



## SITE BACKGROUND – Continued

Additional environmental programs have been implemented at the former shipyard that have evaluated potentially contaminated areas or have identified other environmental concerns. These include surveys performed in anticipation of property transfer, as well as the ongoing environmental programs at the shipyard.

The Western Early Transfer Parcel as discussed in the Draft RAP consists of the following: a portion of Investigation Area (IA) I including Dredge Ponds 1 (partial), 2M, 2N, 2S, 3E (partial), 3W, 4M, 4N, 4S, 5NW (partial), 7 and a historic dredge pond located north of Pond 3W; IA J, which is comprised of tidal marsh along the western shore of Mare Island, adjacent to and west of the Dredge Ponds; and the western Submerged Lands located west of IA J. The WETP Dredge Ponds occupy an area of approximately 516 acres and IA J occupies an area of approximately 650 acres along the western side of Mare Island. The portion of the western Submerged Lands in the WETP occupies an area of 1,400 acres and is located west of IA J.

### Dredge Ponds

The dredge pond system located along the west side of Mare Island was created in several stages between 1914 and 1965 to support the maintenance dredging of Mare Island Strait waterways and ship berthing facilities at the Shipyard. During the 13-year period between 1980 and 1993 alone, records indicate that over 20,000,000 cubic yards of material were dredged. The dredge ponds were constructed on San Pablo Bay wetlands using sediments dredged from Mare Island Strait waterways and transported across the island as slurry through a piping system to the pond outfall points.

The dredge ponds were established to receive dredge material pumped across Mare Island during maintenance dredging of the channel and Shipyard facilities along Mare Island Strait. The dredge pond history suggests two sources of contamination that may have resulted from the operation of the dredge ponds. The first would be the debris (ordnance and explosives, discrete radiological items, scrap metal and miscellaneous debris) that was dredged with the sediment from Mare Island Strait and the second would be the contaminants (pesticides and metals) present in the dredged sediment.

The common historical practice for disposing of damaged or unwanted ordnance was to throw it overboard from a vessel, pier, or sea wall. Ordnance and explosive (OE) material discarded in Mare Island Strait was dredged and transported in 16-inch diameter pipelines with the dredge slurry to pond outfall points. Heavier material, including ordnance, radiological items, and other discarded scrap material quickly settled out and remained in close proximity to the outfall points. Periodic maintenance to restore pond capacity was accomplished when pond bottom sediments were removed and used to raise the height of perimeter berms. Therefore, the probable location of any discarded material should be near the outfall locations in either the pond bottom or the adjacent berm. Discrete radiological items such as radium and strontium buttons were also removed from the Dredge Ponds.

Based on the Preliminary Assessment/Site Inspection (PA/SI) and intrusive investigations, the primary mode of placement of OE (and radiological) items in the dredge ponds was the pumping of silts containing metal debris and OE through pipes, with the metal debris/OE depositing in close proximity to the outfalls due to the relatively higher density of the debris/OE compared to the water and silt. This mode of placement represents a non-random distribution, which is similar to disposal sites where OE is placed into trenches or pits. Once deposited at the outfalls, redistribution of OE can occur when heavy equipment is used to push dredge material from the pond bottoms up the slopes to raise the levees and provide additional capacity in the ponds. The redistribution of OE could occur if the operator scrapes debris from the outfall area and pushes this material into the levee.

Radiological screening was necessary subsequent to the discovery of a radium "button" during screening of outfall debris for the OE Intrusive Investigation. The radiological investigation used a deposition model similar to the one developed for the OE SI.

### Investigation Area J

IA J is entirely comprised of tidal marsh along the western shores of Mare Island. A monotypic stand of pickleweed dominates IA J. IA J is habitat for the salt march harvest mouse, shore birds, and other organisms and is classified as wetlands or open space. Potential sources of contamination with IA J would include the dredge pond weirs that were described previously. The discharge over the weirs from the dredge ponds to IA J could have transported sediment particles with metals or pesticides adsorbed to the particles. The weir areas were also evaluated for metals contamination.

### Western Submerged Lands

The western Submerged Lands consist of the western shores of Mare Island, located west of IA J, and are comprised of open water and mudflats. An outfall pipe is located within the Submerged Lands approximately 200 feet west of the IA J western boundary and originates at the Sanitary Sewage Treatment Plant (SSTP). Currently, bay mud covers the lower half of the outfall pipe, and the pipe appears to be half-filled with bay mud. Between 1957 and 1976, treated effluent from the SSTP was gravity-discharged via a 30-inch concrete outfall pipe into the San Pablo Bay. This practice was discontinued in 1976, when the treated effluent was routed to the Vallejo Sanitation and Flood Control District.

#### **What is a RAP?**

The purpose of a RAP is to present the selected remedial action for a site with a previous hazardous substance release:

#### **The RAP:**

- Provides a description of the site,
- Provides a brief summary of previous investigation findings,
- Identifies and explains the preferred alternative for a remedial action,
- Describes other remedial alternatives considered, if appropriate, and
- Provides remedial action objectives, if appropriate.

