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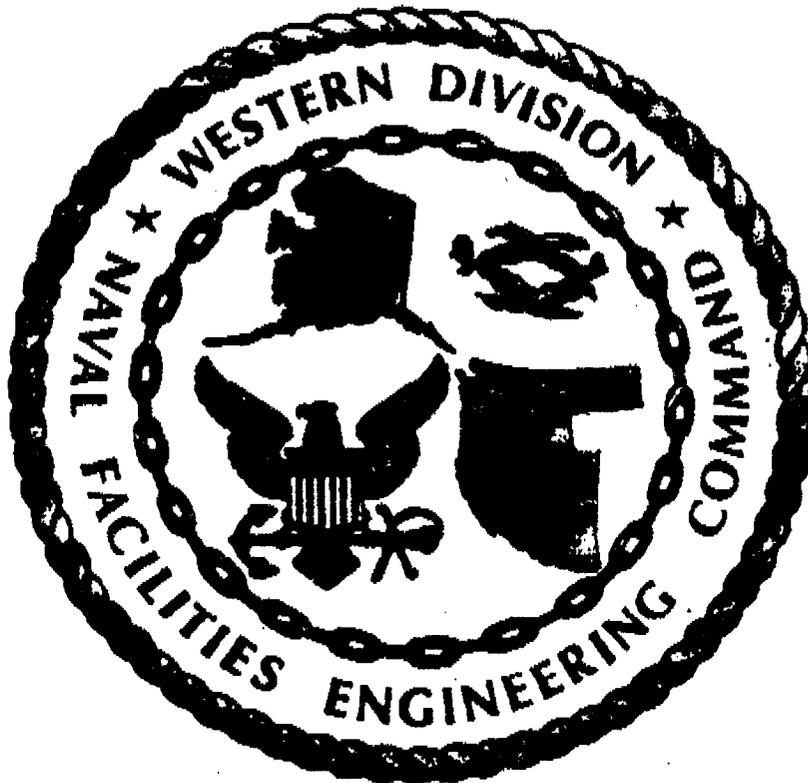
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## FINAL ENVIRONMENTAL IMPACT STATEMENT FOR PROPOSED NEW DREDGING

U.S. NAVY MILITARY CONSTRUCTION PROJECTS:  
P-202 NAVAL AIR STATION ALAMEDA  
P-082 NAVAL SUPPLY CENTER OAKLAND

SAN FRANCISCO BAY, CALIFORNIA

AUGUST, 1990



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18

## Upland Disposal

The Navy identified several potential upland disposal sites for the dredged material from the proposed projects. Nine sites were initially identified. Six of them were suitable for further environmental analysis. Skaggs Island was chosen as the most suitable upland disposal site for in-depth analysis in the EIS. Containment levees would be constructed, and land presently leased for farming would be filled with the dredged material. Wetland and other wildlife habitat would be created at the Skaggs Island disposal site as part of the project, resulting in a positive benefit for wildlife and the environment. Five different habitat creation alternatives are proposed: grading only, seasonal wetland, muted tidal regime, intertidal marsh, and intertidal plateau. In the most probable upland disposal scenario, dredged sediments would be transported in barges towed by tugboats to a transfer point at Naval Shipyard Mare Island, or to the mouth of the Petaluma River. The dredged material would then be pumped about nine or six miles respectively via slurry pipeline to a 250 acre (6% of the island's area) disposal site at Skaggs Island. Skaggs Island is mostly owned by the Navy and is used for communication purposes.

## Ocean Disposal

Three sites were considered: (1) a site 14 miles offshore from Half Moon Bay, (2) a deep ocean former chemical munitions dumpsite approximately 40 miles offshore and west of the Farallon Islands, and (3) a deep ocean site to be designated by U.S. Environmental Protection Agency (EPA) under Section 102 of the Marine Protection, Research, and Sanctuaries Act.

The most feasible ocean disposal site is located in the Gulf of the Farallones, just west of the Gulf of the Farallones National Marine Sanctuary. This former chemical munitions dumpsite was used from 1946 to 1962 to dispose of munitions waste and possibly other debris. It is located approximately 40 nautical miles west by southwest of San Francisco, at a depth between 6000 and 10,000 feet.

## In-Bay Disposal

In-Bay disposal at the Alcatraz site was analyzed in the draft EIS, and has been dismissed from further study in this final EIS. Opposition from regulatory agencies and the public, in addition to potential adverse impacts to water quality, fish habitat, navigation, and reduction of in-Bay disposal capacity were all factors in this decision. The existing Alcatraz disposal site, however, would continue to be used to dispose of maintenance dredged materials that would follow completion of the proposed action.

