



**FINAL  
PROPOSED PLAN  
NAVAL WEAPONS STATION SEAL BEACH, IRP SITE 74  
SEAL BEACH, CALIFORNIA  
JUNE 2024**



The United States Department of the Navy (Navy) invites the public to comment on the **Installation Restoration Program (IRP)\*** Site 74 **Proposed Plan**. IRP Site 74 is located on Naval Weapons Station (NAVWPNSTA) Seal Beach, California (Figure 1). The **California Environmental Protection Agency Department of Toxic Substances Control (DTSC)**, and the **California Regional Water Quality Control Board Santa Ana Region (RWQCB)** have worked with the Navy and concur with this Proposed Plan.

This Proposed Plan presents the four remedial alternatives evaluated to address soil contamination at IRP Site 74 at NAVWPNSTA Seal Beach. The preferred alternative to achieve the **Remedial Action Objectives (RAOs)** established for IRP Site 74 is Alternative 4: Amphibious Excavation.



**Figure 1: NAVWPNSTA Seal Beach IRP Site 74**

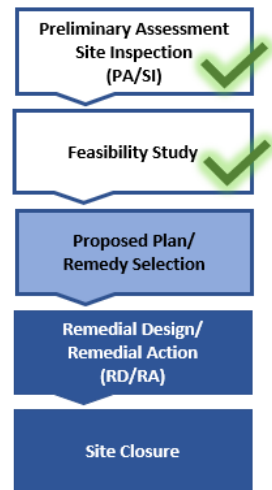
The Navy's Environmental Restoration Program was formed by the Department of Defense (DoD) to protect human health and the environment, and where possible, to restore sites impacted by past DoD operations. The Environmental Restoration Program provides funding for Navy installations to locate, investigate, and clean up contaminated sites, as is being done for IRP Site 74. Based on results from the risk assessments, **chemicals of potential concern (COPCs)** pose a potentially unacceptable risk to human health or the environment; therefore, remedial

alternatives were evaluated to address these risks.

The preferred remedy (Alternative 4) accomplishes the goal of reducing risk to **ecological receptors** and hypothetical future human receptors, while limiting habitat destruction. The following sections describe the regulatory process the Navy has followed to arrive at this cleanup decision.

### The CERCLA Process

The Navy is issuing this Proposed Plan as part of its public participation responsibilities under Section 117(a) of **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**, **Superfund Amendments and Reauthorization Act (SARA)**, Section 300.430(f)(2) of the **National Oil and Hazardous Substances Contingency Plan (NCP)**, and **Executive Order 12580** which delegates the implementation of the CERCLA remediation process to the Navy. The flowchart to the right illustrates the phases of the CERCLA process. A Focused Site Inspection (FSI) and **Feasibility Study (FS)** have been completed for IRP Site 74. The site is currently in the Proposed Plan/Remedy Selection phase of the CERCLA process.



This Proposed Plan summarizes information detailed in the FSI Phase II Report (Naval Facilities Engineering Systems Command [NAVFAC] Southwest, 2002), Tier II **Ecological Risk Assessment (ERA)** (Tier II ERA; NAVFAC Southwest, 2005), 2006 Engineering Evaluation/Cost Analysis (NAVFAC Southwest, 2006), supplemental 2009 Net Environmental Benefit Analysis (NEBA; NAVFAC Southwest, 2009), and

### NOTICE

**Public Comment Period:**  
August 1, 2024  
through  
August 31, 2024

**Public Meeting:**  
Thursday August 15, 2024  
Seal Beach Mary Wilson Public  
Library, 707 Electric Avenue,  
Seal Beach, California  
6 p.m. to 8 p.m.

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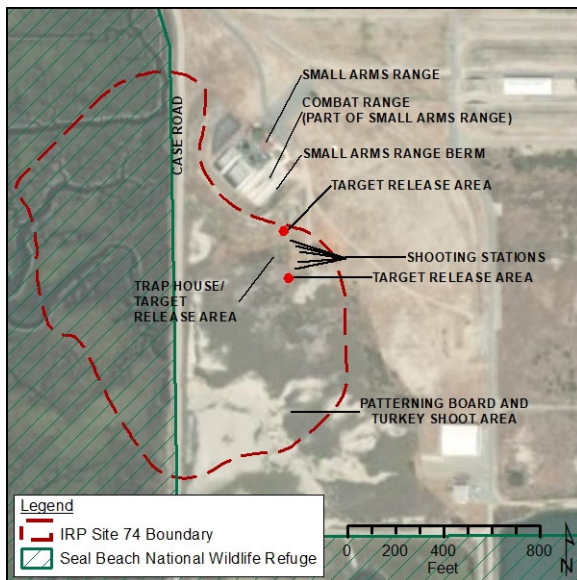
\*Words in **bold italic** type are defined in the Glossary on pages 9-10

Case Road Surveys (included in Appendix A of the FS; Multi-Media Environmental Compliance Group [MMEC Group], 2022). These documents are contained in the **Administrative Record** file for this site. 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 location listed on Page 9. Information about the AR, the public meeting for this Proposed Plan, and submitting comments during the 30-day public comment period is also presented on Page 9.

In response to feedback from the community, new information, and consultation with the regulatory agencies, the Navy may modify the preferred remedial alternative or select other clean-up remedies. 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 comments received during the public comment period and public meeting are considered. The ROD will include a Responsiveness Summary that explains how the Navy considered comments received during the public comment period and meeting. Based on the remedy selected in the ROD, the Navy will plan for and implement the final selected alternative during the Remedial Design/Remedial Action (RD/RA) phase of the CERCLA process. Ultimately, implementation of the RA will facilitate IRP Site 74 in achieving the RAOs.

