

APPENDIX A

Seaside MRA Conceptual Site Model

4.0 SEASIDE MRA CONCEPTUAL SITE MODEL

The Seaside MRA CSM profiles are based on existing information and data provided by the Army and contained in the Fort Ord Administrative Record. Tables and figures associated with the Seaside MRA are located at the end of Section 4.0.

4.1 Seaside MRA Facility Profile

The facility profile provides information on location, physical boundaries, roadways and access, structures and utilities, historical military use, and administrative controls associated with the MRA.

4.1.1 Boundaries and Access

The Seaside MRA is located in the southwestern portion of the former Fort Ord, bordered by the City of Seaside and General Jim Moore Boulevard to the west, the former impact area to the east, Eucalyptus Road to the north, and additional former Fort Ord property to the south (Figure 4.1-1). The Seaside MRA is wholly contained within the jurisdictional boundaries of the City of Seaside.

The Seaside MRA encompasses approximately 419 acres and contains the following four United States Army Corps of Engineers (USACE) property transfer parcels: E23.1, E23.2, E24, and E34 (Table 4.1-1 and Figure 4.1-1).

The Seaside MRA is fenced along the eastern side of General Jim Moore Boulevard and the southern side of Eucalyptus Road, restricting access to most of the MRA and the former impact area to the east and south, respectively (Figure 4.1-1). The narrow area west of General Jim Moore Boulevard is within the MRA but access is not restricted. Use of Eucalyptus Road is restricted by road barriers marked with “road closed” signs located at the intersection of General Jim Moore Boulevard and Eucalyptus Road to the west and at the intersection of Parker Flats Road and Eucalyptus Road to the east. A number of other paved and unpaved roads and dirt trails are located throughout the Seaside MRA (Figure 4.1-1). Detailed information on roadways and access is provided in Table 4.1-2.

4.1.2 Structures and Utilities

The Seaside MRA contains a number of structures and utilities, including 21 existing structures that supported former military activities (Army 2007; Figure 4.1-1). Detailed information concerning location, size, description of structures, presence of asbestos-containing material (ACM) and/or lead-based paint (LBP), if evaluated, and year constructed is provided in Table 4.1-3.

The MRA is not currently served by utilities, such as water and sewer lines. However, a partially aboveground and partially underground line for aquifer recharge water is located

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along the western boundary of the MRA parallel to General Jim Moore Boulevard. An abandoned underground communication line that was installed by the Army is reported to be present immediately east of General Jim Moore Boulevard. The exact location of the abandoned communication line could not be confirmed based on a review of available information. A major utility right-of-way for an existing overhead, high-power transmission line and an overhead electrical line runs through the MRA, parallel to General Jim Moore Boulevard (Figure 4.1-1). More detailed information on utilities within the MRA is provided in Table 4.1-2.

4.1.3 Historical Military Use

Figure 4.1-2 shows the locations of known firing ranges and training areas within the MRA. Table 4.1-4 summarizes the historical military uses of these areas within the Seaside MRA. To facilitate previous MEC investigations and removal activities, these locations were divided into four Munitions Response Sites (MRSs), which generally correspond to the four USACE property transfer parcels (Table 4.1-1), except for the narrow area west of General Jim Moore Boulevard, which was not included within the MRS boundaries associated with the MRA. The MRS boundaries are shown on Figure 4.1-3. The MRSs were designated as MRS-15 SEA 1 through MRS-15 SEA 4 and have been collectively referred to as MRS-15 SEA 1-4 (Parsons 2006b).

Initial use of the Seaside MRA began in approximately 1917 when the U.S. government purchased more than 15,000 acres of land and designated it as an artillery range. Although no training maps from this time period have been found, pre-World War II -era military munitions have been removed during previous Army response actions within the Seaside MRA. These munitions included Livens projectiles, Stokes mortars, and 37 millimeter (mm) and 75mm projectiles. Cavalry and artillery troops stationed at the Presidio of Monterey, along with infantry troops stationed at the Presidio of San Francisco, reportedly conducted training activities in the vicinity of the Seaside MRA, although the exact location is not known.

By 1945, 18 firing ranges and training sites were established within the boundaries of the 8,000-acre multi-range area, which was the area around the perimeter of the former impact area. The Seaside MRA lies on the westernmost part of the former multi-range area. The Seaside MRA contained the former firing points and some of the former targets associated with the following training areas:

- Small arms ammunition (SAA) training - Ranges 18, 19, 20, 21, 22, 23, 46, and 59
- Non-firing target range training - Old Range 22 and Range 23M
- Mortar and antitank training – Range 48
- Booby trap training - Range 50

According to the known configuration of the ranges, weapons were fired to the east and southeast from these firing points toward the center of the impact area (Figure 4.1-2). It is expected that munitions activity associated with these ranges would have occurred within the

range fans associated with the firing points. A munitions activity is intended to include military training activities at or near the range that involve the use or handling of military munitions.

4.1.4 Administrative Controls

A number of administrative controls have been and will be imposed on the Seaside MRA, including land use covenants, city ordinances, FORA resolutions, a Memorandum of Agreement (MOA) between FORA and the DTSC, habitat-related requirements, and BOs. The applicable administrative controls are described in more detail in Table 4.1-5. These administrative controls are enforceable and place constraints on field-related activities and future development activities until such time that remediation has been completed and the regulatory agencies have made a determination as to the closure status of the MRA.

4.2 Seaside MRA Physical Profile

The physical profile provides information on topography, geology, vegetation, surface water, and groundwater associated with the MRA that may affect the location, movement, detectability, and recovery of military munitions.

4.2.1 Topography and Geology

The terrain of the Seaside MRA varies from flat to moderately rolling hills. The elevation ranges from approximately 210 to approximately 520 feet mean sea level (msl) with 2 to 15 percent slopes (Figure 4.2-1). Old dune deposits up to 250 feet thick cover most of the area. Table 4.2-1 provides more detailed information on the geology of the former Fort Ord and soils encountered within the Seaside MRA. Surface soil conditions at the MRA are predominantly weathered dune sand (Figure 4.2-1), which provides a relatively good environment for conducting geophysical surveys, including electromagnetic and magnetic surveys.