## EXISTING ENVIRONMENT

### Dredging Sites

The dredging sites are located in Central San Francisco Bay in an area characterized by complex circulation and sedimentation processes. Chemical testing showed that sediment quality at both dredging sites is similar to the quality of sediments found throughout the Central Bay and is similar to the existing Alcatraz disposal site. Both NAS Alameda and NSC Oakland have been extensively developed and contain structures such as buildings, piers, and maintenance facilities.

Activities related to Navy operations are important to the local economy. Recently, NAS Alameda and NSC Oakland have been included on a Department of Defense candidate list for consideration to be closed. However, this is only a proposed list, with many studies to be done prior to a decision on which bases, if any, to close. For purposes of this EIS, the Navy is proceeding on the assumption that NAS Alameda and NSC Oakland will remain open and fully functional.

### Upland Disposal site

The proposed upland disposal site is 250 acres in the southwest corner of Skaggs Island. Skaggs Island is a 4,310-acre island owned mostly by the Navy, and is located in Sonoma County adjacent to the north end of

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19

San Pablo Bay, approximately eight miles northwest of Vallejo, California. The Skaggs Island is surrounded by artificial levees and its surface ranges in elevation from approximately sea level to about three feet below sea level. The site that would be filled for dredged material disposal and habitat creation has an average present elevation of one foot above MLLW, is used for agriculture, and does not include the wetlands that exist on the water sides of the levees. Only a small amount of wetland vegetation (less than one acre) is present in the disposal area. Many communication reception and relay facilities including associated personnel support and housing are located on the island. The existing environment supports small mammals, upland birds, and marshland around the periphery of the island.

### Ocean Disposal Site

The proposed ocean disposal site is located at a former chemical munitions disposal site approximately 40 miles west by southwest of San Francisco, on the continental slope at depths of 1,100 to 1,600 fathoms. The sediment type at this disposal site is characterized by fine silts. Representative invertebrates and fish, including sablefish, sole, and hake, most likely inhabit the area. No commercial fisheries or economically important nurseries have been identified at the site. Albacore and salmon use the waters in the vicinity of the site.

### Existing Alcatraz Disposal Site

Alcatraz is an in-Bay disposal site that receives the bulk of dredged materials from Central San Francisco Bay. When Alcatraz was originally designated as a disposal site for Bay sediments, it was expected that the dredged material would be washed out to sea with the tides. However, some mounding of the sediment has occurred at the Alcatraz site. There is concern that the dredged sediment already present at the site contains contaminants at elevated levels. The biological community of the site is fairly consistent with other Central Bay locations.

## ENVIRONMENTAL CONSEQUENCES OF PROPOSED AND ALTERNATIVE DISPOSAL ACTIONS

A table of impacts follows the Executive Summary.

### Dredging Sites:

The following are the potential impacts of dredging to the Alameda and Oakland waterfronts. A dredging-induced increase in turbidity would occur, and would have a short-term impact on water quality, particularly a reduction in dissolved oxygen. Bottom-dwelling organisms are well adapted to disturbance at the dredge sites, because annual maintenance dredge episodes occur at these sites. Only short-term impacts are expected, followed by recolonization within days to weeks after dredging is completed.

Pacific herring spawn along the Alameda and Oakland waterfronts. Dredging operations may impact the herring if conducted during the December-February spawning and commercial herring fishing season. Dredging is not expected to have an impact on least terns' nesting at NAS Alameda.

Saline water could intrude on a nearby underground aquifer, the Merrit Sand/Posey formation. However, the amount of saline intrusion would be insignificant relative to the present rate of natural intrusion. No significant socioeconomic impacts are predicted.

The additional dumping of sediments due to increased maintenance dredging at the existing Alcatraz disposal site would have minimal incremental affect on water quality and fish habitat. Dumping of sediments would slightly increase suspended sediment and turbidity, and reduce long term disposal capacity at the Alcatraz site in the long term.

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## Upland Disposal Alternative:

### Physical Environment

Air quality impacts from proposed diesel powered pumps could be significant. Skaggs Island would be permanently impacted by filling and levees built for containment and existing levees raised for flood protection. Otherwise, disposal of dredged material and wetlands creation at Skaggs Island is not expected to result in significant impact to the physical environment. Depending on the wetlands creation option, rainfall could result in leaching of salts and other constituents from the dredged material. This has a neutral impact because the waters around Skaggs Island are saline/brackish.