## Site History and Description

NAVWPNSTA Seal Beach is 26 miles south of metropolitan Los Angeles. NAVWPNSTA Seal Beach consists of 5,000 acres of land along Anaheim Bay on the Pacific Coast and within the City of Seal Beach in Orange County, California, as shown on Figure 1 (page 1).

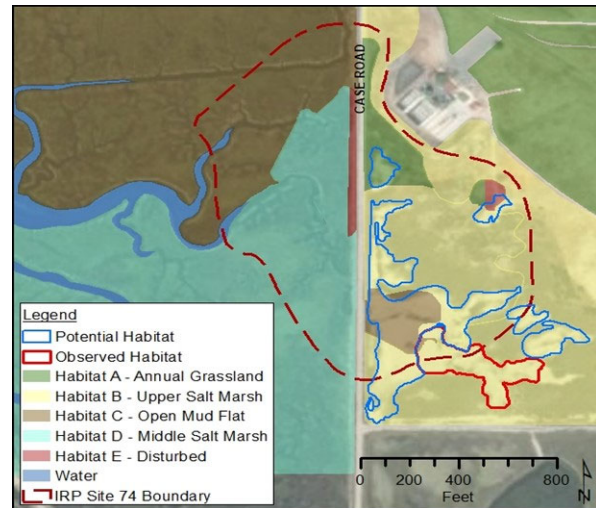


**Figure 2: IRP Site 74 Site Plan**

A portion of IRP Site 74 is within the Seal Beach National Wildlife Refuge (NWR). The site (Figure 2) is bisected by Case Road; the portion of the site to the west of Case Road falls within the NWR. The site is approximately 23 acres in size, consisting of

10.4 acres of upland habitat to the east of Case Road and 13 acres of wetland habitat to the west of Case Road.

Avian species of concern include the endangered California least tern and light-footed Ridgways's rail. In addition, four types of rare Tiger beetles are known to occur on NAVWPNSTA Seal Beach (Figure 3).



**Figure 3: Tiger Beetle Habitats**

IRP Site 74, more commonly referred to as the Old Skeet Range, was once an active skeet and trap range constructed in the late 1960s. The Old Skeet Range consisted of two skeet houses, a trap house and a trailer. Old Skeet Range members typically used 12-gauge shotguns to shoot the clay targets flung from the skeet or trap houses by a mechanical arm. Maximum ranges of the shot (pellets) were estimated at approximately 250 yards (750 feet) from the concrete pad area (Wayland, 1999; Wallace, 1999). The maximum range for the clay targets was estimated at approximately 100 feet from the concrete pad area. Shot (made of an alloy of lead and antimony) is the primary source of lead and antimony contamination at the site. Because of concerns that waterfowl and other wildlife foraging at IRP Site 74 could ingest the shot and soil with residual lead and antimony from the spent shot, the range was closed down in the early 1990s.

A Small-Arms Range, which began operation in the late 1950s, is located north of IRP Site 74. Metal fragments have been found along Case Road indicating a ricochet problem from this Small-Arms range. In 2016, in an effort to reduce ricochets, the Small-Arms Range was renovated to change the berm from a soil berm to a ballistic rubber berm. Sidewalls and overhead baffles were also added. A reduction in the frequency of ricochets was observed following the renovation and the closure of the nearby Combat Range in 2017. In addition, the Base no longer allowed outside parties to use the Small Arms Range, nor were shotguns allowed. The Small-Arms Range was placed on inactive status in 2021 and it is expected to remain inactive indefinitely.

## Site Investigations

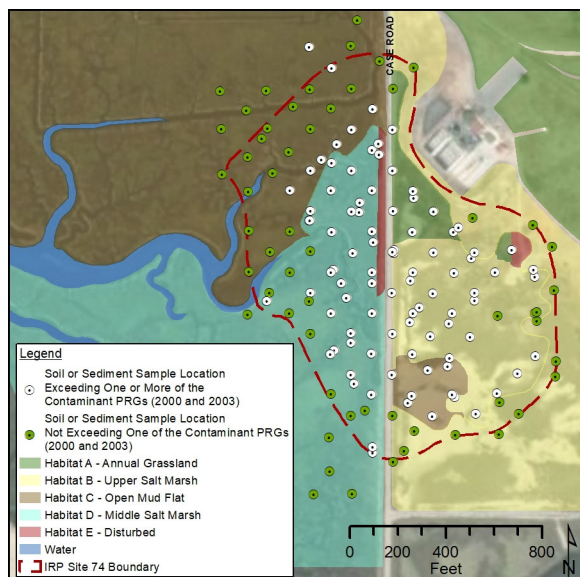
In 2000, as part of the FSI Phase II (NAVFAC SW, 2002), the Navy performed sampling and analysis at IRP Site 74 to provide data for evaluating ecological and human health risks. Previous investigations at IRP Site 74 had collected samples of both



“soil” (from Upland, or dry areas) and “sediment” (from Wetland areas). Samples were collected and analyzed from 52 surface soil samples (0.5 to 1.0 foot below ground surface [bgs]), 21 shallow subsurface soil samples (2.0 to 2.5 feet bgs), and 66 sediment samples (0 to 0.25 foot below sediment surface [bss]). Lead, antimony, and polycyclic aromatic hydrocarbons (PAHs) are the primary COPCs associated with skeet ranges. Therefore, soil samples were analyzed for lead, antimony, PAHs, and shot; sediment samples were analyzed for lead, antimony, and shot. PAHs were not analyzed in sediment because fragments of the clay targets were not observed in the wetland area. Outside of the wetland area, a broken clay target was observed, and was also sampled and analyzed for PAHs.