4.2.2 Vegetation

Vegetation consists primarily of maritime chaparral with patches of non-native grassland and scattered stands of coastal and inland coast live oak woodlands (Table 4.2-2 and Figure 4.2-2; USACE/Jones & Stokes 1992). Poison oak is known to be prevalent in most areas of the MRA. In 2003, as part of the Army's Time-Critical Removal Action (TCRA) for MEC, 398 acres of the Seaside MRA vegetation were cut to make the surface safe and accessible for MEC removal crews. The maritime chaparral was cut to a 6-inch height, and the oak trees were pruned to shoulder height to allow access below the tree canopies. Additional vegetation removal occurred in support of NTCRA. Much of the native vegetation has been reestablished.

4.2.3 Surface Water and Groundwater

Groundwater investigations associated with the Basewide RI/FS have resulted in the installation of a number of groundwater monitoring wells within and adjacent to the Seaside MRA, some of which have been abandoned (Figure 4.2-1). The Seaside MRA overlies the Seaside Groundwater Basin, which is structurally complex and divided into several sub-basins. Groundwater is generally encountered at a depth greater than 100 feet below ground surface (bgs) and is not expected to influence geophysical surveys conducted for MEC remediation activities.

No significant surface-water features or delineated wetlands are reported to be present in the MRA; however, two aquatic features are known to exist to the south and southeast of the MRA.

4.3 Seaside MRA Release Profile

The release profile provides information on the MRA with respect to investigation and removal history, location and extent of military munitions, such as MEC, MPPEH, and MD, and history and conditions of HTW.

4.3.1 Investigation and Removal History

Numerous investigations and removal actions were performed by the Army in the Seaside MRA, which included:

- Field Latrine Investigation from March to November 1997 (USA 2001f)
- MEC Sampling in Small Arms Ranges (OE-15A Grid Sampling) from October to November 1997 (USA 2000a)
- MEC Sampling (OE-15B Grid Sampling) from October 1997 to February 1998 (USA 2000d)
- Impact Area Grid Sampling from March to August 1999 (USA 2001m)
- MEC Removal-Impact Area Roads and Trails from March 1997 to March 1998 (USA 2001d)
- MEC Removal-Blue Line Fuel Break from May to June 1998 (USA 2001p)
- MEC Removal to Support Lead-Contaminated Soil Remediation at Ranges 19, 21, 22, and 23 from April 1997 to June 1999 (USA 2001k)
- MEC Removal to Support Lead-Contaminated Soil Remediation at Range 46 from April to August 1999 (USA 2001k)
- Impact Area Fuel Break Maintenance in 2001 (Parsons 2001)
- TCRA – Vegetation and Surface MEC Removal from December 2001 to March 2002 (Parsons 2006b)

- NTCRA and Phase I Geophysical Operations – 4-foot Removal Action from March 2002 to March 2004 (Parsons 2006b)

The investigation and sampling efforts are summarized in Table 4.3-1. The removal actions are summarized in Table 4.3-2. During the removal actions, burial pits containing MEC were discovered. Additional information on burial pits is provided in the following subsection, and Tables 4.3-2 and 4.3-3 provide detailed information on the specific types of MEC recovered from these burial pits. The results of the removal actions with respect to MEC and MD are summarized in Table 4.3-4 and are shown on Figures 4.3-1, 4.3-2, and 4.3-3. These actions resulted in complete MEC removal to a depth of 4 feet, with the exception of 35 acres identified by the Army as special case areas (SCAs) and a narrow area west of General Jim Moore Boulevard, which was outside the western boundaries of MRS-15 SEA 1 and MRS-15 SEA 2 (Figure 4.3-4). Because the Army's investigation activities did not include the narrow area west of General Jim Moore Boulevard, the status of MEC in this area represents a data gap. Additional information on the SCAs is provided in the following subsection.

Burial Pits

During the removal actions, seven burial pits containing MEC were discovered (Figure 4.3-2). Of the MEC found during the removal actions, 131 of the items and 1 pound of bulk high explosives (HEs) were located in the seven burial pits. Table 4.3-3 provides more detailed information on the specific types of MEC recovered from the burial pits.

Special Case Areas

During the Army's NTCRA and Phase I Geophysical Operations at the Seaside MRA, approximately 35 acres of land were designated as SCAs either because the areas were inaccessible due to surface obstructions or because surface and near-surface features interfered with the signal for the digital geophysical instrumentation, making it difficult to distinguish individual anomalies. The SCAs are shown on Figure 4.3-4 and include:

- Existing Site Fence Area
- Original Fence Line
- Asphalt and Concrete
- Backhoe Excavations
- Excavations requiring Heavy Equipment
- Berms and Retaining Walls
- Structures and Latrines
- Range 46 Weather Station
- Debris Piles

4.3.2 Types of MEC Recovered and Hazard Classification

Table 4.3-4 includes a summary of MEC recovered from the Seaside MRA and associated hazard classification scores. All MEC removed from the Seaside MRA were identified and assigned a hazard classification, except for ordnance components and bulk explosives. Hazard classification scores range from 0 to 3 according to the following descriptions:

Hazard Classification Score	Description
0	Inert MEC that will cause no injury
1	MEC that will cause an injury or, in extreme cases, could cause major injury or death to an individual if functioned by an individual's activities
2	MEC that will cause major injury or, in extreme cases, could cause death to an individual if functioned by an individual's activities
3	MEC that will kill an individual if detonated by an individual's activities

The hazard classification provides a qualitative assessment of risk for MEC. These classifications will be used as inputs in future risk assessments for the Seaside MRA. It should be noted that SAA is not considered in the risk assessment because SAA poses no explosive risk.

4.3.3 Location of MEC and MD

Figures 4.3-1, 4.3-2, and 4.3-3 show the distribution of MEC and MD recovered to date from within the Seaside MRA. A summary of the MEC and MD encountered during previous investigations and removal actions in the Seaside MRA is provided in Table 4.3-5 and included:

- 370 UXO items
- 164 DMM items
- 56,524 pounds of MD (includes expended munitions debris [MD-E] and fragmented munitions debris [MD-F] if weights were documented)

The largest concentrations of MEC were located in MRS-15 SEA 4 between Ranges 18 and 46 in the northern portion of the MRA and in MRS-15 SEA 1 in the area of Range 23 and Watkins Gate Road in the southern portion of the MRA (Figure 4.3-2). MEC were also recovered from several discrete locations as shown on Figure 4.3-2.

