Fort Ord Primer

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Introduction

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Location

Former Fort Ord is near Monterey Bay in Monterey County, California, approximately 80 miles south of San Francisco. The base consists of about 28,000 acres near the cities Seaside, Sand City, Monterey, Del Rey Oaks, and Marina. Laguna Seca Recreation Area and Toro Regional Park border Fort Ord to the south and southeast, respectively. Land use east of Fort Ord is primarily agricultural.

History

Beginning with its founding in 1917, Fort Ord served primarily as a training and staging facility for infantry troops. From 1947 to 1975, Fort Ord was a basic training center. After 1975, the 7th Infantry Division (Light) occupied Fort Ord. Light infantry troops operated without heavy tanks, armor, or artillery. Fort Ord was selected in 1991 for decommissioning, but troop reassignment was not completed until 1994 when the post formally closed. Although Army personnel still operate parts of the base, no active Army division is stationed at Fort Ord.

In 1917, the US Army bought the present day East Garrison and nearby lands on the east side of Fort Ord to use as a maneuver and training ground for field artillery and cavalry troops stationed at the Presidio of Monterey. Before the Army's use of the property, the area was agricultural, as is much of the surrounding land today. No permanent improvements were made until the late 1930s, when administrative buildings, barracks, mess halls, tent pads, and a sewage treatment plant were constructed.

In 1938, additional agricultural property was purchased for the development of the Main Garrison. At the same time, the beachfront property was donated to the Army. The Main Garrison was constructed between 1940 and the 1960s, starting in the northwest corner of the base and expanding southward and eastward. During the 1940s and 1950s, a small airfield within the Main Garrison was present in what is now the South Parade Ground. In the early 1960s, Fritzsche Army Airfield (FAAF) was completed. The Main Garrison airfield was then decommissioned and its facilities were redeveloped as motor pools and other facilities.

Over its history, the post was home to a succession of infantry divisions and served as a center for basic and advanced training. In 1975, the post became the home to the 7th Infantry Division, which conducted training exercises on the installation.

Fort Ord was identified by the U.S. Environmental Protections Agency (EPA) as a federal Superfund site on the basis of groundwater contamination discovered on the base in 1990. Fort Ord was selected for closure in 1991 and placed on the Base Realignment and Closure (BRAC) list. The 7th Infantry Division (light) was inactivated in September 1993 and the soldiers were reassigned elsewhere. The post officially closed on September 30, 1994.

With the closure of Fort Ord, responsibility for the remaining Army activities was transferred to the Commander, Presidio of Monterey. The Presidio of Monterey, Directorate of Environmental and Natural Resources, manages the cleanup of the former Fort Ord under contract with the U.S. Army Corps of Engineers.

Climate

The area's climate is characterized by warm, dry summers and cool, rainy winters. The Pacific Ocean is the principal influence on the climate at Fort Ord, causing fog and onshore winds that moderate temperature extremes. Daily ambient air temperatures typically range from 40 to 70 degrees Fahrenheit, but temperatures in the low 100s have occurred. Fog is common in the morning throughout the year. Winds are generally from the west.

The average annual rainfall of 14 inches occurs almost entirely between November and April. Because the predominant soil is permeable sand, runoff is limited and streamflow only occurs intermittently and within the very steep canyons in the eastern portion of Fort Ord.

Ecological Setting

Fort Ord is located on California's central coast, a biologically diverse and unique region. The range and combination of climactic, topographic, and soil conditions at Fort Ord support many biological communities.

The 11 plant communities identified at the Fort Ord sites include coast live oak woodland, central maritime chaparral, central coastal scrub, vegetatively stabilized dune, northern foredune grassland, landscaped, valley needlegrass grassland, seasonally wet grassland, vernal pool, upland ruderal, and wet ruderal. Central maritime chaparral is the most extensive natural community at Fort Ord, occupying approximately 12,500 acres in the south-central portion of the base. Oak woodlands are widespread at Fort Ord and occupy the next largest area, about 5,000 acres. Grasslands, primarily in the southeastern and northern portions of the base, occupy approximately 4,500 acres. The other five community types generally occupy less than 500 acres each. The remaining approximately 4,000 acres of the base are considered to be fully developed and do not support ecological communities.

