PROPOSED PLAN/DRAFT REMEDIAL ACTION PLAN
INVESTIGATION AREA K
Former Mare Island Naval Shipyard
Vallejo, CA **March 2025**

U.S. NAVY ANNOUNCES PROPOSED PLAN/DRAFT REMEDIAL ACTION PLAN

The Navy encourages the public to provide comments on its proposed cleanup plan for Investigation Area (IA) K at the former Mare Island Naval Shipyard (MINS), Vallejo, California. The Navy has worked with the Department of Toxic Substances Control (DTSC) and the San Francisco Bay Regional Water Quality Control Board (Regional Water Board) to evaluate cleanup options for IA K, including the proposed cleanup plan.

Contents

Public Comment Period
March 14 through May 15, 2025

You are invited to review and comment on this Proposed Plan during the public comment period above.

Public Meeting
April 24, 2025
Mare Island Conference Center
375 G Street, Vallejo, California

This meeting is an opportunity for you to hear more about the Proposed Plan, ask questions, and to give verbal and written comments in person.

Introduction

The Navy is responsible for investigating and remediating contamination that resulted from historical Navy operations at Investigation Area (IA) K at the former Mare Island Naval Shipyard (MINS) (Figure 1). IA K encompasses six offshore areas along the Mare Island and Carquinez Straits: the Fleet Reserve Pier (FRP), Berths 1 and 2, the Production Manufacturing Area Offshore (PMAO), South Shore Area Offshore (SSAO), North Mare Island Strait, and Former North Building Ways Offshore. The IA K was investigated and evaluated under the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**. The Navy, in consultation with the regulatory agencies, will select a final **remedial action (RA)** for the site in the **Record of Decision (ROD)/Final Remedial Action Plan (RAP)** after all information submitted during the public comment period has been reviewed and considered. The Navy may modify its proposed plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives. See the instructions on how to comment on page 10.

The **Proposed Plan (PP)/Draft RAP** summarizes the remedial alternatives on page 7 and explains the basis for identifying the preferred alternative for IA K on page 8. The Navy proposes to select Alternative 2, **Land Use Controls (LUCS)**, to address potential hazards associated with **material potentially presenting an explosive hazard (MPPEH)** within the FRP and PMAO areas at IA K, and Alternative 4, contaminant excavation and disposal, to address chemical contamination associated with stormwater outfalls in FRP and PMAO areas which may impact future ecological receptors within IA K.

No action is proposed to address MPPEH within Berths 1 and 2, North Mare Island Strait, and Former North Buildings Ways Offshore. Due to its overlap with the South Shore Area (UXO Site 7), the SSAO (UXO Site 12) is being addressed under the South Shore Area Shoreline PP/Draft RAP, and is not included in this PP.

Alternative 2 includes:

- LUCs for the FRP and PMAO to restrict specific land uses and activities.

Alternative 4 includes:

- Removal of contaminated sediment within the onshore sloughs associated with stormwater Outfalls 4 (FRP), 33 (PMAO), and 100 (PMAO).

Public comments on this PP/Draft RAP will be accepted from March 14, 2025 through May 15, 2025 and can be submitted via mail, e-mail, of fax throughout the comment period. Please see page 10 for more information on how to submit comments.

A public meeting will be held at 7:00 pm on April 24, 2025 in the Mare Island Conference Center. Members of the public may submit written and verbal comments on this PP/Draft RAP at the meeting. A virtual meeting option will be available. Please see page 12 for instructions on how to attend the meeting.

Figure 1: Site Location Map

The CERCLA Process

The Navy is addressing the contamination at IA K pursuant to CERCLA, the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP),** and the Navy's **Munitions Response Program (MRP).** This PP/Draft RAP is being issued as part of the Navy's public participation responsibilities under CERCLA and the NCP. This PP/Draft RAP has been prepared to highlight key information and conclusions from the Navy's investigations of potential contamination at IA K and evaluations of cleanup alternatives presented in the final **Feasibility Studies (FSs)** issued in 2014 and 2023. The FSs and other documents that provide detailed information about site conditions and Navy activities are available for public review at the locations listed on page 9.

The flowchart (Figure 2) illustrates the status of IA K in the CERCLA process. The Navy's preferred alternatives to address contamination at these areas are presented in this PP/Draft RAP. The ROD/Final RAP will identify the selected cleanup remedy, identify the **remedial action objectives (RAOs)**, and outline performance standards that must be met before cleanup is complete. After the ROD/Final RAP, the remedial design (RD) and RA are the next steps in the CERCLA process, and involve planning and implementing the selected remedial alternative.

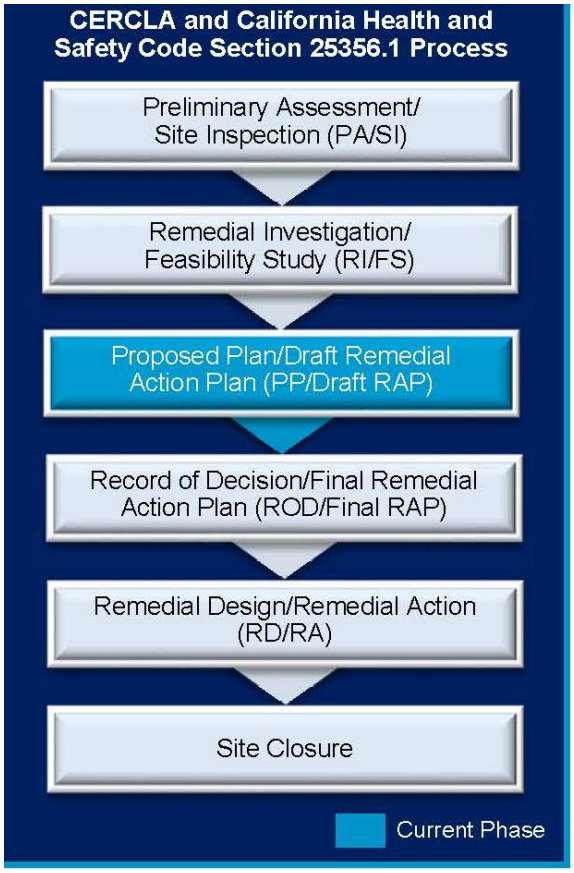

Figure 2: CERCLA Process

Site Background

Mare Island is located within the incorporated boundaries of the City of Vallejo in Solano County, California, northeast of San Francisco (Figure 1). Mare Island is bordered by Highway 37 to the north, Mare Island Strait (Napa River) to the east, Carquinez Strait to the south, and San Pablo Bay to the west. The former MINS was established by the Navy in 1854 and operated continuously until it was closed under the Base Realignment and Closure Program in 1996.