The Military Munitions Response Program (MMRP) database indicates that the majority of the MEC recovered from the Seaside MRA were found on the surface, within 6 inches bgs, or in seven burial pits. Figure 4.3-5 shows the distribution of MEC recovered at specified depth intervals and does not include MEC recovered from the burial pits.

Recovered MD (total pounds per grid) in the Seaside MRA is shown on Figure 4.3-3. The majority of the grids contained less than 100 pounds of MD. A majority of the grids that contained more than 100 pounds of MD were concentrated in the southwestern portion of Ranges 19, 20, and 59 and in the southern and western portions of Ranges 23 and 23M, respectively. A portion of the MD identified on Figure 4.3-3 includes small arms scrap (SAS) but not SAA. It should be noted that soil containing small arms and possibly MD was removed from the Seaside MRA (Ranges 18, 19, 21, and 46) as part of the lead-contaminated soil remediation for the Installation Restoration Program (IRP) Site 39. The debris removed as part of the IRP Site 39 program was not likely recorded in the MMRP database and is, therefore, not captured as part of this analysis of MD data.

4.3.4 HTW History and Conditions

A Basewide Range Assessment (BRA) was conducted by the Army to evaluate the potential presence of chemicals of concern (COCs) at known or suspected small arms ranges, multi-use ranges, and military munitions training areas within the former Fort Ord (Shaw/MACTEC 2006). The areas were identified as historical areas (HAs). The objectives of the BRA investigation activities were to identify which HAs could be eliminated from consideration for potential remediation related to COCs, and to identify areas that require additional investigation for potential chemical contamination, or should be considered for remediation/habitat mapping related to COCs.

Table 4.3-6 summarizes the findings of the BRA investigation activities with respect to HTW for each MRS. As stated in the FOSET, based on the BRA, no further action has been recommended for HAs within this MRA (Army 2007). The Seaside MRA is also part of IRP Site 39 at the former Fort Ord. Previous soil remediation activities were conducted as part of the Site 39 program, which has an existing Record of Decision (ROD). In an effort to facilitate the closure of Site 39 Seaside Parcels with respect to risks related to residual metals in soil, a Draft Post-Remediation Health Risk Assessment (PRHRA) has been prepared on behalf of the Army for the Seaside MRA Parcels. The results indicate that the residual metals concentrations in soil do not pose an unacceptable risk to human health and the environment within the Seaside MRA Parcels and that a residential restriction due to residual metals concentrations in soil is not necessary on Ranges 18, 19, 21, and 46. The results of the PRHRA are presented in the “Draft Post-Remediation Risk Assessment, Seaside Parcels 1 through 4, Former Fort Ord, California, Revision C,” prepared by Shaw/MACTEC in November 2007 (Shaw/MACTEC 2007b).

4.3.5 Regulatory Status

Work completed to date has been documented in after action reports, which have received regulatory reviews; however, the regulatory agencies have identified the following outstanding issues:

- The CERCLA process must be completed for the Seaside MRA, including development of an RI/FS, development of a Proposed Plan, and completion of a ROD;

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- MEC removal action in the SCAs must be completed in accordance with the Army's approved removal action work plan or other agency-approved work plan;
- Additional quality assurance and MEC removal, if necessary, must be completed in areas proposed for residential development within the Seaside MRA.

4.4 Seaside MRA Land Use and Exposure Profile

The land use and exposure profile provides information on the MRA with respect to cultural resources, the current and reasonably foreseeable future uses of the land, and the potential human receptors that may be exposed to military munitions.

4.4.1 Cultural Resources

According to archaeological records, the greater Monterey Peninsula was occupied by Native American groups, including the Ohlone (Costanoan) Indians (EA 1991). Monterey County has designated the southeastern margin of the former Fort Ord as an archaeologically sensitive zone based on two known archaeological sites (EA 1991). The remaining portions of the former Fort Ord have been designated as having low or no archaeological sensitivity. The Seaside MRA is located in the southwestern portion of the former Fort Ord in an area designated as having no archaeological sensitivity.

Actions to be taken at the Seaside MRA will be in compliance with the Programmatic Agreement among the Department of the Army, the Advisory Council on Historic Preservation, and the California State Historic Preservation Officer Regarding the Base Closure and Realignment Actions at Fort Ord, California.

4.4.2 Current Land Use

The Seaside MRA is currently undeveloped, with the exception of General Jim Moore Boulevard, Eucalyptus Road, and a major utility corridor for the high-power transmission line that runs along General Jim Moore Boulevard (Figure 4.1-1). Residual structures that supported training activities at the MRA have been abandoned or are scheduled for demolition.

For the area immediately west of General Jim Moore Boulevard, which is within the MRA but outside of the MRSs, there is a newly installed aquifer recharge water line adjacent to the border with the City of Seaside that is partially aboveground and partially underground. This is a temporary line that does not require access on a routine basis. The area west of General Jim Moore Boulevard is not restricted for access by any control measure, such as fencing.

The area immediately east of General Jim Moore Boulevard and immediately south of Eucalyptus Road has restricted access via the existing site fence. Although infrequent, trespassing has occurred through this area. Along the eastern border of the MRA with the former impact area, a borderland development buffer area was established in the Habitat Management Plan (HMP) along the interface with the natural resources management area

(NRMA) designated as habitat reserve. The setback requirements for the borderland buffer were defined in the Draft Habitat Conservation Plan (HCP) as being 200 feet wide, which must be managed and maintained as prescribed.

Interim uses for this MRA may also include staging of helicopters in support of Army burn activities.

4.4.3 Reasonably Foreseeable Future Land Use

Table 4.4-1 and Figure 4.4-1 identify the proposed uses of the MRA by parcel. It is important to note that the development land use category encompasses infrastructure activities, such as roadway and utility corridor construction, as well as commercial/retail facilities, parks, and borderland activities.