Special-status biological resources are those resources, including plant and wildlife taxa and native biological communities, that receive various levels of protection under local, state, or federal laws, regulations, or policies. Of the 11 plant communities identified at Fort Ord, two are considered rare or declining and of highest inventory priority by the California Department of Fish and Game central maritime chaparral and valley needlegrass grassland. Special status taxa that occur or potentially occur in the plant communities at Fort Ord were identified for each site, include 22 vascular plants, 1 invertebrate, 4 reptiles, 1 amphibian, 9 birds, and 2 mammals.

Topography and Surface Waters

Elevations at Fort Ord range from approximately 900 feet above mean sea level (MSL) near Impossible Ridge, on the east side of the base, to sea level at the beach. The predominant topography of the area reflects a morphology typical of the dune sand deposits that underlie the western and northern portions of the base. In these areas, the ground surface slopes gently west and northwest, draining toward Monterey Bay. Runoff is minimal due to the high rate of surface water infiltration into the permeable dune sand; consequently, well-developed natural drainage is absent throughout much of this area. Closed drainage depressions typical of dune topography are common.

The topography in the southeastern third of the base is notably different from the rest of the base. This area has relatively well-defined, eastward-flowing drainage channels within narrow, moderately to steeply sloping canyons. Runoff is into the Salinas Valley.

Geology

Fort Ord is within the Coast Ranges Geomorphic Province. The region consists of northwest-trending mountain ranges, broad basins, and elongated valleys generally paralleling the major geologic structures. In the Coast Ranges, older, consolidated rocks are characteristically exposed in the mountains but are buried beneath younger, unconsolidated alluvial fan and fluvial sediments in the valleys and lowlands. In the coastal lowlands, these younger sediments commonly interfinger with marine deposits.

Fort Ord is at the transition between the mountains of the Santa Lucia Range and the Sierra de la Salinas to the south and southeast, respectively, and the lowlands of the Salinas River Valley to the north. The geology of Fort Ord generally reflects this transitional condition; older, consolidated rock is exposed at the ground surface near the southern base boundary and becomes buried under a northward-thickening sequence of poorly consolidated deposits to the north. Fort Ord and the adjacent areas are underlain, from depth to ground surface, by one or more of the following older, consolidated units:

- Mesozoic granite and metamorphic rocks
- Miocene marine sedimentary rocks of the Monterey Formation
- Upper Miocene to lower Pliocene marine sandstone of the Santa Margarita Formation (and possibly the Pancho Rico and/or Purisima Formations). Locally, these units are overlain and

obscured by geologically younger sediments, including:

- Plio-Pleistocene alluvial fan, lake, and fluvial deposits of the Paso Robles Formation
- Pleistocene eolian and fluvial sands of the Aromas Sand
- Pleistocene to Holocene valley fill deposits consisting of poorly consolidated gravel, sand, silt, and clay Pleistocene and Holocene dune sands Recent beach sand Recent alluvium

Hydrogeology

Recent studies of Fort Ord hydrogeology concluded that the base straddles two distinct groundwater basins, the Salinas and Seaside basins. Fort Ord includes the southwestern edge of the Salinas basin and the eastern portion of the smaller Seaside basin. The Salinas basin underlies the northern and southeastern portions of the base, and the Seaside basin underlies the southern and southwestern areas.

The Salinas groundwater basin is relatively large and extends well beyond the boundaries of Fort Ord. At Fort Ord, the Salinas basin is composed of relatively flat-lying to gently dipping poorly consolidated sediments. Although relatively simple structurally, the sediments are stratigraphically complex, reflecting a variety of depositional environments. Aquifers within the Salinas basin at Fort Ord, from top to bottom, include the unconfined A-aquifer, the confined Upper 180-foot aquifer, the confined and unconfined Lower 180-foot aquifer, and the confined 400-foot and 900-foot aquifers. These aquifer names reflect local historical water levels and are not directly correlated to present water levels at Fort Ord.