IA K was defined based on past use and operational history, and covers approximately 329 acres in Mare Island Strait and Carquinez Strait extending the length of the eastern shore of the former MINS and the southeastern edge of Mare Island (Figure 1). Based on the identified historical uses of on- and offshore areas and investigation results, IA K was subdivided into six sites: the FRP (**Unexploded Ordnance [UXO]** Site 10), Berths 1 and 2 (UXO Site 11), the PMAO (UXO Site 6), SSAO (UXO Site 12), North Mare Island Strait, and Former North Building Ways Offshore (Figure 3).

References to IA K throughout this document do not include the SSAO area, which is being addressed under a separate

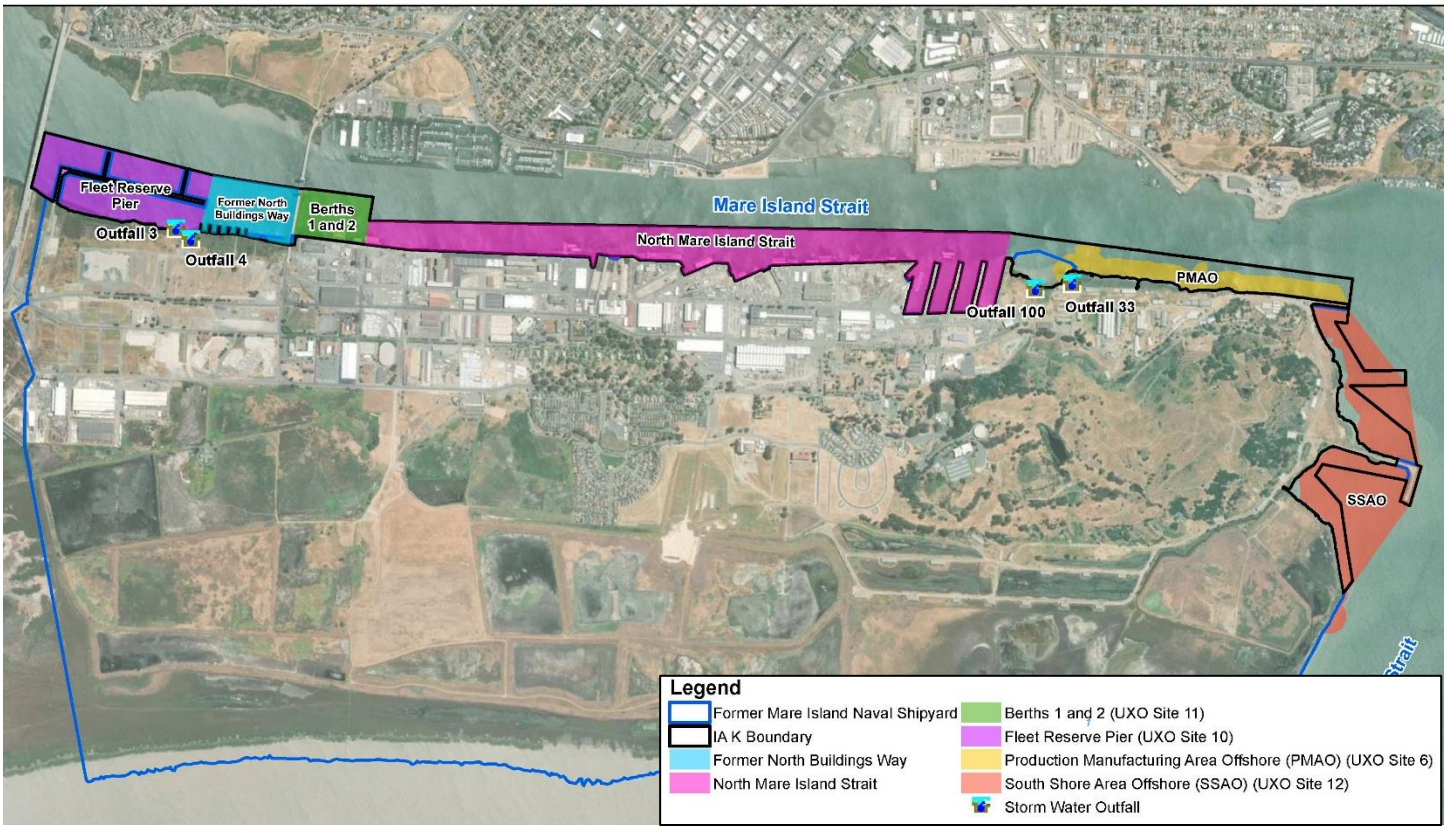

Figure 3: IA K Site Layout

PP/Draft RAP. In addition, previous investigations indicated that the North Mare Island Strait and Former North Building Ways Offshore required no further action under the MRP.

Intertidal mudflat and wetland areas are present at the northern end of Mare Island Strait, near the FRP and North Building Ways, and at the southern end of the strait near IA F1/PMA (the ordnance production area, which was investigated under the Installation Restoration Program [IRP] as IA F1 and under the MRP as the PMA) and IR 04. Portions of the beach and mudflats in this region are exposed at low tide, and were considered accessible to future potential human receptors based on direct exposure to sediment during risk assessments.

Investigations and Removal Actions

Environmental characterization of the former MINS has been conducted since 1983 and has included investigations and removal actions to identify and remove potential munitions at IA K under the MRP. The Navy has also investigated and evaluated the potential for chemical releases at all of the subareas of IA K under the IRP.