As shown in the Base Reuse Plan, this area is predominantly planned for residential reuse. To facilitate reuse, infrastructure improvements, such as utilities and roadways, are required as described in the previous paragraph. A public park is planned for the southern portion of the Seaside MRA (Figure 4.4-1).

4.4.4 Potential Human Receptors

A number of potential human receptors that could come in contact with residual MEC have been identified for current and future land use scenarios. The potential human receptors include:

- Construction Workers (persons conducting surface and subsurface construction activities) – current/future
- Utility Workers (persons installing and maintaining surface and subsurface utilities) - current/future
- Trespassers (persons not authorized to enter or use an area) – current/future
- Firefighters (may require installation of fire breaks) – current/future
- Emergency Response Workers (police and emergency medical technicians conducting surface activities) – current/future
- Ancillary Workers (biologist, archaeologists) – current/future
- Residents (persons residing in the area conducting surface and subsurface activities) – future
- Recreational users (persons biking or on foot) – future

4.5 Seaside MRA Ecological Profile

The ecological profile provides information on the MRA with respect to biological resources, plant communities and habitats, threatened and endangered species, and habitat management. This information is discussed below and provided in Table 4.5-1.

As discussed in Section 4.3.4, COCs related to HTW have been previously addressed and no further action was recommended. Therefore, potential exposure of ecological receptors to the primary risk factors has been mitigated to an acceptable level and ecological receptor exposure is not considered further in this CSM.

The HMP identifies the Seaside MRA as development (which includes residential reuse) with a borderland development buffer area along the interface with an NRMA designated as habitat reserve (Figure 4.5-1). The NRMA interface separates the development category land within the Seaside MRA from the adjacent habitat reserve area of the former impact area. The NRMA and habitat reserve areas support plant and animal species that require implementation of mitigation measures identified in the HMP to ensure compliance with the ESA and to minimize impacts to listed species.

FORA will implement the mitigation requirements identified in the HMP during MEC activities in accordance with the BOs developed during formal consultation between the Army and the USFWS under Section 7 of the ESA. For habitat areas, these measures include conducting habitat monitoring in compliance with Chapter 3 of the HMP (USACE 1997b). For borderland areas, FORA will follow best management practices while conducting work to prevent the spread of exotic species, limit erosion, and limit access to the NRMA.

4.5.1 Major Plant Communities and Ecological Habitats

Vegetation consists primarily of maritime chaparral with patches of non-native grassland and scattered stands of coastal and inland coast live oak woodlands (Table 4.2-2 and Figure 4.2-2; USACE/Jones & Stokes 1992). Poison oak is known to be prevalent in most areas of the MRA.

4.5.2 Threatened and Endangered Species

The USFWS final Biological Opinion for the Disposal and Reuse of Fort Ord (USFWS BO) required that an HMP be developed and implemented to reduce the incidental take of listed species and loss of habitat that supports these species. The HMP for the former Fort Ord complies with the USFWS BO and establishes the guidelines for the conservation and management of wildlife and plant species and habitats that largely depend on former Fort Ord land for survival. The HMP incorporated conservation measures pursuant to the USFWS BO dated prior to issuance of the HMP in April 1997. Since April 1997, three additional BOs have been issued that are relevant to MEC removal activities (USFWS 1999, 2002, and 2005). Future MEC remediation is required to be consistent with the applicable conservation measures.

Plant species identified at the former Fort Ord that are either threatened or endangered include Contra Costa goldfields (*Lasthenia conjugens*; endangered), sand gilia (*Gilia tenuiflora ssp. Arenaria*; endangered), and Monterey spineflower (*Chorizanthe pungens var. pungens*; threatened).

In 2004, the California tiger salamander (CTS; *Ambystoma californiense*) was identified as a threatened species. CTS may be found as far as 2 kilometers (km) from aquatic breeding habitats. As shown on Figure 4.5-1, the CTS may be found in MRS-15 SEA 1 and MRS-15 SEA 2 as these two MRSs are within 2 km of aquatic features that may provide habitat for the CTS.

The Seaside MRA is identified within the HMP as requiring special management for the boundaries between development areas and the NRMA. The requirements have both interim and long-term maintenance implications. As presented in the HMP, with the exception of boundary management requirements, the Seaside MRA is available for development without restrictions although future landowners will still be required to comply with environmental laws enforced by the federal, state, and local agencies, including the ESA.

4.5.3 Other Communities and Species of Concern

Dominant vegetation in the Seaside MRA consists of maritime chaparral with patches of non-native grassland. The maritime chaparral consists of sclerophyllous (hard-leaved) shrub communities within a live oak woodland (coastal coast and inland coast) region that is best developed on sandy soils within the summer fog zone. This type of chaparral is considered rare by the California Department of Fish and Game (CDFG) and is declining statewide. Development has now limited a majority of this community type in the Monterey Bay Area to undeveloped portions of the former Fort Ord. As identified in the HMP, a number of species could be found on the Seaside MRA, as identified by parcel in Table 4.5-2. The following species of concern to the State of California are identified in the HMP as having possible occurrence in the Seaside MRA: seaside bird's beak (*Cordylanthus rigidus ssp. Littoralis*), toro manzanita (*Arctostaphylos montereyensis*), sandmat manzanita (*Arctostaphylos pumila*), Monterey ceanothus (*Ceanothus cuneatus var. rigidus*), Eastwood's ericameria (*Ericameria fasciculata*), and coast wallflower (*erysimum ammophilum*).

4.6 Seaside MRA Pathway Analysis

As discussed in Section 4.3.4, potential exposure of human and ecological receptors to COCs related to the HTW program has been evaluated by the Army. Based on the Army's evaluation in the FOSET, no further action relative to the COCs is required under the ESCA RP. Therefore, no further discussion of potential exposure to human or ecological receptors to COCs relative to the HTW program is presented in this pathway analysis. The primary focus of the exposure pathway analysis is for human health risk from MEC that are potentially present.

4.6.1 Exposure Pathways

An exposure pathway analysis was conducted for the Seaside MRA using the information gathered in the CSM profiles. Exposure pathways include a source, access, receptor, and activity. The likelihood of exposure, however, has been significantly reduced as a result of previous removal actions by the Army. Exposure pathways for the Seaside MRA are presented on Figure 4.6-1 and discussed below.