Groundwater extraction by the city of Marina, by Fort Ord, and by irrigation wells in the Salinas Valley have historically induced seawater intrusion into the Lower 180-foot and the 400-foot aquifers. Seawater intrusion continues to affect these aquifers. Intrusion into the Upper 180-foot aquifer appears to be limited to the vicinity of the beach at Fort Ord. The extraction, by the City of Marina, of drinking water from the lower 180 and 400 foot aquifers has been terminated. Drinking water for the Marina area is now extracted from the 900 ft. and 1,500 ft. aquifers.

Former Fort Ord
Environmental Cleanup

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Fort Ord Primer

Base Realignment and Closure Commission (BRAC)

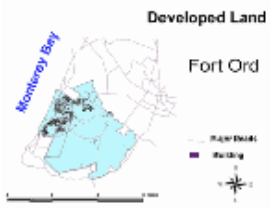
The 1991 Defense Base Realignment and Closure Commission (BRAC91) recommended that Fort Ord be closed and troops of the 7th Infantry Division (Light) be relocated to Fort Lewis, Washington. As part of that action, the Army prepared several documents that identify future land uses for Fort Ord following closure. The BRAC section of this web site identifies the principal sources of information and documents prepared by the Army under the BRAC action; these documents were used in this Remedial Investigation/Feasibility Study to identify future land use scenarios at Fort Ord. The future land use scenarios were used to form the basis for appropriate exposure assumptions in conducting the risk assessments and for the feasibility studies.

The principal documents used in establishing these future land uses include the Army's Environmental Impact Statement prepared to comply with the National Environmental Policy Act, the Army's Installation-wide Multi Species Habitat Management Plan (HMP) prepared to comply with the Endangered Species Act, the local community's draft reuse plan prepared by Fort Ord Reuse Authority, and the results of the real estate screening process.

Although Fort Ord was closed in September 1994, the Army retained approximately 5 percent of the property for a Presidio of Monterey (POM) annex and reserve center. The annex, called Ord Military Community, is on a 785-acre parcel near Gigling Road and General Jim Moore Boulevard. The Army retained a 12-acre parcel near Imjin Gate at Reservation Road for continued use as an Army reserve center.

Land Use

Developed Land



With up to 15,000 active duty military personnel and 5,100 military family members during its active history, developed areas at Fort Ord resembled a medium-sized city, with family housing, medical facilities, warehouses, office buildings, industrial complexes, and gas stations. Individual land use categories were as follows:

- Residential areas included military housing, such as training and temporary personnel barracks, Army family housing for both officers and enlisted soldiers.
- Local services/commercial areas provided retail or other commercial services, such as gas stations, mini-markets, and fast food facilities.
- Military support/industrial areas included industrial operations, such as motor pools, machine shops, a cannibalization yard (area where serviceable parts are removed from damaged vehicles), and the Fritzsche Army Airfield.
- Mixed land use areas combined residential, local services/commercial, and military support operations.
- Schools included the Thomas Hayes Elementary, Roger S. Fitch Junior High, General George S. Patton Elementary, Marshall Elementary and Gladys Stone schools. High school students attended Seaside High, outside Fort Ord's southwest boundary.
- Hospital facilities included the Silas B. Hayes Army Hospital, medical and dental facilities, and a helipad.
- Training areas included a central track and field, firing ranges, and obstacle courses.
- Recreational areas included a golf course and club house, baseball diamonds, tennis courts, and playgrounds.

The three principal developed areas are described below:

East Garrison

The East Garrison is on the northeast side of the base, adjacent to undeveloped training areas. Military/industrial support areas at the East Garrison included tactical vehicle storage facilities, defense recycling and disposal areas, a sewage treatment plant, and a small arms range. Also at the East Garrison areas were used as recreational open space, including primitive camping facilities, baseball diamonds, a skeet range, and tennis courts. Recreational open space comprised 25 of the approximately 350 acres of the East Garrison.