A list of the key investigations pertaining to the entirety of IA K is provided below:

- Initial Assessment Study (1983)
- Emergency Munitions Response Actions (1990-1995)
- Preliminary Assessment for UXO Sites (1995)
- UXO Site Investigation (1997)
- Sediment Sampling in Offshore Areas (1997)
- Offshore Pilot Study (1998)
- Validation Detection Systems Test Program (1999)
- Initial Baseline **Ecological Risk Assessment (ERA)** Investigation (2002)
- Site Investigation at Manhole D1-C85 and Outfalls 22, 23, 25, and 26 in IA C2 (2003)
- **Remedial Investigation (RI)** at IA F1 (Outfalls 33, 34, and 35) (2004)
- RI at IA F2 (Installation Restoration Site 4) (2005)
- **Munitions and Explosives of Concern (MEC)** Investigation at Mare Island Strait and Carquinez Strait (2003-2006)
- Supplemental Site Inspection of the FRP and Berths 1 and 2 (2006)
- RI Pilot Study (2007)
- Updated Baseline ERA Investigation (2008)
- Outfall/Supplemental Sampling Investigation (2009)
- Bathymetric Survey (2006, 2011, 2012)
- Assessing MEC from the Causeway to Berth 24 (2010)
- Data Gaps Sampling Investigation (2012)
- Non-Time-Critical Removal Action (NTCRA) for MEC (2012-2013)
- MRP RI (2014)
- IRP RI/FS (2014)
- MRP FS (2023)

The documents summarizing these investigations and evaluations are available for review at the locations listed on page 9.

While various investigations have been performed to address ordnance (generically labeled as UXO in reports), no ordnance that meets the technical definition of UXO has been discovered at MINS. UXO, in addition to **discarded military munitions (DMM)** and **munitions constituents (MC)**, are considered MEC, which may pose a unique explosive safety risk. MEC, **material documented as an explosive hazard (MDEH)**, and **material documented as safe (MDAS)** are initially considered MPPEH until an assessment of the item is performed. All MEC items recovered to date at MINS have been DMM. These terms are further defined on page 11.

Early MRP investigations at IA K were mostly associated with onshore portions of the PMA and SSA because they were historically used for munitions production, storage, and handling. Over the years, a wide variety of munitions items have been found in sediment within the intertidal areas at the PMAO (and SSAO) that are likely from onshore munitions-related activities, and in the subtidal areas from disposal or offloading from ships, which cannot access the intertidal areas.

Between 2003 and 2006, an offshore munitions response investigation was conducted to characterize the nature and extent of MEC in the shoreline areas (mudflat area and intertidal) of the PMAO.

In 2006, a supplemental site inspection was conducted at the FRP and Berths 1 and 2 to confirm or refute anecdotal information obtained during the 1997 UXO Site Inspection that ordnance had been present in those areas. A follow-up assessment from between the Causeway and Berth 24 (which encompasses Berths 1 and 2 and North Mare Island Strait) was conducted in 2010.

An NTCRA was conducted between 2012 and 2013 to investigate and remove subsurface metallic items identified during previous MEC investigations. During the shoreline portion of the NTCRA, 94 MEC items from 32 anomaly locations within or immediately adjacent to the PMAO were identified and removed (out of 28,810 total shoreline anomaly locations between the PMAO and SSAO).

The 2014 RI/FS characterized the nature and extent of chemical contaminants in sediment resulting from past activities at the site, assessed the risk to both human and ecological receptors, and provided information and recommendations for development and evaluation of cleanup alternatives.

An RI was conducted in 2014 to address data gaps from previous investigations and to evaluate the nature and extent of MEC and MC (metals and energetics/explosives) at IA K. The RI included a geophysical survey and intrusive investigation around the piers at the FRP and Pier 34 (within the PMAO), and assessed the risk to human health and the environmental from MC (metals only, as no MEC was found and no explosive chemicals were detected in shallow sediment) compared to the results of the 2014 RI/FS.

Current and Future Use

The offshore area of IA K is currently used for recreational purposes, as well as by the Water Emergency Transfer Authority to berth ferries and to perform maintenance, and by other local businesses and governmental entities. Anticipated potential future uses of IA K may involve continued industrial activities currently performed at dry docks, berths, and piers and open space for fishing and water activities. Dredging of Mare Island Strait, including areas within IA K, has recently occurred and is planned to occur in the future to maintain navigational lanes.

Nature and Extent of Contamination

MEC/Munitions Items

Investigations at the Berths 1 and 2 and North Mare Island Strait concluded that the potential to encounter MEC within these areas was highly improbable, and that MEC was not considered a contaminant of concern. Based on historical information and results of previous investigations, MEC is not expected to be present in the Former North Buildings Way Offshore, Berths 1 and 2, and North Mare Island Strait areas.

During the 2014 RI, no MPPEH was recovered at the FRP, although 50 pounds of metal debris were removed. Historical records do not indicate that munitions were handled at the FRP, and the potential to encounter MEC within the FRP is very low. However, available dredging records and bathymetric data identify some areas of uncertainty and do not support a conclusive determination that historical dredging would have removed incidental MEC from the FRP.

Early investigations at the PMAO concluded that DMM (consisting of MEC and MDAS) were distributed with a higher density nearer the shoreline relative to areas away from the shoreline, and that MEC items buried in the mudflat and intertidal areas may be exposed but were likely to remain in the same location. While the potential for incidental MEC below the dredge depths could not be completely ruled out, ordnance does not penetrate deeply into sediments, and typically ends up on top of the sediment surface, where it is likely to be removed during subsequent dredging events.

Geophysical surveys in the vicinity of Pier 34 at the PMAO have identified clusters of metal anomalies. There is a higher probability that MEC would be present in a 50-foot-wide buffer around former piers and wharves (including existing Pier 34), while all other areas of the PMAO are considered to have a relatively lower probability of MEC occurrence. During the 2014 RI, no MPPEH items were recovered, although approximately 1 pound of metal debris was removed. Based on these findings, it is likely that metal debris is buried in sediment in other areas of Pier 34 and the PMAO, most likely in the vicinity of former piers and wharves that were used for ordnance loading and unloading. MEC items have historically been removed onshore of and within the intertidal area of the PMAO, and may remain at the PMAO.

