Fort Ord Army Base

Marina, California
Region 9
CA7210020676

Site Exposure Potential

The 11-km^2 Fort Ord Army Base site is located on Monterey Bay near Marina, California (Figure 1). Established in 1917 as a maneuvers and field artillery range, the base is currently used for training. Waste-generating activities included fire drills, vehicle maintenance, battery repair, spray painting, photo processing, laundry, dry cleaning, and arms repair. Hazardous wastes from these activities were stored on the base prior to off-site disposal. More than 20 potentially contaminated areas have been identified on the base; one of the eight on-site landfills is still active. Four main areas have been investigated for type and extent of contamination in soils and groundwater: the 14th Engineers Motor Pool, the 707th Maintenance Facility, the Cannibalization Area, and the Fire Department Burn Pit (E.A. Engineering 1990).

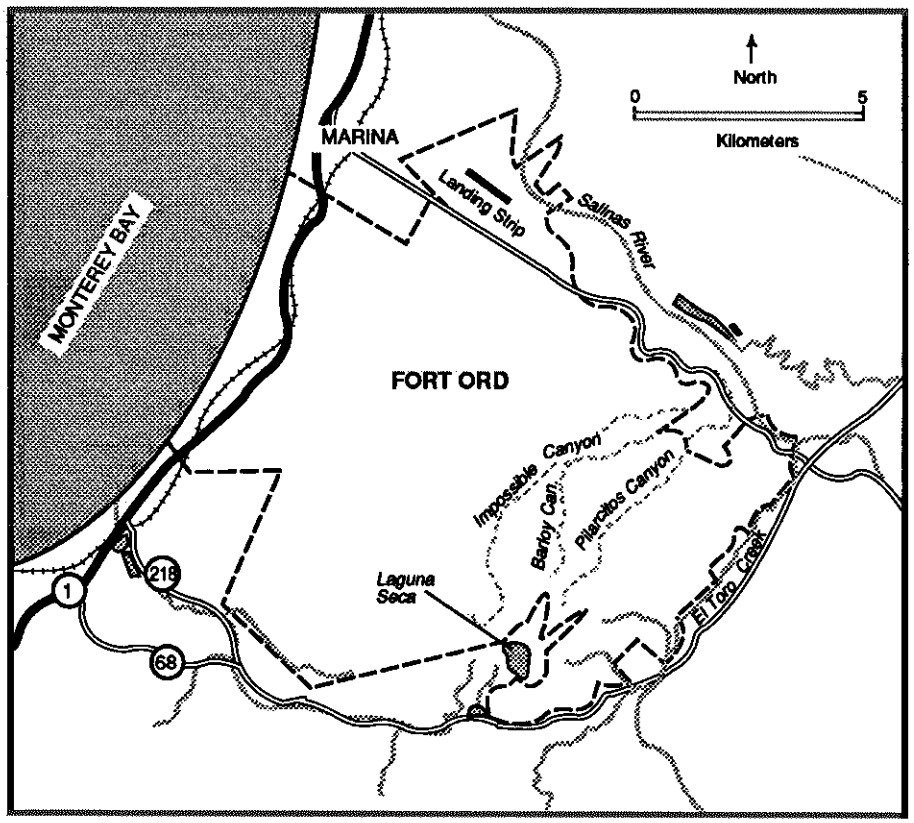

Figure 1.
Fort Ord Army Base, Marina, California.

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Site Exposure Potential, *cont.*

The base is bordered by the Salinas River to the north, El Toro Creek to the east, and Monterey Bay to the west. Sand dunes, the primary landforms in this area, underlie most of the base. The area consists of confined and partially confined aquifers in sandy or finer substrates. Three aquifers underlie the Fort Ord site: a shallow, unconfined sand aquifer, and aquifers composed of finer materials at 55 m and 122 m. These aquifers are not consistently isolated from one another. Groundwater movement in the shallow aquifer is generally west or northwest. The deeper aquifers may be influenced by groundwater pumping in Marina and flow in a more northeasterly direction.

During the original evaluation of Fort Ord as a potential National Priorities List site, surface water transport was not considered an important pathway for off-site migration of contaminants (EPA 1988). However, surface water runoff occurs at all sites investigated on the base. Most runoff is currently collected in storm drains, some of which enter the sanitary sewers that ultimately discharge into Monterey Bay. In the past, runoff occurred from sites with no diversion, ditching, or other collection. There was no information in the Preliminary Assessment regarding the potential for runoff to reach major surface water bordering the site.

Groundwater movement and surface water runoff remain potential pathways for contaminants to reach NOAA resources.