Source

Source areas within the Seaside MRA were addressed during the Army's previous removal actions, with the exception of the SCAs (Figure 4.3-4). The historical source areas within the Seaside MRA are shown on Figure 4.1-3, and recovered MEC and MD from these areas are shown on Figures 4.3-1 through 4.3-3. The sources include firing points, target areas, and range safety fans for military weapons training activities and troop training/maneuver areas. There are no known source areas outside of MRS-15 SEA 1-4 to the west of General Jim Moore Boulevard.

Figure 4.6-2 illustrates the most likely release mechanisms for MEC being found in the Seaside MRA, which include:

- Mishandling/Loss, Abandonment, and Burial (Military Weapons Training)
- Direct and Indirect Firing and Thrown (Military Weapons Training)
- Intentional Placement, Mishandling/Loss, Abandonment, and Burial (Troop Training and Maneuvers)

Access

Access to the SCAs and historical source areas is restricted by the fence around MRS-15 SEA 1-4, located east of General Jim Moore Boulevard and south of Eucalyptus Road. Access to the area west of General Jim Moore Boulevard is unrestricted.

Receptor / Activity

Table 4.6-1 identifies the potential human receptors and exposure media as Ground Surface or Below Grade.

4.6.2 Exposure Pathway Analysis

As discussed above, Figure 4.6-1 graphically presents the exposure pathways analysis for the Seaside MRA. The graphic shows the current and future potentially incomplete and potentially complete pathways for activities in the Seaside MRA.

A small risk of MEC exposure remains to current and future receptors during intrusive activities (i.e., digging). There is also a potential risk of MEC exposure within the hillside

west of General Jim Moore Boulevard (Figure 4.3-4) because the information available to date does not appear to be sufficient to conclude presence or absence of MEC in this area.

4.7 Seaside MRA Conclusions and Recommendations

Potential exposure of human and ecological receptors to COCs related to the HTW program has been evaluated by the Army. Based on the Army's evaluation in the FOSET, no further action relative to the COCs is required under the ESCA RP. The CSM has identified a potential for human health risk associated with residual (or potentially present) MEC in the Seaside MRA.

As required by the AOC, the SEDR provides conclusions and recommendations for each MRA. Generally, the SEDR recommendations identify that a particular MRA falls into one or more of the following categories:

- No response action or no further response action is appropriate
- Response action is necessary
- Additional data are required to fill data gaps
- Proceed to RI

The MEC encountered within the Seaside MRA are consistent with the historical use as a weapons and troop training area. However, data gaps, uncertainties, and/or open regulatory issues have been identified and must be addressed prior to receiving regulatory closure and implementing the planned reuse of the MRA. Therefore, the Seaside MRA falls into two of the categories: 1) response action is necessary, and 2) additional data are required to fill data gaps. Based on the existing data for the Seaside MRA, the following recommendations are suggested:

- Response Action - Complete the Army's NTCRA to mitigate risk related to potential MEC in the SCAs.
- Collection of additional data to fill data gaps
 - Collect data sufficient to support the MEC RI on the hillside west of General Jim Moore Boulevard
 - Conduct a Residential Quality Assurance (RQA) Pilot Study to assess the potential for risk from undetected MEC in future residential areas.
- Proceed with Documentation - Prepare the RI/FS and subsequent ROD documentation.

The proposed pathway to regulatory closure incorporating the above recommendations is presented in Section 13.0 of this SEDR.

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Table 4.1-1
Seaside MRA - Parcel Numbers, Acreage, and MRS Identifiers

USACE Parcel Number (for land transfer)	Acreage (approximate)	MRS Identifier
E24	198	MRS-15 SEA 1
E34	97	MRS-15 SEA 2
E23.1	48	MRS-15 SEA 3
E23.2	76	MRS-15 SEA 4
MRA TOTAL	419	

Note: Acreages for USACE Parcels E24 and E34 are slightly larger than their corresponding MRSs.

Table 4.1-2
Seaside MRA – Site Features

Feature	Description
Roadways	<ul style="list-style-type: none"> • General Jim Moore Boulevard is an active two-lane roadway running in a north/south direction through the MRA and is identified as a major roadway corridor. • Eucalyptus Road is a closed two-lane roadway running in an east/west direction along the northern boundary of the MRA that historically allowed access from General Jim Moore Boulevard to the inland portions of the former Fort Ord. • Watkins Gate Road is a secondary paved roadway that extends to the east through the MRA and into the former impact area. • Other roadways (paved or unpaved) that cross the MRA include Broadway Avenue, Evolution Road, Austin Road, and Pipeline Road (not shown on figures).
Structures and Utilities	<ul style="list-style-type: none"> • Twenty-one structures, which supported former range activities, exist at the MRA. The MRA is not currently served by water and sewer lines. • For the area immediately west of General Jim Moore Boulevard, which is within the MRA but outside of the MRSs, there is a newly installed aquifer recharge water line adjacent to the border with the City of Seaside that is partially aboveground and partially below ground. This is a temporary line that does not require access on a routine basis. • An abandoned underground communication line that was previously installed by the Army is reported to be present immediately to the east of General Jim Moore Boulevard; however, the exact location could not be confirmed based on available information. • A 100-foot-wide right-of-way runs through the MRA parallel to General Jim Moore Boulevard and north of Eucalyptus Road. This right-of-way was granted to Pacific Gas and Electric Company by the Army. The right-of-way contains high voltage (80 kilovolt) electrical wires supported by towers and low voltage (30 and 15 kilovolt) electrical wires supported by standard wooden poles. The low voltage wires are reportedly no longer active. There are additional wires on the wooden poles for data/communication purposes. No known easement has been granted for these activities.
Fencing and Access	<ul style="list-style-type: none"> • Access to the area east of General Jim Moore Boulevard is restricted by four-strand barbed-wire fencing reinforced with concertina, locked chain-link gates with concertina on the bottom to block the access roads into MRS-15 SEA 1 and MRS-15 SEA 2, and warning signs posted along the fencing. • Access to the area west of General Jim Moore Boulevard is unrestricted. • Access to the area south of Eucalyptus Road is restricted by four-strand barbed-wire fencing reinforced with concertina and locked chain-link gates with concertina on the bottom to block the access roads into MRS-15 SEA 3 and MRS-15 SEA 4. • Vehicular access to Eucalyptus Road is restricted by barriers marked with “Road Closed” signs (at the General Jim Moore Boulevard/Eucalyptus Road and Parker Flats Road/Eucalyptus Road intersections).