Chemical Compounds

Based on data evaluated from site investigations conducted through 2012, metals, polychlorinated biphenyls (PCBs), pesticides, polynuclear aromatic hydrocarbons (PAHs), and total petroleum hydrocarbons (TPH) were identified as the primary chemicals of concern (COCs) in the sediment. Impacts to IA K (sediments) at Former MINS are likely the result of historical onshore and offshore uses associated with ship construction and maintenance, manufacturing and storage of munitions, and ship mooring and berthing. Potential Navy sources and release mechanisms include leaching from ordnance buried in sediments as casings decay, runoff from industrial wastes through the storm water outfalls along Mare Island Strait, and anti-fouling/anti-corrosion paints used on ships.

Chemical concentrations in offshore sediments at the FRP, North Mare Island Strait, Former North Building Ways, and Berths 1 and 2 were generally consistent with ambient concentrations. Elevated concentrations of mercury, PCBs, and pesticides were observed in sediment samples collected adjacent to Outfalls 3 and 4.

Outfalls 33 and 100, located adjacent to or within a former sandblasting material area near Building 900, contained elevated concentrations of several metals, pesticides, and PCBs.

Site Risk Details

Risk under the IRP is assessed as the likelihood or probability that a hazardous chemical, when released to the environment, will cause effects (such as cancer or other illnesses) to exposed humans or wildlife. The Navy evaluated the risk to humans and wildlife from exposure to sediment.

To assess risk under the MRP at IA K, the Navy reviewed analytical results for MC that consist of explosive or energetic compounds and select metals in sediment. As only one energetic compound was detected in more than 100 samples collected from offshore sampling locations between 1997 and 2014, it was concluded that potential exposure by human or ecological receptors to unacceptable concentrations of explosives in sediment was not significant.

Human Health Risk Assessment

The Navy conducted a **human health risk assessment (HHRA)** in accordance with Federal and State guidelines. The HHRA evaluated the likelihood of health problems occurring if no action were taken at a site to prevent exposure. Table 1 presents EPA's risk ranges, which were established to protect human health and assist with risk management decisions.

Potential future human receptors at the IA K include recreational users that occasionally walk along or wade within the shallow water in the mudflat sediment areas, as well as persons who may catch and consume fish from the offshore area. Based on the risk assessment results, the COCs in the sediments at IA K were found to be consistent with ambient concentrations in sediment from the San Francisco Bay, and the risk to human health from direct exposure to IA K sediments was low and within the generally acceptable range. In addition, the estimated risks associated with consumption of fish caught from IA K offshore areas were lower than those associated with consumption of fish caught in the San Francisco Bay area (i.e., outside of IA K).

Ecological Risk Assessment

The Navy's Baseline ERA for IA K evaluated the exposure of primary producers (e.g., phytoplankton, algae), invertebrates, fish, birds, and mammals to metals, semivolatile organic compounds, pesticides, PCBs, organotins, and TPH.

The Baseline ERA concluded that concentrations of select metals, PAHs, pesticides, and PCBs in sediment within stormwater Outfalls 4, 33, and 100 may pose low-level risk to the most sensitive populations of benthic invertebrates and wildlife receptors; the results of surface-weight area concentration analysis indicated that Outfall 3 did not contain sufficient chemical mass to appreciably alter chemical concentrations in the adjacent offshore area. As a result, the onshore sloughs at Outfalls 4, 33, and 100 may have a potential for localized risk to offshore benthic populations due to runoff from the shoreline. With this exception, chemical concentrations in surface sediment throughout IA K were not found to pose unacceptable risk to benthic receptors, and risk to other modeled wildlife receptors were insignificant.

MEC Hazard Evaluation

The Navy completed a qualitative **hazard evaluation (HE)** for encountering underwater MEC as part of the MRP RI. As there is no model comparable to the HHRA for assessing MEC hazards, the MRP RI qualitatively evaluated the explosive hazards based on the results of previous investigations and removal actions. The evaluation was structured around three components of potential explosive hazard incidents: severity (the potential consequence of the effect on a human receptor should a MEC item detonate), accessibility (the likelihood that a human receptor will come in contact with a MEC item), and sensitivity (the likelihood for a MEC item to detonate).

Table 1: Risk Ranges to Protect Human Health

Health Risk	**Unacceptable Risk**	**Generally Acceptable Risk (Risk Management Range)**	**Acceptable Risk**
Cancer	More than one additional cancer case in a population of 10,000 (greater than 10^{-4}).	One additional cancer case in a population of 10,000 to 1,000,000 (10^{-4} to 10^{-6}).	Less than one additional cancer case in a population of 1,000,000 (less than or equal to 10^{-6}).
Non-Cancer	A **hazard index (HI)** greater than 1.	—	An HI less than or equal to 1.

MEC is not expected to be present at the Former North Building Ways Offshore, Berths 1 and 2, and North Mare Island Straight. Previous investigations at the FRP have encountered metallic debris, but no MPPEH or MEC. The area most likely to contain MEC is the PMAO. Although previous investigations and removal actions have removed most of the MPPEH (the majority of which was classified as MDAS) from the intertidal portions of the PMAO (and adjacent onshore portions of the PMA), residual MEC may be present in the offshore sediments in portions of the PMAO; all areas classified as having a relatively higher probability of MEC occurrence (around the former piers and wharves) may not be readily accessible to the public. The explosive safety hazard associated with exposure to MEC in the PMAO is low for future recreational and construction worker exposure.

Feasibility Study Summary

The IRP FS for IA K was conducted to develop and evaluate the remedial alternatives to be taken within the onshore sloughs associated with Outfalls 4, 33, and 100 to ensure future protectiveness of ecological receptors offshore. The MRP FS for IA K was conducted to develop and evaluate appropriate remedial alternatives to ensure protection of human health and the environment from potential exposure to MEC hazards.

Remedial Action Objectives

RAOs provide the foundation for the development and evaluation of remedial alternatives that meet the cleanup objectives for being protective of human health and the environment.

The following RAOs were developed for IA K:

- Mitigate the potential for sediment in sloughs associated with Outfalls 4, 33, and 100 to serve as a source of chemicals to adjacent offshore ecological exposure units.
- Reduce the hazard to human and ecological receptors from MEC by minimizing the potential for incidental contact with MEC from recreational activity.
- Manage the explosive safety risk to human and ecological receptors from incidental contact with MEC from construction activity.