PAHs were detected in the broken clay target sample at concentrations significantly higher than those found in the soil samples, indicating the broken targets are likely the source of PAH contamination at IRP Site 74. The FSI Phase II Report recommended that a removal action be conducted to mitigate risks to human health and the environment at IRP Site 74 (NAVFAC SW, 2002).

In 2003, additional samples, including twelve soil samples, twelve sediment samples, 35 tissue samples from birds and mice, and 35 plant samples were collected at IRP Site 74 and at reference locations to support the Tier II ERA (NAVFAC SW, 2005). The objectives of the Tier II ERA report were to define the area of the ecological risks and develop **remediation goals** (cleanup goals) for lead and antimony that would be protective of the most sensitive ecological receptors. Lead, antimony, and PAHs were analyzed in all soil samples. Lead and antimony were analyzed in all sediment samples. Additionally, although the Tier II ERA only assessed risks from the metals lead and arsenic, a subset of the soil and sediment samples (three samples each) collected for the Tier II bioaccumulation studies and all twelve samples collected for the Tier II bioassays were analyzed for additional metals (Contract Laboratory Program Target Analyte List metals excluding mercury and cyanide). Figure 4 shows all of the sampling locations.



**Figure 4: Soil and Sediment Sample Locations**

In 2006, the Navy prepared an Engineering Evaluation/Cost Analysis to evaluate potential capping and removal action alternatives for IRP Site 74. In 2009, to supplement this document, the Navy also prepared a Net Environmental Benefit Analysis to determine which strategies would provide the greatest net environmental benefit to the public. During development of these documents, the Navy determined that it would be more appropriate to transition to the remedial action process, which includes preparation of an FS followed by this Proposed Plan.

Since 2011 the Seal Beach environmental staff have conducted surveys of Case Road to identify the frequency and distribution of ricochets from the active Small-Arms Range. A reduction in the frequency of ricochets was observed following renovations and the discontinued use of the Combat Range portion of the Small-Arms Range in 2017. The Small-Arms Range was placed on inactive status in 2021 and it is expected to remain inactive indefinitely.

During preparation of the original FS in 2014, DTSC raised concerns that the FSI Phase II Report did not evaluate copper and arsenic, and that previous investigations had not analyzed samples for chemicals of gun powders. It was recommended that confirmation samples be collected and analyzed for these chemicals during excavation. Additionally, the Final FS included an evaluation of copper and arsenic based on data collected during the Tier II ERA. During preparation of the original FS in 2014, DTSC also raised concerns on the potential existence of chemicals of gun powders. To address this concern, it was recommended that confirmation samples collected within 50 feet of the skeet firing stations will also be analyzed for explosives (nitroglycerine).

#### **Nature and Extent of Contamination**

The skeet and trap shooting activities have resulted in the observed distribution of solid shot and broken clay targets within IRP Site 74.

Stray bullets from the nearby Small-Arms Range represent another potential source for the lead contamination. PAHs are associated with the clay and tar target fragments that were distributed within the soil footprint area at IRP Site 74. Copper and arsenic are also used to increase the hardness of shot, therefore the FS included an evaluation of these metals.

Lead is the primary **chemical of concern (COC)** in soil and sediment at IRP Site 74. Lead was detected above the upper limit background value of 35.7 milligrams per kilogram (mg/kg) in the majority of surface soil (concentrations ranging from 5 to 80,300 mg/kg) and sediment (concentrations ranging from 8.7 to 154,000 mg/kg) samples (NAVFAC SW, 1997). Soil and sediment samples that exceeded residential and industrial screening levels (RSLs and ISLs) were located within a 160-degree arc and a distance of approximately 800 feet from the shooting area. Lead concentrations at depth (greater than or equal to 2 feet bgs) are much lower than that of surface samples, often below the background value for lead (35.7 mg/kg), showing that chemicals are concentrated in the surface soil (from 0 to 0.5 foot bgs).

Shot was found in surface soil (0 to 0.5 foot bgs) and sediment samples (0 to 0.25 foot bgs), and some samples contained more

than 100 shot per kilogram of soil or sediment sample. The shot in soil and sediment samples was distributed within a 180-degree arc, with the greatest number of shot found in samples collected within approximately two acres within this arc and approximately 250 to 450 feet from the target release area. The shot present in samples varied in size, ranging from 2 to 4 millimeters.

Antimony was frequently detected at locations where lead concentrations were higher and exceeded the background value (35.7 mg/kg), residential preliminary remediation goals (rPRGs), RSL, and ISL. As with lead, antimony concentrations decreased with depth, with antimony not detected in most samples collected at greater than or equal to 2 feet bgs.

PAH detections were limited to surface soil samples and were not reported in shallow subsurface samples. The maximum concentrations of seven PAHs (benzo(a)anthracene [39.5 mg/kg], benzo(a)pyrene [61.5 mg/kg], benzo(b)fluoranthene [47 mg/kg], benzo(k)fluoranthene [34.5 mg/kg], chrysene [47.5 mg/kg], dibenzo(a,h)anthracene [22 mg/kg], and indeno(1,2,3-c,d)pyrene [54 mg/kg]) were detected above their respective rPRGs. The 95 UCL concentrations of five PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-c,d)pyrene) exceeded the rPRGs. A majority of the PAHs detected above the rPRGs were concentrated in soil samples located in the immediate vicinity (within approximately 100 feet) of the target release area.

Additionally, concentrations of benzo(a)pyrene, the PAH that is the primary contributor to risk, decreased with depth like the concentrations of lead and antimony.

## Summary of Site Risks

Within the context of environmental investigations and actions, risk is the likelihood or probability that a substance, when released to the environment, will cause adverse effects on exposed people and/or ecological receptors. The potential risk to human and ecological receptors at IRP Site 74 is summarized below, and is based on concentrations at the site, the receptors present, and routes of exposure.