### Biological Environment

No significant impacts are expected from placing the dredged material on the Skaggs Island disposal site. Historic former bay marshlands (now used for agriculture) would be filled, covering up some wetland plants. The wetland and wildlife habitat created would more than offset impacts from the filling and pipeline impacts.

Endangered plant and animal species may reside in the wetlands on the tidal side of the levee surrounding the island and along access paths to the island. The levees would be expanded and disposal by filling would take place only on the inland sides of the modified levees. Only a very small amount of wetlands (less than one acre by preliminary survey) is present there, and it contains no endangered species. The extensive wetlands on the outside of the levees would not be impacted, except due to the pipeline. However, pipeline laying and vehicular access for maintenance would impact the pipeline route. These impacts would be temporary, would take place in a narrow corridor, and would be insignificant. The project could displace indigenous and endangered species, but they could easily retreat into the large surrounding wetland area. New wildlife habitat would be created on the disposal area on Skaggs Island. *Note*

Aquatic resources would potentially be damaged if wetlands are traversed by construction equipment while the pipeline to Skaggs Island is being constructed. Such impacts would be minor and of limited duration, though the low potential for pipeline breakage would exist.

The creation of wetlands over the disposal site would more than compensate for any wetlands which might be altered during pipeline construction. If any mitigation is required, the likely maximum number of acres affected  $(6.1[\text{pipeline}] + 1[\text{disposal}] + 38[\text{levee}] = 45.1 \text{ acres})$  is still much smaller than the 250 acre disposal area on which new wetlands could be created.

### Socioeconomic Environment

Disposal of dredged material is not expected to have a significant effect on the socioeconomic environment of Skaggs Island. Approximately 250 acres of land would be retired from present oat hay dry farming production, to be replaced by wetland and wildlife habitat, and levee and containment structures to hold the material. The leasing of farmland on the remainder of Skaggs Island would continue as it is at present. *Note*

## Ocean Disposal Alternative:

### Physical Environment

Based on the existing information, no significant impacts are expected to the physical environment from disposal of dredged material at the former chemical munitions disposal site. Impacts to water quality are expected to be minimal, of short duration, and localized.

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Biological Environment

Biological resources in the former chemical munitions disposal area are not expected to be significantly affected by the disposal of dredged material. Benthic organisms would be buried, but the communities would be expected to recover. 1

Individual demersal fish would probably be buried. It is expected that pelagic fish species would avoid the descending material. No commercial fisheries are expected to be affected. 2

Primary current movement is away from the adjacent Farallones Marine Sanctuary. Turbidity may remain for some time after a dump, but cubic miles of ocean are available for dispersion to undetectable levels.

Socioeconomic Environment

Disposal of dredged materials is not expected to have significant socioeconomic effects, such as on recreation, commercial fishing, or other uses of the area. 3

No Action

If NAS Alameda and NSC Oakland are not dredged, the existing conditions would continue. Insufficient clearance at carrier berths at NAS Alameda would continue to exist, resulting in the ingestion of silt and debris damaging components and causing expensive additional maintenance and down-time. Ships would have to continue to enter and leave NSC Oakland partially loaded. The Navy's ability to meet its mission would continue to be constrained and result in costlier, less efficient operations.

Water quality at the proposed deep ocean disposal site would be affected by natural conditions, and existing munitions wastes on the ocean floor, only. Benthic communities in the munitions dump site would be unchanged. Pelagic fish would not be temporarily displaced. There would be no opportunities for wetlands development under the no-action alternative. Approximately 250 acres of agricultural land on Skaggs Island would remain in production. 3.

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## 2.2.1.3.4 Wetland and Habitat Creation

The conceptual mitigation plan presented in the Draft EIR/EIS was developed as a planning guide for the Navy. If this alternative means of disposal is chosen, the Navy will develop a detailed mitigation plan. This plan would be developed in cooperation with the necessary local, state, and federal agencies. The first step would be to work with the agencies to develop the goal of the plan. This goal would define the type of habitat to be developed. An understanding of the engineering constraints associated with deposition of slurried materials would be necessary if the goal is to be realistic. The Sonoma Bayland Trust project currently being planned for the land adjacent to the Port of Sonoma may provide valuable information that would be useful in understanding the limits in creating specific elevation contours with slurried dredged materials.