Preliminary Remedial Goals

Preliminary remedial goals for Outfalls 4, 33, and 100 were developed to meet the RAOs. The preliminary remedial goals were selected based on land use, receptors, and background sediment concentrations (Table 3).

Summary of Remedial Alternatives

Select COCs within Outfalls 4, 33, and 100 are present at concentrations that may pose localized risk to benthic populations offshore. In addition, there remains some limited probability of encountering MEC to current and future land users from residual MEC items that may have escaped detection during previous investigations and removal actions. Therefore, remedial alternatives were developed to achieve RAOs to lessen or eliminate the risk posed by MEC.

Descriptions of the evaluated alternatives for IA K are presented below.

Chemical Contamination

- Alternative 1: No Action
- Alternative 2: Monitored Natural Recovery and **Institutional Controls (ICs)**
- Alternative 3: Stabilized Cap and ICs
- **Alternative 4: Focused Removal, Waste Transportation, and Off-Site Disposal**

MEC

- **Alternative 1: No Action (Berths 1 and 2 [UXO Site 11])**
- **Alternative 2: LUCs (FRP [UXO Site 10] and PMAO [UXO Site 6])**
- Alternative 3: Bulk Removal of Sediment and LUCs
- Alternative 4: Underwater Cap and LUCs

The alternatives highlighted in blue (Table 2) represent the Navy's preferred remedies.

Evaluation of Remedial Alternatives

The Navy evaluated each alternative against the first seven of the nine NCP cleanup action evaluation criteria (Figure 4). Each alternative was given a rating based on its capability to meet the NCP criteria. A rating of low indicates the alternative is unlikely to or will not meet the criteria, whereas a rating of high indicates the alternative will meet the criteria. The last two NCP criteria (state acceptance and community acceptance) will be addressed through public comments and regulatory agency review of this PP/Draft RAP and are not evaluated here.

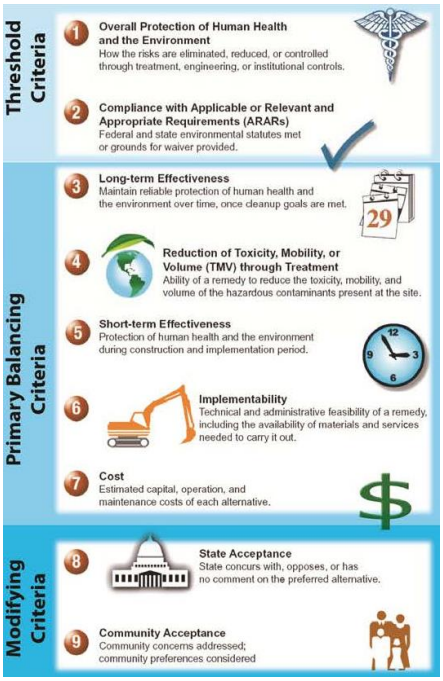

Figure 4: Evaluation of NCP Criteria

An evaluation of the comparison criteria for each of the remedial alternatives for IA K is presented in Table 4. The costs presented in Table 4 reflect the Navy's current estimate to implement each alternative.

Table 2: Summary of Remedial Alternatives	
Remedial Alternative	**Components**
Chemical Constituents	
Alternative 1: No Action	The No Action alternative is required by CERCLA to be evaluated for comparison purposes. Under this alternative, nothing is done to clean up the contamination, restrict land use, or limit contamination movement.
Alternative 2: Monitored Natural Recovery and ICs	Alternative 2 includes reliance upon natural processes to contain and/or reduce the bioavailability and toxicity of sediment COCs within the outfall target treatment zones (TTZs), and includes long-term monitoring to assess the progress of these natural processes. Long-term monitoring (i.e., sediment sampling for COCs and topographic/bathymetric surveys) would be conducted annually for the first five years and then at five-year increments over an estimated 30-year total monitoring period. ICs would be implemented to minimize potential exposure to or mobilization of buried contamination by restricting or prohibiting future actions that would have the potential to alter site conditions within the TTZs.
Alternative 3: Stabilized Cap and ICs	Alternative 3 includes covering impacted sediment within each outfall TTZ with a cap that would stabilize underlying contaminated sediment and isolate the COCs from the surrounding environment and potential ecological receptors. Cap armoring would be necessary for protection against natural erosive forces and to ensure the long-term integrity of the underlying geotextile material. ICs would be implemented to minimize potential exposure to or mobilization of buried contamination by restricting or prohibiting future actions that would have the potential to damage the stabilized cap or otherwise alter site conditions.
Alternative 4: Focused Removal, Waste Transportation, and Off-Site Disposal	Alternative 4 includes removal of impacted sediment within the outfall TTZs to meet remedial goals established in the RI/FS (Table 3). Depending on final excavation depth, backfilling and stabilizing of the slough after excavation may be performed. Approximately 2,600 square feet (or 200 cubic yards, assuming a depth of two feet) of sediment would be removed from the three outfall TTZs.
MEC	
Alternative 1: No Action	The No Action alternative is required by CERCLA to be evaluated for comparison purposes. Under this alternative, nothing is done to clean up the contamination, restrict land use, or limit contamination movement. (Berths 1 and 2 [UXO Site 11] only.)
Alternative 2: LUCs	Alternative 2 may include institutional and engineering controls such as signage, notification, public education, and outreach to protect the public in areas with the highest potential for MEC exposure, and may be incorporated into covenants to restrict the use of property and quitclaim deeds. LUCs will also protect construction workers and the public from potential MEC exposure during construction activities by preventing the accidental detonation of MEC or the improper relocation of MEC outside the areas subject to the LUCs. These LUCs will include a system to notify stakeholders (regulatory and resources agencies, property owners) of impending construction/dredging at IA K. (FRP [UXO Site 10] and PMAO [UXO Site 6] only.) Implementation of LUCs will include the preparation of a LUC Remedial Design Plan that describes the procedures for implementing applicable LUCs.
Alternative 3: Bulk Removal of Sediment and LUCs	Alternative 3 consists of the removal of sediment (potentially containing MEC) from the top two feet in the high probability area (for MEC). The dredged areas will be backfilled with the dredged sediment that has been dried and screened for MEC or by clean import. LUCs will also be included to protect the casual recreational user, reduce the risk from exposure to MEC during construction activities, and to protect the integrity of the remedy.
Alternative 4: Underwater Cap and LUCs	Alternative 4 consists of the placement of a three-layered engineered cap over the high probability area in the PMAO. Some sediment removal may be necessary to facilitate cap construction. The sediment that is removed will be dried, screened free of MEC, and disposed of at an off-site permitted landfill. LUCs will also be included to protect the casual recreational user, reduce the risk from exposure to MEC during construction activities, and to protect the integrity of the remedy. This alternative will require periodic (possibly annual) monitoring of the cap integrity and maintenance of the cap if there is material loss.