Fritzsche Army Airfield

The Fritzsche Army Airfield is in the northern portion of Fort Ord, on the north side of Reservation Road. The primary land use was for military/industrial support operations; facilities included air strips, a motor park, aircraft fuel facilities, a sewage treatment plant, aircraft maintenance facilities, an air control tower, a fire and rescue station, and aircraft hangars.

Main Garrison

The Southern Pacific Railroad right-of-way and Highway 1 separate the coastal zone from Fort Ord's Main Garrison. The Main Garrison consisted of a complex combination of the various land use categories. Facilities included schools; a hospital; housing; commercial facilities, including a former dry cleaner and a gasoline service station; and industrial operations, including motor pools and machine shops.

Undeveloped Land

Coastal Zone

A system of sand dunes lies between Highway 1 and the shoreline. The western edge of the dunes has an abrupt drop of 40 to 70 feet, and the dunes reach an elevation of 140 feet above mean sea level on the gentler, eastern slopes. The dunes provide a buffer zone that isolates

the Beach Trainfire Ranges from the shoreline to the west. In some areas, spent ammunition had accumulated on the dune slopes as the result of years of range operation. Numerous former target ranges, ammunition storage facilities, and two inactive sewage treatment facilities lie east of the dunes. A well-known coastal landmark and former recreation center, Stilwell Hall, was demolished between Auguest 2003 and February 2004 due to coastal bluff erosion, building deterioration and weathering.

Because of the presence of rare and/or endangered species and because of its visual attributes, Fort Ord's coastal zone has been designated an environmentally sensitive area. The beach dune area at Fort Ord has been identified as among the best coastal dunes in California because of significant features including coastal strand vegetation and the extent of natural dune habitat.

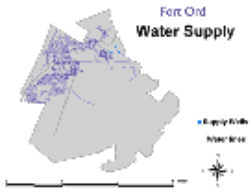
Inland Areas

Undeveloped land in the inland portions of Fort Ord included infantry training areas and open areas used for livestock grazing and recreational activities such as hunting, fishing, and camping. A large portion of this undeveloped land is occupied by the Impact Area (formerly called the Multi-Range Area). This area was used for advanced military training operations.

These undeveloped areas are primarily left in their natural state, without the development of facilities.

Infrastructure

Water Supply



Groundwater is the principal source of water supply for Fort Ord and its neighboring communities. The city of Marina and Fort Ord currently obtain water from wells located near the east boundary of Marina and in the East Garrison, respectively. Historically, seawater intrusion has affected wells in the city of Marina and at Fort Ord for several decades. In response to seawater intrusion, Fort Ord relocated water- supply wells in the Main Garrison area to sites in the north eastern part of Fort Ord. The city of Marina, on the other hand, was constrained to the east by the Marina/Fort Ord boundary. Consequently, Marina drilled deeper wells (greater than 1,200 feet) to penetrate aquifers below the zones of seawater intrusion.

Storm Drain System

Construction of the storm drain system at Fort Ord began in the early 1940s. As the base grew, the storm drain system was expanded, but the major lines in the Main Garrison still run from east to west. A complex network of branches feeds into the major lines; these branches collect surface water runoff from housing and recreational areas, motor pools, maintenance yards, and industrial facilities. The primary lines in the Main Garrison discharge surface water runoff at three beach or dune outfalls and at four ocean outfalls directly above the Monterey Bay surf zone. Numerous minor surface water outfalls are present in depressions or open fields in the Main Garrison.

In the East Garrison, the three main storm drain lines run from west to east. These lines and their numerous extensions discharge surface water runoff offbase to a field south of the Salinas River.

At the former Fritzsche Army Airfield, some surface water outfalls discharge into open fields and depressions east and west of the main airfield; however, the main line discharges surface water runoff to an open field south of the Salinas River.

Sanitary Sewer System

Installation of the sanitary sewer system at Fort Ord also began in the early 1940s. Although the system underwent expansion and some reconstruction when new housing areas were built after World War II, the original pipelines are still used. The system was designed to collect, treat, and discharge all domestic and industrial wastewater generated at Fort Ord.