Section 4 – Seaside MRA Conceptual Site Model

Table 4.1-3
Seaside MRA - Existing Structures and Buildings

Parcel Number	Facility Number	Area (square footage)	Description	Asbestos-Containing Material	Lead-Based Paint	Year Built
E24	R9232	436	Range Support Building	Unknown	Unknown	Unknown
E24	R9230	410	Field Range Latrines	Unknown	NO	1984
E24	3908	419	Range House	Unknown	YES	1968
E24	R9221	307	Observation Tower	Not surveyed	Unknown	Unknown
E24	R9220	419	Field Range Latrines	No ACM	NO	1985
E34	8312	453	Observation Tower	No ACM	YES	1958
E34	R9190	1,155	Field Range Latrines	Rated 6 to 13	NO	1984
E23.2	R9181	189	Field Range Latrines	No ACM	NO	1984
E23.2	R9483	190	Field Range Latrines	Rated 6 to 13	NO	1984
E23.2	8302	121	Observation Tower	No ACM	YES	1959
E23.1	8304	659	Observation Tower	No ACM	YES	1963
E23.2	R9180	149	Field Range Latrines	Rated 6 to 13	NO	1984
E23.2	8301B	89	Range Support Building	No ACM	Unknown	Unknown
E23.2	8301A	452	Range Support Building	No ACM	Unknown	Unknown
E23.2	R9482	185	Field Range Latrines	No ACM	NO	1984
E23.2	3940	424	Covered Training Area	No ACM	NO	1989
E23.2	3939	1,388	Covered Training Area	No ACM	YES	1968
E23.2	3941	456	Ammunition Magazine	Rated 6 to 13	YES	1950
E23.2	R9460	463	Range Support Building	No ACM	NO	1984
E23.2	3983	73,490	Combat Pistol Range	Not surveyed	YES	1968
E23.2	R9463	186	Field Range Latrines	Unknown	NO	1984

**Table 4.1-4
Seaside MRA – Historical Military Use**

Location	Description
Range 18	<ul style="list-style-type: none"> Used as a small arms firing range at the time of closure. Past records indicate that 5.56mm, 7.62mm, and 30-caliber machine gun rounds were used or projectiles found on this range. A historical Range 18, shown on a 1961 training facilities map, is roughly coincident with the current position of Range 18.
Range 19	<ul style="list-style-type: none"> Range 19 is shown on maps dating back to 1956. Use of the range is documented as a firing range from 1973 to present. Some type of training with small arms took place in the 1940s and possibly early 1950s.
Range 20	<ul style="list-style-type: none"> Used as a 10 meter machine gun and 25 meter rifle range at the time of closure. Past records indicate that 5.56mm, 7.62mm, and 30-caliber machine gun rounds were used or projectiles found on this range.
Range 21	<ul style="list-style-type: none"> Used as a 10 meter machine gun and 25 meter rifle range at the time of closure. Past records indicate that 5.56mm, 7.62mm, and 30-caliber machine gun rounds were used or projectiles found on this range.
Range 22 and Old Range 22	<ul style="list-style-type: none"> Used as a 50-caliber machine gun range at the time of closure. Past records indicate that 5.56mm, 7.62mm, and 30-caliber machine gun rounds and 106mm recoilless rifle rounds were also used or projectiles found on this range. In addition, M48 series 50-caliber spotter-tracer projectiles (A574) that are used to check the aim of the 106mm recoilless rifle may also be present on the range. Another Range 22, which was roughly parallel to General Jim Moore Boulevard, was shown on range control maps at the time of closure. It was decommissioned in the past and labeled as “non-firing” on numerous historical maps. According to reviewed documents, it was an identified target detection range (a non-firing range, use of live ammunition was not authorized). This decommissioned Range 22 is labeled as “Old Range 22” on applicable maps in this report.
Range 23	<ul style="list-style-type: none"> Used as a squad attack range at the time of closure. Past records indicate that 5.56mm and 7.62mm machine gun rounds, 40mm HE projectiles, and claymore mine components (electrical firing devices) were used or projectiles found on this range. A 1961 training facilities map indicates an automatic rifle Table VIII (automatic rifle training), and a 1964 map shows a Range 23. Both ranges are roughly coincident with the current position of Range 23.
Range 23M	<ul style="list-style-type: none"> Used as a non-firing training area for laser-aimed Dragon anti-armor weapons. Some Dragon missiles and 4.2-inch mortar fragments have been found on the range.
Range 46	<ul style="list-style-type: none"> Used as a small arms range from the late-1950s up to the time of closure. Firing point located within MRS-15 SEA 4 with target sites located downrange to the southeast in front of a berm. Records and field investigations indicate that the military munitions at this range were restricted to small arms (pistols and rifles).

Section 4 – Seaside MRA Conceptual Site Model

Table 4.1-4
Seaside MRA – Historical Military Use

Location	Description
Range 48	<ul style="list-style-type: none"> • Used as a light antitank weapon (LAW) range at the time of base closure. • The firing point located within MRS-15 SEA 4 with target locations located downrange to the southeast. • Records show range was in use since the 1940s. • Used for weapons familiarization training, and as a sniper range, mortar range, and machine gun range. • Records and recent field investigations indicate the following military munitions used or found in this range: <ul style="list-style-type: none"> – fragmentation hand grenades; – practice rifle grenades; – practice mines, including claymore and antipersonnel, and AT types; – Dragon-guided and high-explosive antitank (HEAT) missiles; – mortars, including HE, illumination, target practice, and white phosphorous types; – projectiles including HE, HEAT, illumination, practice, smoke, and subcaliber types; – HEAT, incendiary, practice, and subcaliber rockets illumination signals; and small arms.
Range 50	<ul style="list-style-type: none"> • Identified as a Booby Trap training area in 1945.
Range 59	<ul style="list-style-type: none"> • Shown on a 1956 training facilities map, indicating that a range labeled M1 Table XI (M1 rifle training) existed in MRS-15 SEA 2. • A 1967 training facilities map shows a Range 59 that is roughly coincident with that area. Range 59 appears to have been decommissioned in the past and is not shown on range maps at the time of base closure.