Table 3: Summary of Preliminary Remedial Goals		
COC	**Preliminary Remedial Goal**	**Outfall**
Antimony	25	Outfall 100
Cadmium	9.6	Outfall 33
Chromium	370	Outfall 100
Copper	270	Outfall 4
Lead	65.44 / 59	Outfalls 4 and 33 / Outfall 100
Zinc	410	Outfalls 4, 33, and 100
Chrysene	2.8	Outfalls 4 and 33
Fluoranthene	5.1	Outfalls 4 and 33
Pyrene	2.6	Outfalls 4 and 33
Chlordanes	0.006 / 0.0011	Outfalls 4 and 33 / Outfall 100
Dieldrin	0.008	Outfall 100
Total DDx	0.0461	Outfalls 4, 33, and 100
Total PCBs	0.18	Outfalls 4, 33, and 100

Table 4: Ranking of Remedial Alternatives					
Alternative	**Long-Term Effectiveness**	**Reduction of Mobility, Toxicity, and Volume Through Treatment**	**Short-Term Effectiveness**	**Implementability**	**Total Cost**
Chemical Constituents					
1	◔	◔	●	●	$0.0
2	◑	◔	◑	●	$2.2M
3	◕	◔	◕	●	$700K
4	●	◔	◕	●	$600K
MEC					
1	○	○	●	●	$0.0
2	◑	○	◕	◕	$400K
3	◕	◑	◔	◔	$10.3M
4	◑	○	◑	○	$8.7M

○ Very low
◔ Low
◑ Moderate
◕ High
● Very High

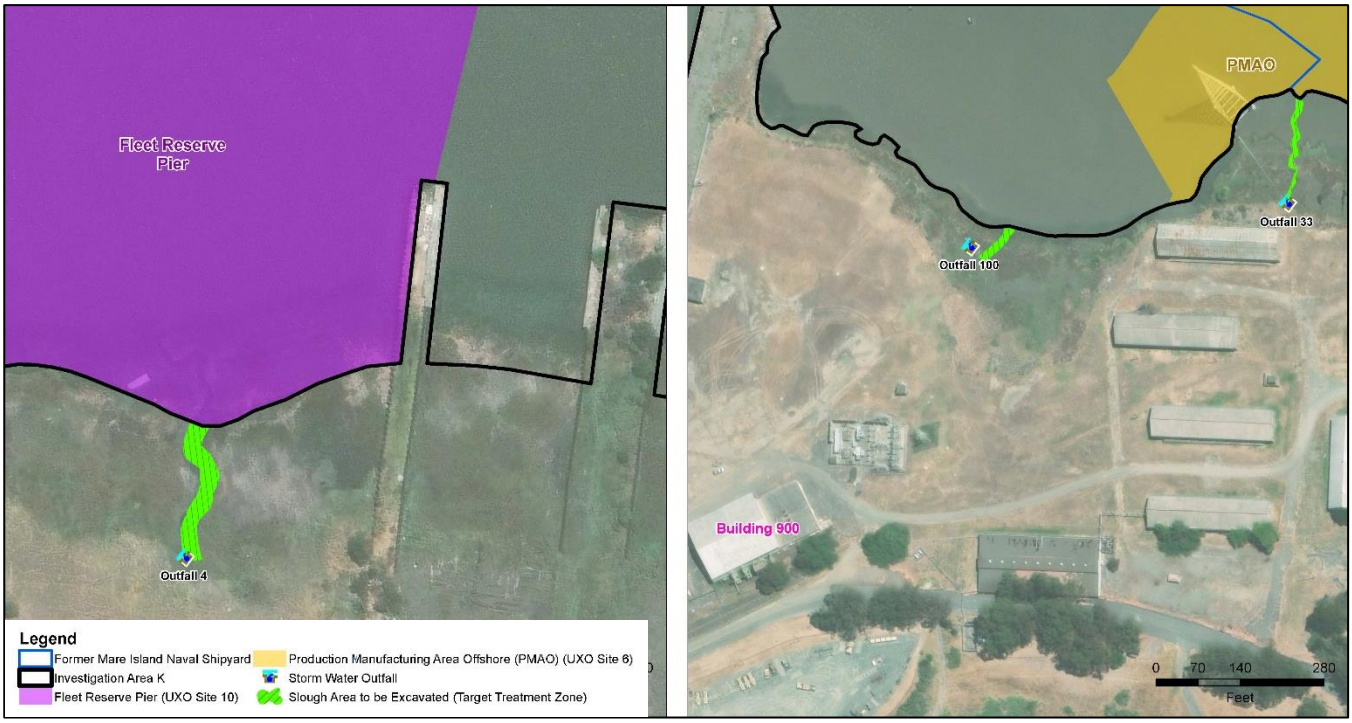

Figure 5: Proposed Excavation Extent

Summary of the Preferred Alternatives

The preferred remedy for chemical contamination in sediments at Outfalls 4, 33, and 100 is Alternative 4 (Focused Removal, Waste Transportation, and Off-Site Disposal); the preferred remedy for MEC at the FRP and PMAO is Alternative 2 (LUCs). No Action (Alternative 1) is the preferred remedy for Berths 1 and 2. These alternatives are preferred for the following reasons:

- These alternatives provide protection to human health and the environment by permanently removing contaminated sediment from the site, and by establishing activity restrictions, deed restrictions, and an educational program to prevent contact with potential MEC.
- They meet Federal and State ARARs.
- Proper implementation of LUCs will reduce MEC exposure hazards to receptors, and removal of sediments will be protective of ecological receptors in the long-term.
- There may be short-term risk to workers, the community, and the environment during excavation activities at Outfalls 4, 33, and 100.