### Human Health Risk Assessment

For people, risk is further classified as carcinogenic (may cause cancer) or non-carcinogenic (may cause other illnesses). The NCP indicates that excess lifetime cancer risks (ELCR) posed by a site should not exceed a range of between one in one million ( $1 \times 10^{-6}$ ) and one hundred in one million ( $1 \times 10^{-4}$ ). For non-carcinogenic substances, the United States Environmental Protection Agency (USEPA) established that the total **hazard index (HI)** for an individual or group of individuals should not exceed 1. Hazard quotients (HQs) are calculated for each COC. The HI is then calculated by adding the HQs for substances that affect the same target organ or organ system, for example liver or lungs, with the HQ equal to the ratio of the potential exposure to the substance and the level at which no adverse effects are expected. Risk assessments are designed to provide a margin of safety to protect public health and the environment by using conservative assumptions that ensure risks are not underesti-

mated.

The soil and sediment analytical results from the FSI Phase II (NAVFAC SW, 2002) were used to estimate ELCR and non-cancer health effects to human health for the screening level evaluation. In the FSI Phase II Report, residential exposure was evaluated using screening level methodology where concentrations were compared to USEPA residential screening levels (rPRGs), assuming a hypothetical future residential land use scenario in which people could be exposed in both the wetland and upland areas. The maximum and 95 percent upper confidence limit (UCL) concentrations in soil and sediment analytical data were compared with applicable background values for NAVWPNTA Seal Beach (NAVFAC SW, 1997). Soil concentrations were also compared to USEPA Region 9 rPRGs (USEPA, 2000). Cancer risk was calculated for PAHs, and non-cancer health effects were calculated for each COC (lead, antimony, and PAHs). The results of the screening-level assessment are summarized below.

- Antimony and lead exceeded their corresponding non-cancer rPRGs (31 mg/kg for antimony and 400 mg/kg for lead at the time the FSI Phase II report was prepared) by several orders of magnitude yielding an HQ of 12, which exceeded the non-cancer threshold of 1.
- The 95 UCL concentration for lead in soil was 9,609 mg/kg. At the time that the FSI Phase II report was prepared, the residential screening level for lead was a rPRG of 400 mg/kg. Currently, the DTSC RSL for lead in soil is 80 mg/kg. Lead concentrations at IRP Site 74 exceeded the DTSC RSL for lead (80 mg/kg) in soil and the background value (35.7 mg/kg) by several orders of magnitude.
- Cancer risk from exposure to PAHs in soil was estimated to be  $1 \times 10^{-4}$ , and the non-cancer HI was less than 0.1 for PAHs at IRP Site 74. Elevated PAHs are collocated with the high lead concentrations. PAHs were not analyzed in sediment because clay target fragments were not observed in the wetland area; therefore, neither cancer nor noncancer risk were estimated for exposure to PAHs in sediment.
- A combined HI of 60 represents the overall human health non-cancer HI for IRP Site 74, which exceeded the non-cancer threshold of 1.
- The maximum concentration of copper was 213 mg/kg, which is less than the RSL of 3,100 mg/kg by more than an order of magnitude. The levels of copper at the site do not appreciably impact the HI result.
- The maximum arsenic concentration was 200 mg/kg, which yielded a residential ELCR of  $3 \times 10^{-4}$ , which exceeded the risk management range. It should be noted that this maximum concentration is within the proposed remediation footprint, and thus is anticipated to be incidentally addressed by the preferred action.

Following the remedial action, confirmation sample results for the full suite of metals, as well as for PAHs, and nitroglycerin (within 50 feet of the skeet firing stations) will be used to calculate residual human health risks and to address recommendations made by DTSC.

## **Ecological Risk Assessment**

Ecological risks were assessed initially in a screening-level ERA, followed by a more detailed Tier II ERA.

An initial screening-level ERA was performed as part of the FSI Phase II (NAVFAC SW, 2002). Due to the high concentrations of lead present at IRP Site 74, risks were assumed to be present and data were combined to estimate potentially “safe” concentrations of lead and shot containing lead in soil to be used as ecological preliminary remediation goals (PRGs). These ecological PRGs were developed based on four wildlife receptors at the site (Ridgway’s rail, American kestrel, mourning dove and ground squirrel). Soil and sediment sample data were compared to the ecological PRGs and to background values, as available. Accidental ingestion of the residual lead and antimony from spent shot and soil contaminated with these metals was identified as a primary exposure pathway. Ecological risks from this accidental ingestion were calculated. The results of the screening-level ERA identified risks for terrestrial receptors from lead and antimony in soil and sediments. Lead was identified as the primary contributor of risk to these receptors.

A Tier II ERA (NAVFAC SW, 2005) evaluated risks in both the upland and wetland habitats of the site. In support of the Tier II ERA, additional data were collected including co-located soil/sediment and plant and animal tissue samples. Risks to ecological receptors at IRP Site 74 were evaluated using a weight-of-evidence approach. Lines of evidence for the assessment included both site-specific measures (e.g., concentrations in tissues and food ingestion models) and literature measures (e.g., effects concentrations and toxicity reference values).

Risks to birds from ingestion of shot was also assessed using dietary ingestion models. Birds may mistake shot for grit or rough plant matter, needed to aid digestion in the gizzard.

The results of the Tier II ERA did not identify risks to plant communities. The results of the Tier II ERA indicated that lead and antimony concentrations in sediment presented risk to sediment invertebrates (other chemicals did not contribute significantly), and that antimony and lead presented risks to resident birds and mammals. The Belding’s savannah sparrow was the most sensitive species to lead, and the ornate shrew was the most sensitive species to antimony. Later ecological risk modeling conducted in response to California Department of Fish and Wildlife comments on the 2014 Final FS Report found that the light-footed Ridgway’s rail was the most sensitive receptor to lead shot in soil and sediment. The Tier II ERA recommended that remedial alternatives be evaluated to address these risks.