The goal of the project would define the habitat mix for the mitigation site. Based on this goal, specific objectives would be developed that would define the habitat to be created. (For example, if the goal is to create habitat that is most favorable for the Salt Marsh Harvest Mouse, the objectives would define the vegetation mix, establish target coverage by the key species, define the desired elevation of the vegetation, and define the target acreage for the various vegetation types. These objectives also would be used as a basis for defining the success criteria for the mitigation project.

After agreement is reached on the project goal and specific objectives, a detailed site plan would be developed. This site plan would describe the final configuration of the site and the steps that would be necessary for achieving this configuration. If the sediments require special amendments, such as the addition of organic matter, nutrients, or other material to make the texture of the material more appropriate, these procedures would be described in detail in the site preparation plan.

Another component of the mitigation plan would be the planting plan. This plan would describe the vegetation to be planted, where it is to be planted, planting layout, planting procedures, propagation procedures (if needed), and the planting procedures. The monitoring plan would define the monitoring procedures. This plan would be developed in cooperation with the appropriate agencies, and would address, at a minimum, the objectives developed to define the goal. Data to be collected could include species present and cover, plant height and possibly productivity, bird use of the mitigation area, as well as measurement of physical parameters such as soil salinity, nutrient content, organic matter content, pH, duration of flooding, etc.

The monitoring plan also would be designed to provide input to the maintenance plan, another important element of the mitigation plan. The maintenance plan is, in essence, a contingency plan. The maintenance plan would define the appropriate actions if the data from the monitoring plan indicates that there are problems. For example, if exotic plant species begin to become established in the developing marsh, there would be defined actions to remove the offending vegetation. If elevations appear to be too high or too low, based on monitoring of the duration of flooding or some other measure, steps to correct the situation would be defined. Definition of these actions may need to include a consultation procedure with the agencies since it may be more appropriate to modify the response procedures if the response action would itself result in potentially significant impacts.

The wetland and Habitat Creation alternatives are envisioned in the following:

### a. No Reclamation Action

Under this alternative, no surface reclamation would be taken after the disposal and dewatering of the dredged material. Vegetation would be expected to establish itself naturally, probably taking years. Low value wetland habitat may become established. Very little if any cost would be involved.

### b. Seasonal Wetland, Levee Intact

The disposal area would be developed to enhance the habitat potential of the site (seasonal wetland to upland) through grading, soil amendments, and planting. The levee would not be breached. It would involve minimal construction costs and monitoring.

### c. Wetland with Muted Tidal Regime

Tidal gate opening would be provided. Waterbird surface habitat, marsh, and upland habitat would

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## 3.2.1.3 Water Quality

The surface water environment surrounding Skaggs Island involves the complex interaction of meteorology and tides. Skaggs Island is separated from San Pablo Bay by a 0.5 mi reach of Sonoma Creek which flows between the narrow western tip of Island No. 1 and Tubbs Island. Extreme high and low water in San Pablo Bay are 5.5 and -5.2 ft from 1929 mean sea level datum (msl), respectively. Mean high and low water are 80 and -58 cm (2.6 and -1.9 ft) msl, respectively. Although salinity varies with stream flows, for well-mixed conditions and low stream flows salinity in the deep water channel north of Pinole Point varies between 22 ppt to 25 ppt (Dames and Moore, 1974).

Beneficial uses of Sonoma Creek include navigation, water contact recreation, sport fishing, warm freshwater habitat, preservation of areas of special biological significance, wildlife habitat, marine habitat, and fish migration. The beneficial uses of San Pablo Bay include industrial service supply, navigation, water contact recreation, non-contact recreation, commercial and sport fishing, wildlife, preservation of rare and endangered species, fish migration, fish spawning, shellfish harvesting, and estuarine habitat (CA RWQCB).

Precipitation in the Sonoma Creek and Napa River drainage basins creates freshwater flows that mix with the saline waters of San Pablo Bay in the tidal sloughs surrounding the island. Precipitation averages 51 to 63 cm (20 to 25 in) annually in the vicinity of Skaggs Island and about 76 cm (30 in) in the basin uplands (California Department of Water Resources, 1976). The mean 24-hour storm is 6 cm (2.5 in) and the 100-year 24-hour storm is 16 cm (6.25 in). Flow in Sonoma Creek is highly dependent on precipitation, especially in the upper basin. Base flow during dry months (April through October) is on the order of tens to hundreds of m<sup>3</sup>/sec (hundreds of cfs). By contrast, the maximum recorded flood, which occurred in December 1985, reached a peak discharge of 251,482 l/sec (8,890 cfs) at the Agua Caliente gaging station. The peak flood discharge recorded for the Napa River at Napa was 971,376 l/sec (34,300 cfs) in February 1989.