## SUMMARY OF INVESTIGATIONS

Based on historical information, the Remedial Investigation (RI) focused on those historical areas within the WETP that likely posed a potential risk to human health and the environment. Those areas included the WETP Dredge Ponds, the weirs within Investigation Area (IA) J, and the SSTP outfall located in the western Submerged Lands. The WETP Dredge Ponds were extensively investigated for OE, discrete radiological items, and chemical contaminants. Both the IA J weirs and the SSTP outfall were also investigated from chemical constituents. The RI and risk assessments concluded that the following hazards posed an unacceptable risk to humans or environment within the WETP and required the development of remedial alternatives.

### Dredge Ponds

- The risk to people from contaminants of concern (COCs) present within seasonal surface water was greater than  $10^{-6}$ .
- The risk to plants and animals from contaminants of ecological concern (COECs) present within the dredge pond material was shown to be limited.
- The qualitative risk assessment for OE risk stated that based on the type, condition, and location of OE items previously recovered from the Dredge Ponds, it can be concluded that although OE material may still exist in the Dredge Ponds, the probability of coming into contact with OE items is extremely low, and the risk of injury due to contact with OE items is even lower. In addition, the intrusive investigation/removal action likely removed a vast majority of the OE items.
- The qualitative risk assessment for the discrete radiological items concluded that there may be an extremely remote possibility that radiological items are still present in the Dredge Ponds, but the likelihood of exposure to radiological items is even more remote.

### Investigation Area J

- The ecological risk assessment showed limited risk to plants and animals from COECs around the Dredge Pond Weirs.

### Western Submerged Lands

- The ecological risk assessment concluded that the risk to plants and animals from COECs around the SSTP outfall was also shown to be limited and not immediate.

## SUMMARY OF FEASIBILITY STUDY

Based on the extremely low human health risk posed by the OE and discrete radiological items, and the limited risk posed by chemical constituents remedial alternatives were developed and evaluated in a Feasibility Study (FS). The following remedial alternatives were developed within the FS.

### Dredge Ponds

- Alternative DP-1: No action
- Alternative DP-2a: Institutional Controls, Walkway, and Cover on Eastern Levee
- Alternative DP-2b: Institutional Controls, Walkway, Fence, and Cover on Eastern Levee
- Alternative DP-3a: Institutional Controls, 2-Foot Soil Cover on All Berms
- Alternative DP-3b: Institutional Controls and 2-foot Soil Cover in All Areas
- Alternative DP-4: Institutional Controls and Anomaly Removal

### Investigation Area J

- Alternative IAJ-1: No Action
- Alternative IAJ-2: Institutional Controls and Monitoring
- Alternative IAJ-3: Excavation/Off-Site Disposal of Sediment

### Western Submerged Lands

- Alternative SL-1: No Action
- Alternative SL-2: Institutional Controls and Monitoring
- Alternative SL-3: Excavation/Off-Site Disposal of Sediment

Based on the detailed evaluation and comparative analysis the following alternatives were selected as the preferred remedies.

Alternative DP-2a is the preferred remedy for the WETP Dredge Ponds with a total present worth cost of \$1,175,000 and includes access restrictions (walkway, 2-foot soil cover on eastern levee of Dredge Ponds 4N, 4M and 4S (partial), and signage), land use restrictions, and annual monitoring of sediments. Alternative DP-2a satisfies the threshold criteria while balancing long- and short-term effectiveness at a reasonable cost. Although the Intrusive Investigations/Removal Action significantly reduced the exposure to potential residual OE, Alternative DP-2a, which includes a walkway, further reduces the low probability of exposure to potential residual OE, and the physical hazards associated with the berms by the recreational user.

# DRAFT REMEDIAL ACTION PLAN FOR INVESTIGATION AREAS I (PARTIAL) AND J, AND WESTERN SUBMERGED LANDS

Alternative IAJ-2 is the preferred remedy for IA J with a total present worth cost of \$311,000 and includes land use restrictions and monitoring of sediment at locations adjacent to the weirs. Alternative IAJ-2 is the most cost-effective alternative and satisfies the threshold criteria and provides greater short-term effectiveness.

Alternative SL-3 is the preferred remedy for western Submerged Lands with a total present worth cost of \$295,000 and includes excavation of the sediments adjacent to the SSTP outfall. Alternative SL-3 satisfies the threshold criteria and provides greater long-term effectiveness.

The selected remedies are protective of human health and the environment.

## **FINDINGS AND CONCLUSIONS OF THE DRAFT REMEDIAL ACTION PLAN**

The environmental concerns associated with the past uses of the dredge ponds such as the OE, discrete radiological items, and inorganic constituents in sediments have been investigated and considered not to present a significant risk, or the remaining residual risk has been resolved in the proposed remedy to minimize risks to humans and the environment. The Draft Remedial Action Plan concludes that land use controls, access controls and monitoring is necessary for the WETP dredge ponds; land use controls and monitoring is necessary for IA J; and hot spot removal of mercury and PCB contamination is required for the area downstream of the SSTP outfall in the western Submerged Lands. These recommendations are consistent with the future use of the site for dredge ponds, wetlands and open space.

## **CALIFORNIA ENVIRONMENTAL QUALITY ACT**

California Environmental Quality Act (CEQA) requires DTSC to review the proposed remedial action for possible negative effects on the environment or public health. Assuming compliance with applicable laws and regulations, and with the terms and conditions of the Draft RAP, DTSC has determined that the project will not have a significant effect on the environment as that term is defined in the Public Resource Code Section 21068. DTSC has also determined that this project will not have any significant effect on the environment. Therefore, no mitigation measures are needed.