## **Remedial Action Objectives**

RAOs are site-specific goals for protecting human health and the environment from site risks. RAOs are formulated during the FS to provide a means of identifying and assessing potential remedial alternatives to achieve site cleanup. The RAOs for IRP Site 74 are:

- Reduce risk to birds from ingestion of food items and incidental ingestion of soil and sediment containing elevated concentrations of lead and lead shot.

- Reduce risk to mammals from ingestion of food items and incidental ingestion of soil and sediment containing elevated concentrations of lead and antimony.
- Reduce potential future risk to human health from exposure to soil and sediment containing elevated concentrations of lead and antimony.
- Limit habitat destruction to protect species of concern.

The RAOs also provide the basis for developing numerical remediation goals, which are used to identify the extent of the clean-up (i.e., the remediation areas) needed to achieve the RAOs. Remediation goals were not developed for human receptors, because future risk to human health from exposure to soil and sediment will be reduced by achieving the remediation goals developed for ecological receptors. The following are the numerical remediation goals for lead in soil and sediment, which will be calculated as an area-weighted average after remediation:

- Lead in soil—Upland Area—68 mg/kg
- Lead in sediment—140 mg/kg
- Shot containing lead—164 mg/kg
- Lead in rare tiger beetle habitat soil—1,700 mg/kg (also to be a “not to exceed” or maximum value)

## **Remedial Alternatives**

Remedial alternatives were developed and evaluated in the FS Report for IRP Site 74. The remedial alternatives were evaluated against the first seven of the nine criteria required by CERCLA and as specified in the NCP (Figure 5, next page). The two final criteria are state acceptance and community acceptance. State acceptance is documented in this Proposed Plan. Community acceptance will be evaluated after the public comment period for this Proposed Plan and will be addressed in a Responsiveness Summary in the ROD. In response to feedback from the community during the public comment period or due to new information and in consultation with the regulatory agencies, the Navy may modify the preferred remedial alternative or select other cleanup remedies. Therefore, the community is strongly encouraged to review and comment. A final decision will not be made until all comments are considered.

Four remedial alternatives for IRP Site 74 were developed for detailed analysis in the FS Report and are summarized in Table 1. The four alternatives determined to be the most suitable for addressing the RAOs for IRP Site 74 are:

- Alternative 1: No Action (Baseline Condition for Comparison)
- Alternative 2: Standard Excavation
- Alternative 3: Capping
- Alternative 4: Amphibious Excavation (Preferred Alternative)

The area for which the alternatives apply are shown in Figures 6 and 7.

Alternative 2 includes excavation of soil from the upland area and sediment from the wetland area. As shown in Figure 6, approximately 9.63 acres of soil in the upland area (shaded green)



Figure 5: Description of the Nine NCP Evaluation Criteria

and 2 acres of sediment in the wetland area (shaded brown) would be removed to a depth of 1 foot. Standard excavation equipment (e.g., long-reach excavator with an enclosed bucket) would be used to remove the soil and sediment that contain lead, antimony, and PAHs (in soil only) exceeding remediation goals. Remedial activities would not be performed during the nesting season (April through September).

Prior to remediation activities, an ecological risk assessment field verification and tiger beetle population surveys would be conducted, and the findings and conclusions would be used in the remedial design (RD) or RD work plan.

For the soft-bottomed wetland area, a long-reach excavator, stationed adjacent to the removal area would be used to remove as much sediment as possible with the long-reach arm. For the remaining sediment removal areas that are unreachable with the long-reach excavator, crane mats (or equivalent material) may be used to support the heavy equipment to these areas. Prior to remedial activities, sheet piles would be installed around the perimeter of the sediment excavation area to help control and divert water away. A silt curtain would also be installed around the perimeter of the sediment excavation area.

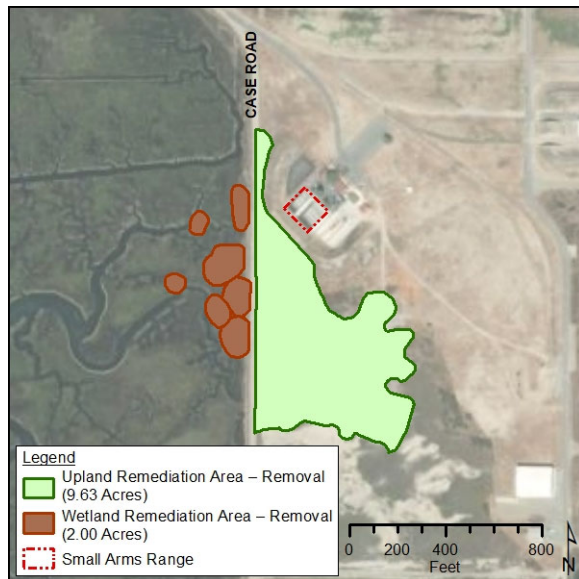
A staging and dewatering area would be constructed in the upland area or area adjacent to the site. Sediment drying beds would be constructed in the staging area to passively dewater the excavated sediment prior to offsite transportation and disposal. The sediment dewatering water would be collected and analyzed for lead and antimony prior to discharge back to the wetland, the sanitary sewer, or disposed offsite, depending on the analytical results.

The excavated soil and dewatered sediment would be chemically analyzed to determine treatment and disposal requirements.