References: USACE 1997a and Parsons 2006b

**Table 4.1-5
Seaside MRA – Administrative Controls**

Type	Description
Land Use Covenants	<ul style="list-style-type: none"> As identified in the FOSET, Covenants Restricting the Use of the Property (CRUPs) have been imposed on the Seaside MRA parcels (Army 2007). These CRUPs are defined in the “Memorandum of Agreement Among the Fort Ord Reuse Authority, Monterey County and Cities of Seaside, Monterey, Del Rey Oaks and Marina, California State University Monterey Bay, University of California Santa Cruz, Monterey Peninsula College, and the Department of Toxic Substances Control Concerning Monitoring and Reporting of Environmental Restrictions on the Former Fort Ord, Monterey County, California.” These restrictions involve the enforcement of site review and reporting requirements and agency cost recovery/reimbursement requirements as imposed by the DTSC.
Restrictions to Digging/Excavation	<ul style="list-style-type: none"> City of Seaside Ordinance No. 259 amending the municipal code referred to as Chapter 15.34. The ordinance prohibits excavation, digging, development, or ground disturbance of any type on the former Fort Ord that involves the displacement of 10 or more cubic yards of soil without approval.
FORA Resolution 98-1	<ul style="list-style-type: none"> An approved FORA resolution that contains proposed and suggested measures to avoid or minimize hazardous material impact.
ESCA MOA	<ul style="list-style-type: none"> The MOA between FORA and the jurisdictions for the purpose of defining the terms of an agreement for holding and managing (ownership and responsibilities) property while remedial work is accomplished under an ESCA. The MOA establishes FORA’s ownership during the MEC remediation period; identifies that jurisdictions need to provide public safety response from police, fire, and other emergency personnel as needed; establishes control of access to ESCA property during the MEC remediation period; and agreement that access to properties will be governed by the restrictions included in the Land Use Covenant accompanying the transfer of the property.
Habitat Management Plan	<ul style="list-style-type: none"> The HMP incorporated conservation measures pursuant to USFWS BOs dated prior to issuance of the HMP in April 1997. Specific MEC activities were addressed in Chapter 3 of the HMP (USACE 1997b).
Biological Opinions	<ul style="list-style-type: none"> Since the release of the HMP, a number of BOs have been issued that are relevant to the MEC remediation period (USFWS 1999, 2002, and 2005). Accordingly, some information has been updated and additions have been made to the sections that address MEC activities. Future MEC work is required to be consistent with the applicable conservation measures.

**Table 4.2-1
Seaside MRA – Geology and Soils**

Type	Description
General Geology	<ul style="list-style-type: none"> • The former Fort Ord is located within the Coast Ranges Geomorphic Province, which consists of northwest-trending mountain ranges, broad basins, and elongated valleys generally paralleling the major geologic structures. • The former Fort Ord is located 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 the former Fort Ord generally reflects this transitional condition. Older, consolidated rocks are characteristically exposed in the mountains near the southern base boundary, but are buried under a northward-thickening sequence of younger, unconsolidated alluvial fan and fluvial sediments in the valleys and lowlands to the north. In the coastal lowlands, these younger sediments commonly interfinger with marine deposits. • The former 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; and 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: Pliocene-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 and alluvium. • The MRA includes deposits from the Paso Robles Formation and sand and gravel deposits of Aromas Sandstone.
Topography and Soils	<ul style="list-style-type: none"> • Terrain varies from flat to moderately rolling with 2 to 15 percent slopes. • Elevation ranges from approximately 210 to approximately 520 feet msl. • Soils consist predominantly of Baywood Sand with 2 to 15 percent slopes. • Soils formed by Pleistocene-age dune deposits (Baywood Sand) that may be up to 250 feet thick with Arnold Santa Ynez Complex sand deposits, which are older but similar in composition, to the east. The Baywood Sand deposits cover the entire MRA. • Mature plant communities largely stabilize these widespread, unconsolidated dune deposits.

References: EA 1991, HLA 1995, and the Fort Ord MMRP Database

Table 4.2-2
Seaside MRA – Vegetation

MRS Identifier	USACE Parcel Number	Vegetation
MRS-15 SEA 1	E24	All vegetation within the MRSs of the Seaside MRA was mechanically or manually cut to support the TCRA and NTCRA that were conducted by the Army from 2001 to 2003. The current vegetation may include early seral stages of maritime chaparral. Coast live oak woodland strands are scattered throughout the MRS.
MRS-15 SEA 2	E34	All vegetation within the MRSs of the Seaside MRA was mechanically or manually cut to support the TCRA and NTCRA that were conducted by the Army from 2001 to 2003. The current vegetation may include early seral stages of maritime chaparral
MRS-15 SEA 3	E23.1	All vegetation within the MRSs of the Seaside MRA was mechanically or manually cut to support the TCRA and NTCRA that were conducted by the Army from 2001 to 2003. The current vegetation may include early seral stages of maritime chaparral. A coast live oak woodland strand is located in the northwestern portion of the MRS, and individual coast live oaks are scattered throughout the MRS.
MRS-15 SEA 4	E23.2	All vegetation within the MRSs of the Seaside MRA was mechanically or manually cut to support the TCRA and NTCRA that were conducted by the Army from 2001 to 2003. The current vegetation may include early seral stages of maritime chaparral. A coast live oak woodland strand is located in the northwestern portion of the MRS, and individual coast live oaks are scattered throughout the MRS.