Site-Related Contamination

Limited studies have indicated that both soil and groundwater are contaminated in areas on the site (E.A. Engineering 1990). In 1985, volatile organic compounds (VOCs) were detected in groundwater sampled from the northwest section of the base. Concentrations of these compounds exceeded California state action levels for drinking water but did not exceed AWQC (EPA 1986). In 1989, groundwater and soil samples from the four main areas were collected as part of a preliminary site investigation. VOCs were detected in groundwater at levels below ambient water quality values by a factor of 10 (EPA 1986; E.A. Engineering 1990).

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Site-Related Contamination, *cont.*

Groundwater samples were contaminated with VOCs, but at levels below ambient water quality values. Mercury, chromium, zinc, nickel, and copper exceeded ambient water quality levels in groundwater by a factor of 10.

Soil samples were contaminated with VOCs, phthalate esters, PAHs, and total petroleum hydrocarbons. In several areas, elevated concentrations of mercury were detected in soil. Mercury concentrations in groundwater sampled from the 707th Maintenance Division ranged from 17-98 µg/l, greatly exceeding the freshwater chronic AWQC of 0.012 µg/l.

NOAA Trust Habitats and Species

The Fort Ord site includes approximately 7 km of shoreline along Monterey Bay and part of the Salinas River. The mostly flat, sandy-bottomed nearshore area provides habitat for many commercially important marine species, several of which spawn nearby (Table 1; Benteen personal communication 1990; Hardwick personal communication 1990). The Salinas River Wildlife Refuge, operated by the U.S. Fish and Wildlife Service,

Table 1. Species and habitat use in Monterey Bay and the Salinas River near the site.

Species		Habitat		
Common Name	Scientific Name	Spawning	Nursery	Adult Forage
ANADROMOUS FISH				
steelhead trout	*Salmo gairdneri*			M
chinook salmon	*Oncorhynchus tshawytscha*			◆
ESTUARINE/MARINE FISH				
Pacific sanddab	*Citharichthys sordidus*	◆	◆	◆
petrale sole	*Eopsetta jordani*			◆
surf smelt	*Hypomesus pretiosus*	◆	◆	◆
California halibut	*Paralichthys californicus*	◆	◆	◆
English sole	*Parophrys vetulus*	◆	◆	◆
C-O sole	*Pleuronichthys coenosus*	◆	◆	◆
sand sole	*Psettichthys melanostictus*	◆	◆	◆
INVERTEBRATES				
California market squid	*Loligo opalescens*	◆	◆	◆
Pismo clam	*Tivela stultorum*	◆	◆	◆
MARINE MAMMALS				
northern fur seal	*Callorhinus ursinus*			M
sea otter	*Enhydra lutris*		◆	◆
northern elephant seal	*Mirounga angustirostris*		M	M
California sea lion	*Zalophus californianus*			M

M: species is present in the area as a migrant only

NOAA Trust Habitats and Species, *cont.*

encompasses the lagoon and dunes area at the mouth of the Salinas River, north of the town of Marina. A state park along the shoreline near Marina is heavily used for recreation (Hardwick personal communication 1990).

Chinook salmon and squid are caught commercially within one-quarter mile of shore, and California halibut is caught recreationally in Monterey Bay in the vicinity of Fort Ord. Halibut and squid spawn in the sandy nearshore area of the bay. Sanddabs and English sole, both the object of offshore commercial fisheries, use the area as a nursery ground and may also spawn nearby. Surf smelt are fished north of Fort Ord (Hardwick personal communication 1990).

The sea otter is the only resident of the several species of marine mammals in this part of Monterey Bay. Elephant seal, northern fur seal, and California sea lion are seen intermittently on the beaches adjacent to Fort Ord.

The Salinas River and lagoon are tidally influenced for approximately 1.6 km upstream from Monterey Bay. Riverflow is intermittent part of the year since upstream dams retain most of the water during dry months. There is a native run of steelhead trout in the Salinas River, but migrations up- and downriver are restricted to periods when the river is flowing. This steelhead run is fished recreationally (Benteen personal communication 1990).

References

Benteen, R., Associate Fisheries Biologist, California Department of Fish and Game, Monterey, California, personal communication, June 19, 1990.

E.A. Engineering, Science, and Technology. 1990. Final Site Investigation Report. Fort Ord and Fort Hunter Liggett, California. Part 1. Fort Ord, California: U.S. Army Corps of Engineers, Omaha District and Directorate of Engineering and Housing.

Hardwick, J., Marine Biologist, California Department of Fish and Game, Monterey, California, personal communication, July 3, 1990.

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U.S. Environmental Protection Agency. 1986. Quality Criteria for Water. Washington, D.C.: Office of Water Regulations and Standards, Criteria and Standards Division. EPA 440/5-87-003.

U.S. Environmental Protection Agency. 1988. National Priorities List. Fort Ord, Marina, California. San Francisco: EPA Region 9.