Table 1. Summary of Remedial Alternatives Evaluated for IRP Site 74

Alternative	Description	Total Cost
<b>Alternative 1: No Action</b>	The No Action Alternative is required by CERCLA and the NCP to be evaluated as an alternative, and also serves to reflect the baseline condition from which to compare the other alternatives. No actions are performed for this alternative.	\$0
<b>Alternative 2: Standard Excavation</b>	Excavation of soil from the upland area and sediment from the wetland area. Standard excavation equipment (e.g., long-reach excavator with an enclosed bucket) would be used. Pre-remediation biological surveys would be performed. Onsite dewatering of sediment would be conducted. Excavated soil and sediment would be transported offsite by truck to a treatment and disposal facility. Excavated areas would be backfilled with imported soil and restored; wetland areas would be filled to an additional 1 foot above existing grade to create a buffer zone for sea level rise. Post-remediation biological monitoring of sensitive species and habitat would also be performed during a restoration period.	\$12,600,000
<b>Alternative 3: Capping</b>	Contaminated soil in the upland area and sediment in the wetland area would be capped with low permeability materials. <b>Institutional Controls (ICs)</b> and long-term monitoring would be required. <b>Wetland mitigation</b> would be required since a loss of the same quality of wetland habitat may occur.	\$13,500,000
<b>Alternative 4: Amphibious Excavation (Preferred Alternative)</b>	Alternative 4 contains the same components as Alternative 2, except sediment in the wetland area would be removed using amphibious excavation equipment instead of standard excavation equipment.	\$13,400,000





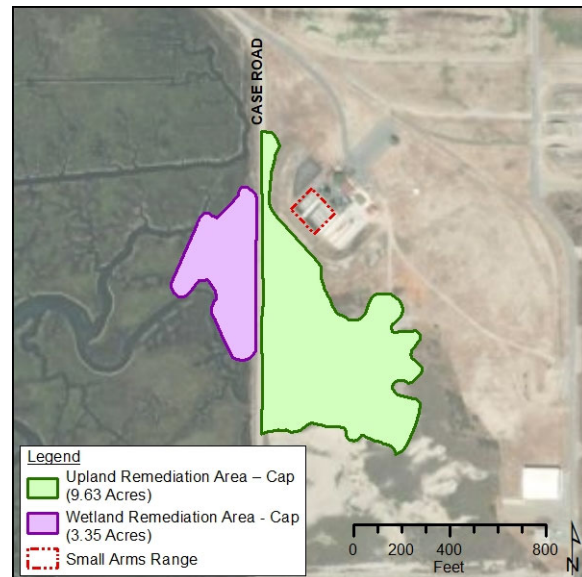
**Figure 6: Extent of Removal for Alternatives 2 and 4**

The soil and sediment would be transported by truck to a treatment and disposal facility where they would be solidified or stabilized, if required (depending on analytical results), and disposed of offsite at a permitted landfill.

The excavated areas in the Upland Remediation Area would be backfilled with imported soil and re-vegetated to achieve pre-removal elevations and site conditions.

The excavated areas in the Upland Remediation Area would be backfilled with imported soil and re-vegetated to achieve pre-removal elevations and site conditions. The excavated areas in the Wetland Remediation Area would be filled to an additional 1 foot above existing grade with sediment of the same quality as existing sediment to create a buffer zone for sea level rise due to climate change. Confirmation soil and sediment samples would

be collected to ensure remediation goals were achieved. Additionally, ecological and human health risk calculations would be performed using confirmation sample results following remediation. Post-remediation biological monitoring would also be performed during the restoration period.



**Figure 7: Extent of Capping for Alternative 3**

Under Alternative 3, 9.63 acres of contaminated soil in the upland area and 3.35 acres of sediment in the wetland area would be capped with low permeability materials. As shown in Figure 7, a larger wetland area would be impacted (capped) under Alternative 3 than would be removed (excavated) under Alternatives 2 and 4 to ensure continuity of the capped area. Under Alternatives 2 and 4, 2 acres of wetland sediment, shaded brown in Figure 6, would be removed while under Alternative 3, 3.35 acres of wetland sediment, shaded pink in Figure 7 would be

**Table 2. Comparative Analysis of IRP Site 74 Remedial Alternatives Based on the NCP Evaluation Criteria**

NCP Criteria	Alternative 1: No Action <sup>a</sup>	Alternative 2: Standard Excavation	Alternative 3: Capping	Alternative 4: Amphibious Excavation <sup>b</sup>
1. Overall protection of human health and the environment	NO	YES	YES	YES
2. Compliance with ARARs	NO	YES	YES	YES
3. Long-Term effectiveness and performance	○	●	◐	●
4. Reduction of toxicity, mobility, or volume through treatment	○	◐	○	◐
5. Short-Term effectiveness	◐	◐	○	◐
6. Implementability	●	◐	○	◐
7. Cost	\$0	\$12,600,000	\$13,500,000	\$13,400,000
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			

Notes:

a. Alternative 1 does not meet the protectiveness criterion; therefore, an evaluation against the ARARs criterion was not performed.

b. Alternative 4 is the preferred alternative.

ARAR = Applicable or Relevant and Appropriate Requirements; NCP = National Oil and Hazardous Substances Contingency Plan; ROD = Record of Decision

○ = Low; ◐ = Medium; ◑ = Medium to High; ● = High

removed; a difference of 1.35 acre). The low permeability cap would act as an effective physical, hydraulic, and chemical environmental barrier. Once applied, the material will hydrate, coalesce, and transform into a continuous soft body of material.

Placement of the caps would be achieved using standard excavation equipment for the upland area and amphibious excavation equipment in the wetland area. Prior to capping activities in the wetland area, a barrier such as a silt curtain would be installed around the perimeter of the capping area. The remedial activities would not take place during the nesting season (April - September).

