Authority, which is part of the California Water Quality Control Board, within the California Environmental Protection Agency. Its mission is to preserve, enhance, and restore California's water resources. The Water Board is represented on the Navy's Base Realignment and Closure Cleanup Team for Alameda Point.

Semi-volatile organic compounds (SVOCs): organic (carbon-containing) compounds that evaporate (volatize) relatively slowly.

Total Petroleum Hydrocarbons (TPH): These include petroleum-based substances derived from crude oil processing, such as fuels, motor oils, lubricants, petroleum solvents, and used oils.

United States Environmental Protection Agency (EPA): The federal agency that is charged with protecting human health and the environment. The EPA is represented on the Navy's Base Realignment and Closure Cleanup Team for Alameda Point.

Volatile Organic Compounds (VOCs): organic (carbon-containing) compounds that evaporate (volatilize) readily at room temperature. VOCs are found in industrial solvents commonly used in dry cleaning, metal plating, and machinery degreasing operations.

ATTACHMENT 1
APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS)

CERCLA requires that remedial actions meet federal or state (if more stringent) environmental standards, requirements, criteria, or limitations that are determined to be ARARs. Substantive provisions of the requirements listed below are ARARs that must be met by the preferred remedy.

Chemical-Specific ARARs

Federal

Cal. Code Regs. tit. 22, § 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100 for characterizing waste prior to offsite disposal

Cal. Code Regs. tit. 22, § 66264.94(a)(1), (a)(3), (c), (d), and (e) for soil and groundwater cleanup levels to lowest levels technologically and economically achievable

40 CFR § 131.36(b), 131.37, and 131.38 ambient water quality standards for the protection of surface water from potential migration of site groundwater

State

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) for characterizing waste prior to offsite disposal

Cal. Water Code §§ 13241, 13243, 13263(a), 13269, and 13360 of the Porter-Cologne Act as enabling legislation as implemented through the beneficial uses, Water Quality Objectives (WQOs), Waste Discharge Requirements (WDRs), promulgated policies of the Water Quality Control Plan (WQCP) for the San Francisco Bay Basin for groundwater

WQCP for the San Francisco Bay Basin establishing WQOs, beneficial uses, and waste discharge limitations for groundwater

State Water Resources Control Board Resolution No. 88-63 (Sources of Drinking Water Policy) is applicable for groundwater

Location-Specific ARARs

Federal

National Historic Preservation Act of 1966, as amended (16 USC § 470-470x-6 and it's implementing regulations 36 C.F.R. pt 800) if buildings are determined to be eligible for listing

16 U.S.C. § 703 for migratory birds known to be present near OU2B

Coastal Zone Management Act (16 USC §1451-1466) and 15 C.F.R. §930 for activities that affect the coastal zone

Action-Specific ARARs

Federal

Cal. Code Regs. tit. 22, § 66262.10(a), 66262.11 and Cal. Code Regs. tit. 22, § 66264.13 (a) and (b) are applicable for waste characterization

Cal. Code Regs., tit. 22, § 66262.34 for waste accumulation

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

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 waste staged

CCR tit. 22, § 66264.90(c) and CCR tit. 22, § 66264.91(a)(4) and (c) – relevant and appropriate for groundwater monitoring.

Cal. Code Regs. tit. 22, § 66264.93 defines constituents of concern

Cal. Code Regs. tit. 22, §§ 66264.97(b)(1)(A), 66264.97 (b)(1)(D)(1) and (b)(1)(D)(2). 66264.97(b)(2), 66264.97(b)(4) – (7), 66264.97(e)(6), 66264.97(e)(12)(A) and (B), 66264.97(e)(13), 66264.97(e)(15) are general monitoring requirements

Cal. Code Regs. tit. 22, § 66264.98(e)(1)-(e)(5), 66264.98(i), 66264.98(j), 66264.98(k)(1)-(k)(3), 66264.98(k)(4)(A), 66264.98(k)(4)(D), 66264.98(k)(5), 66264.98(k)(7)(C) and (D), 66264.98(n)(1), 66264.98(n)(2)(B), and (n)(2)(C) provide detection monitoring requirements

Cal. Code Regs. tit. 22 § 66264.100(a), (d), and (g)(1) requires a corrective action monitoring program to demonstrate the effectiveness of the corrective action program

BAAQMD Regulation 2, Rule 2-301, Regulation 6-11, Regulation 8-2-301, requires BACT and emission rate limits if exceeded

BAAQMD Regulations 6-301, 8-40-304, 8-40-305, 8-40-306.1, 306.2, 306.3, 306.4, 306.6 for dust and vapor emissions from excavation and stockpiles

State

Cal. Health & Safety Code §§ 25202.5, 25222.1, 25233(c), 25234, and 25355.5(a)(1)(C) and Cal. Civ. Code § 1471 and Cal Code Regs., tit. 22 § 67391.1 are state ARARs for institutional controls

Proposed Plan Comment Form
Alameda Point Operable Unit 2B

The public comment period for the Proposed Plan for Sites 3, 4, 11, and 21 at Alameda Point, Alameda, California, is from **April 30 to May 31, 2013**. A public meeting to present the Proposed Plan will be held at the Alameda Free Library, 1550 Oak Street, Alameda, California, on **May 15, 2013, from 6:30 pm to 8:00 pm**. You may provide comments verbally at the public meeting, where all comments will be recorded by a court reporter. 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 **May 31, 2013**. After completing your comments and your contact information, please mail this form to the address provided on the cover page. You may also submit this form to a Navy representative at the public meeting. Comments are also accepted by e-mail; please address e-mail messages to derek.j.robinson1@navy.mil and by fax: (619) 532-0995.

Name: _____

Representing: (optional) _____

Phone Number: (optional) _____

Address: (optional) _____

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

Comments:

Attn: Derek Robinson
BRAC Environmental Coordinator
Department of the Navy
BRAC Program Management Office West
1455 Frazee Road, Suite 900
San Diego, CA 92108-4310

Proposed Plan for Operable Unit 2B
Installation Restoration Sites 3, 4, 11, and 21
Former NAS Alameda
Alameda, California