The sewer system collected domestic flows and industrial wastewater without any pretreatment until the mid-1960s, when several oil/water separators were installed in the maintenance shops and motor pools to treat wastewater from vehicle wash racks. Before the mid-1960s, some of the wash racks drained directly to the sanitary sewer system and some drained directly to the storm drains. After the mid-1960s, all of the wash racks drained into oil/water separators and then to the sanitary sewer system. All sewage currently flows to the main sewage trunk line, which transports sewage to the Monterey Regional Treatment Plant north of Marina.

Habitat

Biological Inventory

The purpose of the Basewide Biological Inventory was to review existing documentation regarding biological resources at Fort Ord, to verify these findings through field surveys, and to identify and fill data gaps as necessary. Results of the biological investigations were used to provide a basis for ecological risk assessments and to develop resource protection guidelines for field work. Subsequent investigations were conducted to fill data gaps identified in the initial biological inventory; results of these investigations are incorporated into the Ecological Risk Assessment (ERA).

During the 1991 and 1992 field investigations, limited field surveys were conducted. Characteristic plant and animal species and resources of concern (i.e., special-status taxa and communities) known or likely to occur were identified during field surveys. In addition, plant communities were identified from aerial photos and mapped for the entire base.

During 1993 and 1994, comprehensive field surveys were conducted at sites for which additional environmental characterization was necessary. The purpose of these surveys was to provide more detailed and site-specific information regarding botanical resources, plant communities, observed and expected wildlife, and biological resources of concern. Plant communities were mapped for each site evaluated in the ERA. The eleven plant community types identified at the Fort Ord sites surveyed included coast live oak woodland, central maritime chaparral, central coastal scrub, vegetatively stabilized dune, northern foredune grassland, landscaped, valley needlegrass grassland, seasonally wet grassland, vernal pool, upland ruderal, and wet ruderal. Special-status taxa that occur or potentially occur in these communities at Fort Ord were identified for each site evaluated in the ERA and include 22 vascular plant, 1 invertebrate, 4 reptilian, 1 amphibian, 9 avian, and 2 mammalian species. In addition to conducting site-specific field surveys, reference sites were identified for comparison with sites evaluated in the ERA. Reference sites were chosen to establish comparable baseline conditions for unaffected sites. Reference site locations exhibited plant communities, slope, aspect, and soils similar to sites evaluated in the ERA. Reference sites are discussed further in the ERA.

Ecological Risk Assessment

The purpose of the Ecological Risk Assessment (ERA) was to assess whether plants or animals might be adversely affected by chemicals at Fort Ord, either now or in the future. Forty three potential chemical source areas and 38 surface water outfalls have been identified where contaminants might be present.

The Ecological Risk Assessment involved:

> Developing conceptual site models to identify endpoints identifying locations where chemicals of potential concern (COPC) are present that have not adversely affected plants or animals. Identifying locations where COPCs are present that may be adversely affecting plants or animals, and characterizing the magnitude and extent of those effects.

Following EPA guidelines, these tasks were performed in three separate phases: problem formulation, analysis, and risk characterization.

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Environmental Policy Act

The 1990 Base Closure Act specifies that the National Environmental Policy Act (NEPA) is applicable to military base closures and the processes of property disposal. The process is intended to help the Military Department make informed and environmentally responsible disposal decisions. The NEPA process requires the Army to conduct environmental analysis concerning:

- The environmental impact of the proposed disposal action, including reasonably anticipated reuse activities.
- Alternatives to the proposed disposal and reuse action, including the "no-action" alternative.
- Adverse impacts.
- Any appropriate environmental impact mitigation actions.

The NEPA process (described in 40 CFR Parts 1500-1508) is typically completed in one of the following three ways:

1. Categorical Exclusion - Military Department transfer to another Federal Agency.
2. Environmental Assessment/Finding of No Significant Impact - based on the analysis, the disposal action would have no significant affect on the environment and a full Environmental Impact Statement (EIS) would not be necessary.
3. EIS/Disposal Record of Decision - Involves a more formal and in-depth public and regulatory agency involvement process and analysis.

