Naval Station Treasure Island - Hunters Point Annex
San Francisco, California
Region 9
CA1170090087

Site Exposure Potential

From 1869 to 1940, Hunters Point Annex was a commercial dry dock facility in San Francisco, California (Figure 1). The U.S. Navy bought the property in 1940 and leased it to Bethlehem Steel in 1940 and 1941. No data are available regarding activities prior to 1941, but the Navy operated the shipyard for ship construction, maintenance, and repair from 1942 to 1974. Shore facilities included industrial buildings, offices, and housing; waterfront facilities included forty 150-meter long deepwater berths and six dry docks. The facility was also used for experiments on radioactive decay, properties of fallout, fallout effects on animals, and physics of instrumentation and shielding. Navy ships used in the Bikini Atoll nuclear tests were decontaminated by sandblasting at Hunters Point. All radioactive wastes were reportedly disposed of off-site (DNWD 1988).

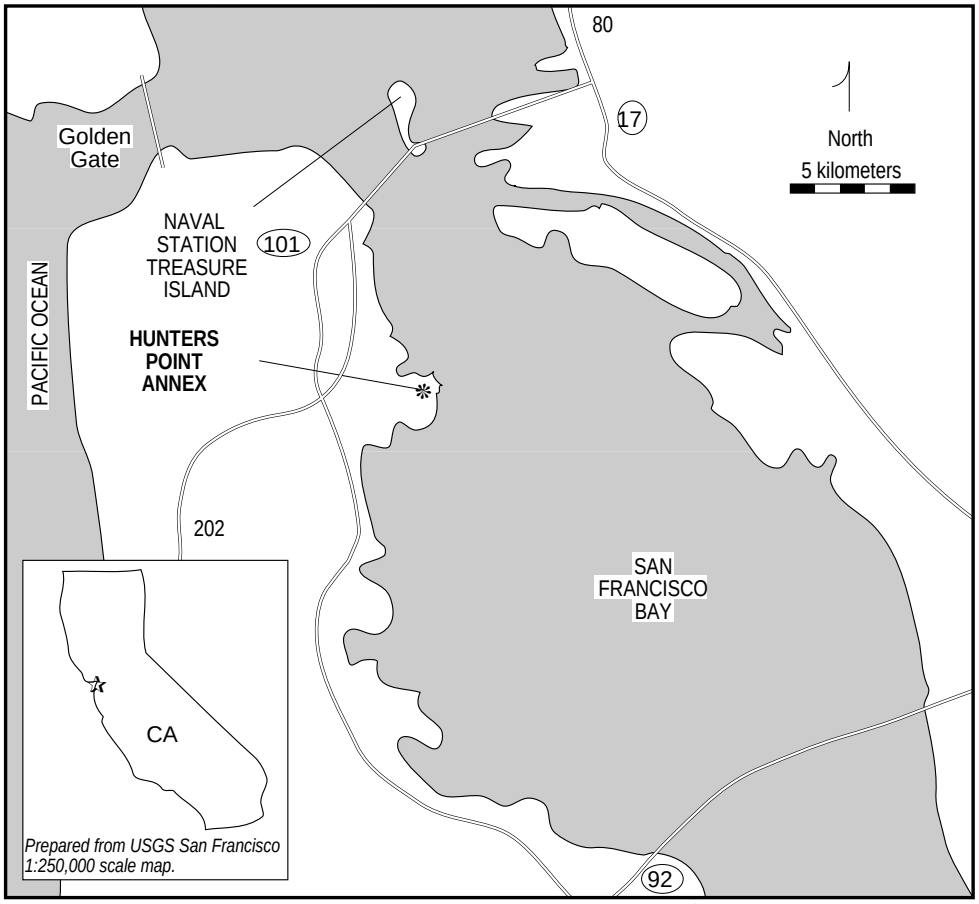

Figure 1. The Hunters Point Annex site in San Francisco, California.

In May 1976, most of the facility was leased to Triple A, who operated it as a commercial ship repair facility until June 1987. Triple A sublet portions of the site to private firms for warehouse, industrial, and commercial activities. Wastes were generated from ship repair and maintenance, facilities maintenance, and building demolition. Activities by all tenants

resulted in the largely undocumented disposal of sandblast waste, paints, solvents, fuels and oils, acids, bases, metals, PCBs, and asbestos (DNWD 1988).

The Hunters Point Annex property covers 390 hectares; 211 hectares on land, 179 hectares in San Francisco Bay. The site is bounded on three sides by the bay and on the fourth side by the residential/commercial/industrial area of Hunters Point. The northern and eastern shores of the site have dry dock and berthing ship repair facilities. The southern shore is primarily fill. Nearly 80 percent of the land area of the site is relatively level lowland areas that were built by placing fill along the margin of the bay. The remaining area is a moderate to steeply sloping ridge in the northwest portion of the site. Elevations range from two to four meters above mean sea level (MSL) in the lowlands to about 55 meters MSL at the crest of the ridge. Surface drainage is primarily sheet-flow runoff collected by on-site storm sewers and discharged to the bay. There are no naturally occurring drainage features across the facility. Groundwater beneath the site may flow radially toward the bay from higher elevation inland areas, and may be tidally influenced in some areas (DNWD 1988).