A final decision will not be made until all comments are considered. Community acceptance will be evaluated after the public comment period for this PP/Draft RAP. The Navy will address any comments in a Responsiveness Summary presented in the ROD/Final RAP.

State of California Laws

California Health and Safety Code

This PP meets applicable requirements for RAPs contained in California Health and Safety Code (HSC) Section (§) 79195 for hazardous substance release sites listed by DTSC. This PP serves as a Draft RAP to fulfill the public notice and comment requirements of the California HSC, and the CERLCA ROD for IA K will serve as the Final RAP.

California Environmental Quality Act

At the conclusion of the public comment period for the PP/Draft RAP, DTSC will prepare a California Environmental Quality Act (CEQA) Initial Study to evaluate potential impacts of the proposed excavation at IA K on public health and the environment. This will allow DTSC to ensure that the CEQA document incorporates any changes to the project resulting from public review and comment. The Initial Study will then be made available for review and comment during a future public comment period. LUCs do not result in a direct physical change to the environment, and do not meet the definition of a project under the CEQA.

Nonbinding Allocation of Responsibility

California HSC § 79215 requires DTSC to prepare a nonbinding allocation of responsibility among all identifiable potentially responsible parties. Based on the available information regarding the former MINS, DTSC has determined that the Navy is the only identifiable responsible party.

Community Participation – The Next Steps

Public comments on this PP/Draft RAP received during the period from March 14 through May 15, 2025 will be considered by the Navy, in consultation with the regulatory agencies, prior to selecting a final remedy for the IA K. Responses to comments will be addressed in a Responsiveness Summary presented in the ROD/Final RAP. The ROD/Final RAP will formally document the selected remedy for IA K. Additional information on opportunities to comment on this PP/Draft RAP can be found on page 10.

A Public Notice will be posted in the local papers announcing when the IA K ROD/Final RAP is available to the public in the information repositories listed below.

The PP/Draft RAP may also be viewed online at the Navy website: https://www.bracpmo.navy.mil/brac_bases/california_former_shipyard_mare_island.html.

Restoration Advisory Board

The Navy provides information on IA K to the public through public meetings, the AR file for the site, the local library, and notices published in the local newspapers. Restoration Advisory Board (RAB) meetings are generally held quarterly on the fourth Thursday of the month and are open to the public. Please visit the Navy's website for more RAB information and current RAB meeting dates and times: https://www.bracpmo.navy.mil/brac_bases/california/former_shipyard_mare_island/meeting_material.html.

Information Repositories

The John F. Kennedy Library provides public access to technical reports and other information that support this PP/Draft RAP. The Navy **Administrative Record (AR)** file is a collection of reports and historical documents used to select remedial alternatives.

John F. Kennedy Library
505 Santa Clara Street
Vallejo, California 94590
Library Hours (by appointment only):
Monday – Thursday: 9 AM to 6 PM
Friday: 9 AM to 5 PM
Phone: (866) 572-7587

Official Administrative Record Location
Naval Facilities Engineering Systems Command Southwest
2965 Mole Road, Building 3519
Attn: Ms. Diane Silva, Administrative Records Coordinator
Naval Base San Diego
San Diego, California 92136
Phone: (619) 556-1280
Email: diane.c.silva.civ@us.navy.mil

The Navy AR file hours are Monday through Friday 8 AM to 5 PM.

Other Site Documents

The Navy is issuing this PP/Draft RAP as part of its public participation responsibilities under CERCLA § 117(a) and § 300.430(f)(2) and (3) of the NCP to ensure that the public has the opportunity to comment. This PP/Draft RAP summarizes information detailed in previous documents, including the RI and FS Reports, contained in the AR file for IA K. The Navy encourages the public to review these documents to gain an understanding of the environmental investigations, removal actions, and risk assessments that have been conducted. Documents generated for these sites that are listed on page 3 are available for public review at the information repositories listed above.

Some documents may also be available online at the Navy website (https://www.bracpmo.navy.mil/brac_bases/california_former_shipyard_mare_island.html.) and at the DTSC website (http://www.envirostor.dtsc.ca.gov/public).

Multi-Agency Environmental Team Concurs with the IA K Remedy

The BCT (BRAC Cleanup Team), composed of representatives from the Navy, DTSC, and Regional Water Board, was established with the primary goals of protecting human health and the environment, expediting the environmental cleanup, and coordinating the environmental investigations and cleanup at the installation.

The BCT obtains a consensus on issues regarding the installation's environmental activities and makes a concerted effort to integrate current and potential future uses into the cleanup decisions. The BCT has been involved in the review of all major documents and activities with IA K. This review included the RI and FS Reports for IA K, which included risk assessments, an evaluation of the effectiveness of the remedial alternatives for IA K, and documentation that these alternatives meet the NCP evaluation criteria.

Based on reviews and discussions of key documents and activities, the BCT recommends Alternative 4 for chemical contamination (Focused Removal, Waste Transportation, and Off-Site Disposal), Alternative 1 (No Action) for Berths 1 and 2, and Alternative 2 for the PMAO and FRP (LUCs).

How Do You Provide Input to the Navy?

There are two ways to provide comments during the public comment period from March 14 to May 15, 2025:

1. Offer oral comments during the public meeting.
2. Provide written comments by mail, fax, or email to the Navy no later than May 15, 2025 (see contact information below). A mail-in comment form is provided as pages 12 and 13.

The public meeting will be held on April 24, 2025, 7:00 PM at the Mare Island Conference Center, 375 G Street, Vallejo, California. Navy and DTSC representatives will provide information on the environmental investigations, completed removal actions, and remedial alternatives for IA K. You will have an opportunity to formally comment on the remedial alternatives summarized in this PP/Draft RAP during that meeting.