The EIS is normally appropriate for proposed BRAC actions involving the disposal and reuse of real property because of the potential significant impacts is common. The Army prepared a Final EIS (FEIS) in June 1993 which analyzed the impacts of base closure and the Local Reuse Authority redevelopment plan. A Supplemental EIS was completed in June 1996. The EIS/SEIS analyzed a wide range of reuse alternatives to include (1) high, medium, and low-density mixed-use alternatives; (2) an alternative composed of primarily institutional uses (educational, government, and public/quasi-public; (3) an open-space alternative; and (4) an anticipated reuse alternative. The EIS identified a need to develop and implement a Habitat Management Plan (HMP) as a mitigation measure for impacts on vegetation and wildlife resources in accordance with the Endangered Species Act.

The Army published an HMP initially, in February 1994, and again in April 1997, in response to both the biological opinion issued by the U.S. Fish and Wildlife Service and mitigation measures identified in the EIS Record of Decision and the Supplemental EIS. The final plan presented in the HMP requires the Army to implement and monitor mitigation measures to minimize the impacts to special-status species during the Army's predisposal actions. Army predisposal actions include the cleanup of unexploded ordnance as well as excavation of lead-contaminated soil and landfill closure.

In addition to the Army's requirements for predisposal actions, the HMP assumes a reuse development scenario for the base that will result in the removal of up to 6,300 acres of existing vegetation and wildlife habitat including many of these rare and endangered species and their habitats. However, more than 16,000 acres of habitat reserves with about 400 additional acres of connecting habitat corridors have been established in perpetuity to offset the loss of other areas to support the reuse of former Fort Ord. In addition to the establishment of specific reserve areas and corridors, the HMP further conditions development on approximately 1,800 additional acres by requiring reserve areas or specific restrictions on those lands. Along the development/reserve interface lands bordering the Bureau of Land Management reserve area, management requirements such as development of fire breaks, control of invasive species and limitations to vehicle access are required.

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Endangered Species Act

In February 1994, and again in April 1997, the Army published the Installation-Wide Multispecies Habitat Management Plan (HMP) for the closure and reuse of former Fort Ord to comply with the requirements of the Endangered Species Act. The HMP establishes the guidelines for the conservation and management of plant and wildlife species and habitats that largely depend on Fort Ord land for survival. The HMP includes requirements such as monitoring and reporting following the cleanup of contaminated sites to ensure a healthy recovery. The HMP was developed with input from federal, state, local, and private agencies and organizations concerned with the natural resources and the reuse of Fort Ord. The overall goals of the HMP are (1) to avoid any net loss of populations or important habitat for any of the subject species of the HMP and (2) to promote preservation, enhancement, and restoration of habitat and populations of HMP species while allowing implementation of the community-based reuse plan.

The goals stated above are being accomplished by transferring the larger contiguous and biologically diverse habitat parcels to natural resource management agencies such as the Bureau of Land Management (BLM) and the California State Parks. The rare species found in central maritime chaparral are to be managed by BLM using prescribed fire to promote a healthy plant community and prevent their extinction. By ensuring the reserves are managed to promote the continued existence of these rare species and habitats, other areas containing these species can be developed. The U.S. Fish and Wildlife Service (USFWS) stated in a letter to the Army dated April 24, 2000:

> "*We believe that the conservation and appropriate management of significant preserve lands that support maritime chaparral at Fort Ord may preclude the need to add several species in the Monterey area to the federal list of threatened and endangered species in the future and has substantially reduced the burden of protection that would have fallen on private landowners and local municipalities in the area had a plan for preserving these areas not been developed.*"

The Installation-Wide Multispecies Habitat Management Plan (view) was completed and signed by the Army and the USFWS in 1997. Of the 14 signatories to the HMP including the Fort Ord Reuse Authority, the California Department of Parks is the only agency that has not yet signed the HMP.