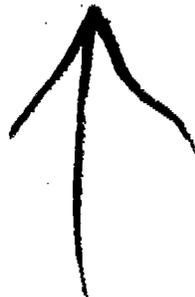
Annual potential evapotranspiration has been estimated at 48 in annually (IECO, 1975). However, because about 75 percent of the rainfall occurs between November and January, when the evaporation rate is lowest, most of the precipitation becomes stream flow or infiltrates and recharges the aquifer.

At Skaggs Island, excess surface water is collected in a network of ditches and is pumped into the surrounding sloughs. While no estimates have been made of the amount of seepage that occurs through the dikes from the sloughs, it is likely that some of the pumped water is from this source (IECO, 1975). Because the ditches are below mean sea level, the average hydraulic head outside the dikes is higher than inside. Plant transpiration probably increases the upward flow of brackish water through the soil profile. If the soil were not drained by ditches, it might become too saline to grow hay crop. Pumping therefore enables rainfall to infiltrate and leach salts from the soil.

The water quality of the sloughs is not monitored, although the sloughs are expected to contain a variable and intermediate mixture of the solutes present in both the San Pablo Bay water, and in the freshwater flow discharging from Sonoma Creek. Table 3-7 lists typical values for inorganic solute concentrations and water quality parameters for Sonoma Creek and San Pablo Bay.

Skaggs Island is within the 100-year floodplain delineated by the USGS (Limerinos et al., 1973). However, because it is protected by dikes, the COE excludes Skaggs Island from its designation of flood-prone areas. Skaggs Island is also not considered by the USGS to be threatened by inundation by run-up from a 20 ft tsunami because of the protection afforded by both Island No. 1, and the dikes on Skaggs Island (Riuser and Dupre, 1972).

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The intensively developed, maintained, or landscaped areas of Skaggs Island account for 94.2 ac, of which 56 ac are in landscaped areas. The remainder of the area consists of buildings, roads and parking lots, and maintained areas. There are no naturally occurring woody plant species in the landscaped areas. Those woody plants that are present are not abundant in either number of individuals or number of species. The most frequently sighted vegetation includes pine, eucalyptus, strawberry ice plant, ivy, and purple leaf plum. The pines, cedar, and eucalyptus were planted 30 years ago. No other mature trees are found at the facility.

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The housing and recreation areas are planted with lawn grasses and occasional ornamental landscape plants, such as roses or weeping willows. Grasses in the recreation areas are in poor condition because of compaction and invasion by less desirable herbaceous species.

The Navy's extensively developed and maintained areas consist of: nonirrigated cropland, 2,787 ac; main drainage ditch, 20 ac; levee area, 71 ac; maintained vacant land, 22.7 ac; tidal wetlands, 188 ac; sewage ponds (freshwater wetlands), 59 ac; wildlife area, 80 ac; for a total of 3,216.8 ac.

The agricultural areas are used to raise oat and ryegrass hay. Infestations of yellow starthistle and toadflax occur in the low, poorly drained areas. The vegetation in the main drainage ditch area, levee area, and maintained vacant land area includes alkali bulrush, annual ryegrass, yellow starthistle, fat hen, coyote brush, prickly lettuce, curly dock, California oatgrass, riggut brome, cattails, blue gum, and willow. The vegetation in the tidal wetlands includes alkali bulrush, pickleweed, saltgrass, and gum plant. The vegetation in the sewage ponds includes hardstem bulrush and cattails. The vegetation in the wildlife area includes California oatgrass, annual ryegrass, riggut brome, bull thistle, prickly lettuce, curly dock, and coyote brush.

### 3.2.2.4 Wildlife Habitat/Wetlands

The Navy's natural resource plan for Skaggs Island (U.S. Navy, 1989b), identifies the single largest habitat type on Skaggs Island is the approximately 2,800 ac of agricultural outlease. This area is intensively cultivated, subject to discing each year and kept drained by a system of ditches and pumps. The southwestern corner of the station is the lowest portion of the agricultural area that is typically slowest to drain and therefore produces lower yields of hay.

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Any agricultural area of the Skaggs Island is a flooded palustrine wetland that would revert to wetland conditions if draining and farming were discontinued (U.S. Navy, 1988b). The intensive agricultural use of the leased area has reduced wildlife value. The farmlands receive some use by raptors and passerine birds, but waterbird use is minimal and limited to periods following heavy rainfall.