Implementation of ICs would be required to limit the future disruption of the low permeability cap. Long-term monitoring would be performed to evaluate the low permeability cap effectiveness. Long-term monitoring activities to evaluate cap performance may include physical surveys of the low permeability cap thickness, and collection of soil, sediment, or surface water samples. Maintenance of the low permeability cap materials would be performed as needed. As required by the USEPA, Five-Year Reviews would also be conducted to assess remedy protectiveness.

The low permeability capping of approximately 3.35 acres of wetland under Alternative 3 may result in the loss of wetland habitat because it is uncertain whether the restored wetland area will be of the same quality and able to provide the endangered species habitat that is currently present at the site. To offset this loss, a wetland mitigation plan would be developed as part of the RD/remedial action work plan. The mitigation plan will address the need to construct a wetland at another location within NAVWPNSTA Seal Beach. The new wetland would be monitored for a period of 5 years after completion.

Alternative 4 contains the same components as Alternative 2, except sediment in the wetland area would be removed using amphibious excavation equipment instead of standard excavation equipment. Marsh buggies would be used to excavate sediment inside the wetlands under this alternative. A marsh buggy is a construction vehicle equipped with an amphibious undercarriage that allows it to float on water. The use of marsh buggies would have less impact on the wetland than conventional excavation equipment. The marsh buggy can operate on land and in water. Conventional excavation equipment would require swamp mats to allow access to the areas being excavated which may cause damage to the wetland plants and underlying sediment in areas not being excavated. Prior to remedial activities in the wetland area, a silt curtain would be installed around the perimeter of the excavation area. Because the amphibious excavation equipment is operable in a saturated environment, sheet piling is not necessary to control or divert water away from the sediment excavation area as part of this alternative. The elimination of the need for sheet piling would also lessen the overall potential for damage to the wetlands.

### Comparison of Alternatives

Identification of the preferred alternative is based on the NCP criteria, as shown in Figure 5. Alternatives are rated “high”, “moderate”, 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 considered to have a more favorable cost rating. The alternatives are ranked based on their protectiveness and on their ability to meet the RAOs. Table 2 provides a comparative summary of the four remedial alternatives in relation to the nine NCP evaluation criteria.

### Preferred Alternative

The preferred remedial alternative to achieve the RAOs established for IRP Site 74 is Alternative 4, Amphibious Excavation. Alternative 4 meets the threshold criteria for overall protection of human health and the environment and for compliance with **Applicable or Relevant and Appropriate Requirements (ARARs;** Table 2) and is rated the highest overall for all NCP criteria. The alternative is protective of human health and the environment and would achieve the project RAOs. Alternative 4 would result in the least impact to habitat while providing long-term effectiveness by permanently removing contaminated soil and sediment posing unacceptable risk from the site. Under Alternative 4 it was assumed that a large portion of the excavated soil and sediment would be required to undergo solidification/ stabilization to meet landfill disposal requirements, which would reduce mobility of contaminants through treatment.

Multi-Agency Environmental Team Concurs with Preferred Remedy		
The environmental team, which has been working cooperatively to address remedial decisions for NAVWPNSTA Seal Beach and will sign the ROD, consists of:		
Navy	DTSC	RWQCB

### Site Contacts

Community involvement in the decision-making process is encouraged. If you have any questions or concerns about environmental activities at IRP Site 74, please contact any of the following project representatives.

- **Navy Remedial Project Manager** Naval Facilities Engineering Systems Command (NAVFAC) Southwest  
750 Pacific Highway, 11th Floor  
San Diego, California 92132-0058  
(619) 705-5430
- **Installation Restoration Coordinator**  
Department of the Navy  
800 Seal Beach Blvd., B230  
Seal Beach, California  
(562) 626-7897
- **Project Manager**  
Site Mitigation Program  
Department of Toxic Substances Control  
5796 Corporate Avenue  
Cypress, California  
(714) 484-5458
- **Project Manager**  
Regional Water Quality Control Board, Santa Ana Region  
3737 Main Street, Suite 500  
Riverside, California  
(951) 782-4130



## Opportunities for Public Involvement

Individuals interested in the full technical details beyond the scope of this Proposed Plan can visit NAVWPNSTA Seal Beach's website at and review the Administrative Record for IRP Site 74:

<https://cnrsw.cnic.navy.mil/Installations/WPNSTA-Seal-Beach/Operations-and-Management/Environmental-Program/Environmental-Cleanup/Seal-Beach/>

### PUBLIC COMMENT PERIOD

The 30-day comment period is from August 1, 2024 through August 31, 2024.

#### Submit Comments

Provide comments by mail or e-mail (mailed comments are to be postmarked no later than the last day of the public comment period, which ends on August 31, 2024).

#### Public Meeting

A public meeting to present the Proposed Plan and receive public comments will be held on Thursday August 15, 2024 from 6 p.m. to 8 p.m. at the Seal Beach Mary Wilson Public Library, 707 Electric Avenue, Seal Beach, California.



#### Or you can send comments to:

Ms. Kathryn Robinson  
Naval Facilities Engineering Systems Command  
(NAVFAC) Southwest  
750 Pacific Highway, 11th Floor  
San Diego, California 92132-0058  
(619) 705-5430  
kathryn.s.robinson6.civ@us.navy.mil



## Glossary

**Administrative Record:** A record containing reports, plans, and decision documents used in support of project activities.

**Applicable or Relevant and Appropriate Requirement (ARAR):** A federal, state, or local regulation or standard determined to be legally applicable or relevant and appropriate to remedial actions. Section 121(d) of CERCLA requires that onsite remedial actions attain or waive federal environmental ARARs, or more stringent state environmental ARARs, upon completion of the remedial action. The 1990 NCP also requires compliance with ARARs during remedial actions and removal actions to the extent practicable.