Additionally, written comments can be sent or emailed to:

BRAC Program Management Office West
Attn: Mr. Scott Anderson
BRAC Environmental Coordinator
33000 Nixie Way, Building 50, Suite 207
San Diego, California 92147
Scott.d.anderson11.civ@us.navy.mil

PROJECT REPRESENTATIVES

For further information on the environmental program at the former Mare Island Naval Shipyard or the PP/Draft RAP, please contact one of the following representatives:

Mr. Scott Anderson
BRAC Environmental Coordinator
BRAC PMO West
33000 Nixie Way, Building 50, Suite 207
San Diego, California 92147
Phone (619) 524-5808
Fax (619) 524-5260
scott.d.anderson11.civ@us.navy.mil

Mr. Franklin Mark
Project Manager
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, California 95826
Phone (916) 255-3584
Fax (916) 255-3585
franklin.mark@dtsc.ca.gov

Ms. Asha Setty
Public Participation Specialist
Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, California 94710
Phone (510) 540-3910
Fax (510) 540-3738
asha.setty@dtsc.ca.gov

Glossary of Technical Terms

Administrative Record (AR) file is a collection of reports and historical documents used in the selection of remedial alternatives or environmental management activities.

Applicable or relevant and appropriate requirements (ARARs) are the Federal and State environmental laws and regulations that must be followed for the selected remedial alternative. These requirements may vary among sites and alternatives.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as Superfund, is a Federal law that regulates environmental investigation and cleanup of sites identified as potentially posing a risk to human health and/or the environment.

Discarded military munitions (DMM) includes any military munitions that have been abandoned without prior disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. DMM does not include UXO, and have not been armed or primed, but do include live small arms.

Ecological risk assessment (ERA) is an evaluation of the likelihood that ecological receptors (plants and animals) exposed to contaminants at a site may suffer harm.

Feasibility Study (FS) is a study that identifies and evaluates remedial technologies to develop remedial alternatives for a site based on criteria mandated in the NCP.

Hazard Evaluation (HE) is a method for establishing the probability for injury from an encounter with MEC and is intended to support site management decisions specifically related to explosive hazards. Site-specific information on munitions is used to assign a hazard level score on the potential for an explosive hazard at the site ranging from 1 to 4. A hazard level score of 1 is the highest potential for an explosive hazard, and a hazard level of 4 is the lowest potential for an explosive hazard at a site.

Human health risk assessment (HHRA) is an evaluation of the likelihood that humans exposed to contaminants at a site may suffer harm.

Institutional controls (ICs) are non-engineering mechanisms established to limit human exposure to contamination. These mechanisms may include deed restrictions, covenants, easements, laws, and regulations.

Land use controls (LUCs) include engineering and institutional controls and help to minimize the potential for exposure to contamination and are typically designed to limit land or resource use by modifying or guiding human behavior at a site.

Material documented as an explosive hazard (MDEH) are MPPEH items that cannot be positively determined to be free of energetic material.

Material documented as safe (MDAS) are MPPEH items that can be positively determined to be free of energetic material.

Munitions constituents (MC) include any materials originating from UXO, DMM, or other military munitions.

Munitions and explosives of concern (MEC) includes 1) unexploded ordnance (UXO), 2) discarded military munitions, and 3) munitions constituents present in high enough concentrations to pose an explosive hazard.

Munitions Response Program (MRP) is designed to clean up discarded military munitions, UXO, and their chemical residues at closed ranges and munitions disposal sites.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP) is the federal regulation that guides determination of the sites to be corrected under both the Superfund program and the program to prevent or control spills into surface waters or elsewhere.

Proposed Plan (PP)/Draft Remedial Action Plan (RAP) is a document that reviews the remedial alternatives presented in the FS, summarizes the recommended remedial action, explains the reasons for recommending the action, and solicits comments from the community. The RAP is required under HSC Section 25356.1 for sites that are not listed on the Superfund National Priorities List, such as Mare Island. A Draft RAP is the California HSC equivalent of the Navy's Proposed Plan.

Record of Decision (ROD)/Final Remedial Action Plan (RAP) is a decision document that identifies the selected remedial alternative to be implemented at a specific site. The ROD/RAP is based on information and technical analysis generated during the RI/FS and consideration of public comments received throughout the process and in response to the PP/Draft RAP. A Final RAP is the California HSC equivalent of the Navy's ROD.

Remedial action (RA) is a general term used to describe technologies used to contain, remove, or treat hazardous wastes to protect human health and/or the environment.

Remedial action objectives (RAOs) are goals established for the protection of human health and the environment.

Remedial Investigation (RI) is a study that identifies the nature and extent of potential contaminants at a site and assesses risk to human health and the ecological receptors.

Unexploded ordnance (UXO) includes military munitions that 1) have been primed, armed, or otherwise prepared for action, 2) have been fired, dropped, launched, projected, or placed in such a manner as to continue to be a hazard to operations, installations, personnel, or material, and 3) remain unexploded either by malfunction, design, or any other cause.

Former Mare Island Naval Shipyard
Investigation Area K
Public Meeting
April 24, 2025 at 7:00 PM

Proposed Plan/Draft Remedial Action Plan – Comment Form

A public meeting to present the PP/Draft RAP will be held on **April 24, 2025 at 7:00 PM**. There are three ways to join the public meeting:

1. In-person at the Mare Island Convention Center (375 G Street, Vallejo, California)
2. Join by computer or mobile app: type this link into your browser: https://tinyurl.com/MINSRAB-Apr25. Click "Join" in the upper right corner. Enter session number **254 261 703 144**, follow prompt to enter name, email address, and session password **JJ3mp6nA** to enter the meeting.
3. Join by telephone: **call Toll Free: (833) 240-9982** and enter access code **143810388#** when instructed.

The public comment period for the PP/Draft RAP for IA K is from March 14 through May 15, 2025. You may provide your comments verbally at the public meeting where your 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 15, 2025.** After completing your comments and your contact information, please mail this form to the address provided on the reverse side. Comments are also being accepted by email; please email messages to Mr. Scott Anderson at **scott.d.anderson11.civ@us.navy.mil**.

Name: _____

Representing (optional): _____

Phone Number (optional): _____

Address (optional): _____

Please check the appropriate box if you would like to be added to or removed from the Navy's Environmental Mailing List for Mare Island: ☐ Add me ☐ Remove me

Comments

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Your Return Address:

Place Postage Here

Navy BRAC Program Management Office West
Attn: Mr. Scott Anderson
BRAC Environmental Coordinator
33000 Nixie Way
Building 50, Suite 207
San Diego, California 92147