Possible contaminant migration pathways are groundwater flow, surface water runoff, direct discharge, and erosion and runoff of contaminated surface soils to San Francisco Bay .

Site-Related Contamination

Contaminants of concern to NOAA include trace metals, PCBs, and volatile and semi-volatile organic compounds (Table 1). Arsenic, cadmium, chromium, copper, lead, silver, and zinc were observed in on-site groundwater in concentrations that exceeded acute AWQC by up to

Table 1. Maximum concentrations of selected contaminants at the Hunters Point site (DNWD 1988); range in natural soils (EPA 1983); AWQC for the protection of saltwater aquatic life (EPA 1986); concentrations for soils in mg/kg and for water in μg/l.

		Range in		AWQC	
Contaminant	Soil	Natural Soils	Groundwater	Acute	Chronic
ORGANICS					
PCBs					
PCBs	89	N/A	4	10	0.03
Volatile					
pyrene	16	N/A	470	N/D	N/D
xylene	N/A	N/A	42,000	N/D	N/D
Semi-Volatile					
naphthalene	84	N/A	290	2,350*	N/D
INORGANICS					
Trace Metals					
arsenic	N/A	1-50	30,000	69	36
cadmium	54	0.01-0.7	650	43	9.3
chromium	55,000	1-1,000	4900	1,100	50
copper	37,000	2-100	130,000	2.9	2.9
lead	52,000	2-200	71,000	140	5.6
mercury	6.1	0.01-0.3	N/A	2.1	0.25
nickel	1,000	5-500	N/A	75	8.3
silver	1.7	0.01-5	100	2.3	N/D
tin	N/A	2-200	410,000	N/D	N/D
zinc	150,000	10-300	26,000	95	86

N/A: Not available N/D: Criteria not developed * LOEL

four orders of magnitude. High levels of tin (410,000 μg/l) were also observed in on-site groundwater. Levels of cadmium, chromium, copper, lead, mercury, silver, and zinc measured in on-site soils exceeded the range commonly found in natural soils (EPA 1983). PCBs were found in on-site groundwater and soils; PCB concentrations observed in groundwater exceeded AWQC. Volatile and semi-volatile organic compounds were measured in on-site groundwater and soils, but none of the concentrations exceeded available toxicity criteria (EPA 1986; DNWD 1988).

NOAA Trust Habitats and Species in Site Vicinity

San Francisco Bay is an estuarine environment providing nursery, adult, and spawning habitat for NOAA trust resources (Table 2). The southern bay area is used mostly as a seasonal nursery ground. Species such as smelt and herring spawn in the central areas of the bay and use the nearshore estuaries for juvenile growth. Several flatfish species also use the nearshore area as juvenile nursery grounds and as adult habitat. Sea perch are year-round residents of the area and can often be found just beyond the intertidal zone. Leopard sharks, dogfish, and bat rays are relatively shallow-water carnivores that feed on smaller fish and benthic invertebrates along the mud flats during high tide. Commercially important shrimp species are also found in San Francisco Bay, with juveniles present in

Table 2. NOAA trust resource use of San Francisco Bay near the Hunters Point site (USFWS 1981).

Species	Spawning Area	Nursery Area	Adult Area	Migration Route	Commercial Fishery	Recreational Fishery
INVERTEBRATES						
bay shrimp	X	X	X		X	X
bent-nose clam	X	X	X			
Dungeness crab		X				
rock crab	X	X	X			
soft-shell clam	X	X	X			
FISH						
anchovy		X				
barred perch	X	X	X			
bat ray		X	X			
California tonguefish		X	X			
English sole		X	X			
jack smelt		X				
leopard shark		X	X			
Pacific salmon				X		
Pacific herring		X				
sand dab		X	X			
shiner perch	X	X	X			
spiny dogfish		X	X			
staghorn sculpin	X	X	X			
starry flounder		X	X			
steelhead trout				X		
striped bass		X	X			X
top smelt		X				
yellowfin gobie	X	X	X			
MAMMALS						
harbor seal		X	X			

nearshore waters and adults in the central portions of the bay. Pacific salmon and steelhead trout use the bay as a migratory route (USFWS 1981). Harbor seals are found in the more southern part of the bay, near the site only when moving through the area (Lecky 1989).

Response Category: Federal Facility

Current Stage of Site Action: RI/FS Workplan

EPA Site Manager

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References

DNWD. 1988. Scoping Document Remedial Investigations/Feasibility Studies Naval Station, Treasure Island, Hunters Point Annex, San Francisco, California. San Bruno, California: Department of the Navy Western Division.

EPA. 1983. Hazardous Waste Land Treatment. Washington, D.C.: Office of Water Regulations and Standards, Criteria and Standards Division. SW-874.

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Lecky, James, biologist, Marine Mammal Branch, NOAA, Los Angeles, California, personal communication, March 15, 1989.

USFWS. 1981. Pacific coast ecological inventory: San Francisco, California. Washington, D.C.: U.S. Fish and Wildlife Service. 1:250,000 scale map.