**California Regional Water Quality Control Board, Santa Ana Region (RWQCB):** The state agency responsible for ensuring the site is managed in accordance with state and federal laws.

**Chemical of Concern (COC):** A chemical that contributes to human health risk or hazard above acceptable levels that may require cleanup or action to prevent human exposure to the chemical.

**Chemical of Potential Concern (COPC):** A chemical released at a site that could pose a cancer risk or non-cancer hazard to humans. COPCs are included in a risk assessment to evaluate

whether they may be COCs.

**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA):** The primary law that the Navy must follow for remedial actions at naval facilities. CERCLA provides broad federal authority to respond directly to past releases, or threatened releases, of hazardous substances that may endanger public health or the environment.

**Department of Toxic Substances Control (DTSC):** The primary agency that regulates the generation, handling, treatment, and disposal of hazardous waste in California. DTSC provides support to the Navy on IRP Site 74.

**Ecological Receptor:** A plant or animal on or near a site where COCs are known to exist; an "ecological risk assessment" evaluates whether such ecological receptors may be at risk from contamination at a site.

**Ecological Risk Assessment (ERA):** The process for evaluating how likely it is that the environment may be affected as a result of exposure to one or more environmental stressors such as chemicals, land change, disease, invasive species, and climate change.

## Glossary (Continued)

**Executive Order 12580:** The order issued by the President of the United States of America that delegates the implementation of CERCLA to the Navy.

**Feasibility Study (FS):** A study that follows remedial investigation (a study conducted to better understand a contamination problem) that identifies cleanup goals and evaluates and compares limited remedial, or cleanup, alternatives for the site.

**Hazard Index (HI):** A measure of the potential for adverse health effects other than cancer. An HI that exceeds 1 indicates a possible concern for potential non-cancer adverse health effects, whereas an HI less than 1 indicates that there may not be a concern for adverse health effects.

**Human Health Risk Assessment:** The process to estimate the nature and probability of adverse health effects in humans who may be exposed to chemicals in contaminated environmental media, now or in the future.

**Installation Restoration Program (IRP):** The Navy program that addresses releases of hazardous substances, pollutants, or contaminants that pose toxicological risk to human health or the environment. IRP sites are managed under the IR Program.

**Institutional Control (IC):** An administrative and legal land use control that reduces potential hazards by limiting public exposure to contamination. Examples include site access limitations, and restrictions on future land use that would be placed on property deeds or titles if the property is transferred.

**National Oil and Hazardous Substances Pollution Contingency Plan (NCP):** The federal regulation that provides the organizational structure and procedures for government responses to oil and hazardous substance spills, releases, and sites where these materials have been released.

**Proposed Plan:** A document that summarizes remedial alternatives, presents the recommended alternative, explains the recommendation, and solicits comments from the community.

**Record of Decision (ROD):** A document that records a decision on the remedial alternative of a site that is made by the lead and support agencies, with input from the public through the Proposed Plan. The Navy and regulatory agencies sign the ROD.

**Remedial Action Objective (RAO):** A site-specific goal for protecting human health and the environment.

**Remediation Goal:** A chemical concentration limit that provides a numerical goal for the remedial alternatives; the remediation goal may be based on human or ecological risk calculations, federal or state regulations, background concentrations, or other numerical standards.

**Superfund Amendments and Reauthorization Act (SARA):** An act that amended CERCLA on October 17, 1986, making several important changes and additions to the program, including new enforcement authorities and settlement tools.

**Wetland Mitigation:** Restoration, creation, or enhancement of wetlands to compensate for permitted wetland losses.

## Key References

Naval Facilities Engineering Command Southwest (NAVFAC Southwest). 1997. Stationwide Background Study. Technical Memorandum. Phase II.

———. 2002. Focused Site Inspection Phase II Report, Naval Weapons Station, Seal Beach, Seal Beach, California. Final. January.

———. 2005. Tier II Ecological Risk Assessment Site 74, Naval Weapons Station, Seal Beach, Seal Beach, Orange County, California. Technical Memorandum. Final. April.

———. 2006. INTERNAL Engineering Evaluation/Cost Analysis (EE/CA) for Potential Removal Action Alternatives IRP Site 74.

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United States Environmental Protection Agency (USEPA). 2000. EPA Region IX Preliminary Remediation Goals. 1 November.

Wallace, Darrell (NAVWPNSTA, Seal Beach). 1999. Personal communication during the Ecological Risk Assessment (NAVFAC Southwest, 2005). 19 January.

Wayland, Chris (NAVWPNSTA, Seal Beach). 1999. Personal communication during the Ecological Risk Assessment (NAVFAC Southwest, 2005). 12 January.

## Proposed Plan Comment Form

### *Installation Restoration Program Site 74*

### *Naval Weapons Station Seal Beach*

The public comment period for the Proposed Plan for IRP Site 74, Naval Weapons Station Seal Beach is from August 1, 2024 through August 31, 2024. A public meeting to present the Proposed Plan and receive public comments will be held on Thursday August 15, 2024 from 6 p.m. to 8 p.m. at the Seal Beach Mary Wilson Public Library, 707 Electric Avenue, Seal Beach, California. You may provide your comments in the space provided below or on your own stationery. Comments submitted by mail must be postmarked no later than August 31, 2024. Comments are also being accepted by e-mail. Please e-mail comments to:  
kathryn.s.robinson6.civ@us.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 Naval Weapons Station Seal Beach

Comments:

Mail to:

Ms. Kathryn Robinson  
Naval Facilities Engineering Systems Command (NAVFAC) Southwest  
750 Pacific Highway, 11th Floor  
San Diego, California 92132-0058  
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