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The brackish tidal wetlands outside the levees comprise the second most abundant habitat type on Skaggs Island (258 ac). These are classified as regularly flooded intertidal estuarine emergent wetlands, primarily supporting alkali bulrush and pickleweed. This area represents the historic remnant of the wetland type existing naturally in the Napa Marsh prior to diking and is potential habitat for the federally listed, endangered California clapper rail and salt marsh harvest mouse. In addition to these species, these wetlands receive considerable use by a variety of migratory waterbirds, including herons and egrets, coots and rails, ducks and shorebirds, as well as several species of raptors.

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The third most extensive habitat is the excavated palustrine emergent and unconsolidated bottom wetlands in the 24-ha (59-ac) sewage oxidation ponds near the northeast boundary of the station. Hardstem bulrush (*Scirpus acutus*) and cattails (*Typha* sp.) are the dominant species in these ponds. They support significant use by a variety of ducks, marsh birds, and passerine birds.

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The pipeline route from the Petaluma River to Skaggs Island is through some areas of tidal marsh. Tidal marsh dominated by varying mixtures of pickleweed (*Salicornia virginica*) and cordgrass (*Spartina foliosa*) is found at the margins of the Petaluma River, Tolay Creek, and Sonoma Creek. North of Highway 37 along Tolay Creek is an extensive marsh dominated by pickleweed. The Northwestern Pacific right-of-way between the Petaluma River and Tolay Creek is adjacent to agricultural drainage ditches which contain some emergent vegetation and a small fresh water marsh near the Black Point Gamebird Club. The intertidal and subtidal habitats of San Pablo Bay in the vicinity of the mouth of the Sonoma River are sensitive habitats used as feeding areas for a variety of shorebirds and waterfowl.

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3.2.3.3 Commercial Fisheries

No commercial fisheries exist in or around Skaggs Island. The area around Skaggs Island is surrounded by sloughs and sensitive wetland areas. These serve as nurseries for a number of fish species, however.

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3.2.3.4 Commercial Shipping

There are no public port facilities in San Pablo Bay except for Suisun Bay's Port of Benicia. However, there are numerous ports serving oil refineries and other industrial operations (Dames & Moore, 1974). The Skaggs Island site, however, is not in any commercial shipping lanes.

3.2.3.5 Military Activities

Skaggs Island is used by the Navy for communications activities. The naval facilities also include housing units and administrative buildings. These facilities support the Naval Security Group.

3.2.3.6 Recreation

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Sonoma County Parks Department operates a public boat launch ramp on Hudeman Slough next to the Hudeman Slough bridge which provides road access to the island from the north. Skaggs Island has been identified by the South Sonoma Valley Planning Department as public/quasipublic. This classification identifies Skaggs Island as agricultural. Regional plans of BCDC, as well as ABAG have projected future land uses to include recreation, but the type is not specified.

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3.2.3.7 Archaeological, Historical, and Cultural Resources

A records search was conducted by California Archaeological Inventory to identify any historic sites on the island. The search concluded that Skaggs Island does not have any recorded prehistoric or historic sites.

3.2.3.8 Noise and Visual Aesthetics

No noise studies for Skaggs Island are known to exist. The noise levels are probably quite low because any noise would be the result of normal agricultural practices and limited Navy activities.

Skaggs Island possesses many aesthetic amenities such as agricultural lands, wetlands, and waterfowl. The terrain is relatively flat and the island's peripheral levees are adjacent to salt marshes. While generally not an undisturbed view, the island projects a relatively quiet, unrushed scene.

3.2.3.9 Land Use

Skaggs Island is part of unincorporated Sonoma County and has three principal land uses including (1) farming, (2) military activities, and (3) wildlife. Approximately 2,800 ac are leased out by the Navy for agricultural use and an additional 1,000 ac of privately owned land are used for agriculture. The remaining land space is used by the Navy for communications. The island's land use is not likely to be changed. The Navy communications facility requires that the surrounding area be free of industrial and low density residential areas. This type of area is known as a clear zone and the Navy has restricted its non-mission land use of Skaggs to agriculture, conservation, and recreation (Entrix, 1989).

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3.3 OCEAN DISPOSAL SITE ALTERNATIVE

The proposed ocean disposal site for the Navy dredging projects is in the former chemical munitions disposal site located approximately 40 nmi west by southwest of San Francisco, on the continental slope at depths of 1100 to 1600 fm (2013 to 2928 m). The sediment type is characterized by fine silts. Representative invertebrates and fish (including sablefish, sole, and hake) most likely inhabit the

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