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Table 4.3-1
Seaside MRA – Investigation and Sampling

Activity	Summary
Field Latrine Investigation	<ul style="list-style-type: none"> From March to November 1997, removal work was performed on 52 of the approximately 132 field latrines scattered throughout the former Fort Ord because MEC may have been discarded in the latrines. Two field latrines located in MRS-15 SEA 1 were investigated, but no MEC were encountered (USA 2001f).
MEC Sampling in Small Arms Ranges (OE-15A Grid Sampling)	<ul style="list-style-type: none"> From October to November 1997, 20 100-foot by 100-foot grids located in Site OE-15A were sampled to determine the need and scope of future removal actions. Site OE-15A consisted of those areas within the range fans of Small Arms Ranges 18, 19, 21, 39, and 46. Five of the 20 sample grids were placed within the boundaries of the Seaside MRA. MRS-15 SEA 2 contained one grid in Range 19 (Grid G1); MRS-15 SEA 4 contained three grids in Range 18 (Grids G1, G2, and G3) and one grid in Range 46 (Grid G1). Schonstedt magnetometers were used to investigate 100 percent of each sample grid. All anomalies detected were investigated to depth and resolved (USA 2000a).
MEC Sampling (OE-15B Grid Sampling)	<ul style="list-style-type: none"> From October 1997 to February 1998, 41 100-foot by 100-foot grids located in OE-15B were sampled to determine the need and scope of future removal actions and establish the types and distribution of MEC in the impact area. Of the 41 sample grids, six were located within the boundaries of the Seaside MRA; five grids (G16, G18, G19, G20, and G37) were located in MRS-15 SEA 1; and one grid (G21) was located in MRS-15 SEA 2. Schonstedt magnetometers were used to investigate 100 percent of each sample grid (USA 2000d).
Impact Area Grid Sampling	<ul style="list-style-type: none"> Between March and August 1999, 213 100-foot by 100-foot grids in MRS-MOCO.2, MRS-15 SEA 1-4, MRS-DRO.2, and MRS-MOCO.1 were sampled to determine the need and scope of future removal actions. One hundred fifty-five sample grids were placed in MRS-15 SEA 1-4, and 100 percent of each grid was investigated with Schonstedt magnetometer (USA 2001m).

**Table 4.3-2
Seaside MRA – Removal Activities, Burial Pits, and Special Case Areas**

Activity	Summary
MEC Removal – Impact Areas Roads and Trails	<ul style="list-style-type: none"> From March 1997 to March 1998, vegetation clearance operations and a 4-foot removal conducted with Schonstedt magnetometers were performed on eight range roads and 32 dirt trails in the former impact area to facilitate travel for field activities. Six of the roads (Winchester, Range 23, Hangfire, Tracer, Canister, and Broadway) were located in the Seaside MRA. MEC items were removed from grids on Winchester Road, Hangfire Road, and Range 23 Access Road located in MRS-15 SEA 1 (USA 2001d).
MEC Removal – Blue Line Fuel Break Reestablishment	<ul style="list-style-type: none"> Between May and June 1998, vegetation clearance operations and a 4-foot removal (with Schonstedt magnetometers) were performed on the 30-foot-wide, approximately 6-mile-long fuel break (the Blue Line) that extends west along the southern border of MRS-MOCO.2 and MRS-15 SEA 3–4 and then bends south along the eastern boundaries of MRS-15 SEA 1–2, MRS-DRO.1–2, MRS-MOCO.1, and MRS-46. This work was performed to reestablish the fuel break as part of the wildfire safety and control program in the former impact area. MRS-15 SEA 1–4 contained 133 contiguous sections (grids) of this fuel break (USA 2001p).
MEC Removal to Support Lead- Contaminated Soil Remediation – Ranges 19, 21, 22, and 23	<ul style="list-style-type: none"> From April 1997 to June 1999, 4-foot removal operations with Schonstedt magnetometers were conducted in Ranges 19, 21, 22, and 23 to support efforts to remediate spent SAA and lead-contaminated soil and to provide safe access routes for personnel and equipment into the areas (USA 2001k). In Ranges 19, removal operations were completed on nine access road sections and 23 target boxes to prepare the target boxes for the lead remediation work. No MEC were encountered during this operation. In Range 21, removal operations were performed on, in front of, and behind a berm to prepare the area for the lead remediation work. The removal work in front of the berm was stopped because the excessive anomalies in the area interfered with the Schonstedt. The removal operations on and behind the berm were successfully completed. No MEC were encountered. In Range 22, removal operations were planned to prepare the area for the lead remediation work; however, they were cancelled because it was determined that there was insufficient lead contamination to warrant remediation operations. In Range 23, removal operations were completed on an access road into the range before operations were cancelled because it was determined that there was insufficient lead contamination to warrant remediation operations. Three MEC items were found on the access road before work was stopped (a 22mm subcaliber M744 projectile, a practice 3-inch Stokes trench mortar, and a practice 40mm M781 cartridge).
MEC Removal to Support Lead – Contaminated Soil Remediation – Range 46	<ul style="list-style-type: none"> From April to August 1999, 4-foot operations with Schonstedt magnetometers were conducted on 26 grids around Range 46 to support efforts to remediate spent SAA and lead-contaminated soil around the range’s firing line (USA 2001k). Of the 26 cleared grids, all or a portion of 23 were located in MRS-SEA 4. During this work, no MEC were encountered.
Impact Area Fuel Break Maintenance	<ul style="list-style-type: none"> To prevent and control wildfires in the former impact area, maintenance work was conducted in 2001 on old roads, trails, and fuel breaks in the impact area used during military training activities. Surface removals were conducted on the 15-foot sides of each fuel break, and a 4-foot removal (with deeper excavations approved by the USACE Ordnance and Explosives Safety Specialist [OESS]) was performed with

Section 4 – Seaside MRA Conceptual Site Model

Table 4.3-2
Seaside MRA – Removal Activities, Burial Pits, and Special Case Areas

Activity	Summary
	<p>Schonstedt magnetometers on some of the fuel breaks' 15- to 20-foot-wide centers. Five of the reestablished fuel breaks had sections that were within MRS-15 SEA 1-4: Austin Road, General Jim Moore Road (North and South), Broadway Road (West), Watkins Gate Road, and Nowhere Road (Parsons 2001).</p>
TCRA	<ul style="list-style-type: none"> • During December 2001 to March 2002, a TCRA was completed over the surface of MRS SEA.1-4 (this action was done separately under an Action Memorandum, which describes the decision for conducting the TCRA). The TCRA was done to address the imminent threat posed to human health (public safety) or welfare or the environment posed by the presence of MEC on the surface on MRS-SEA 1-4 (Parsons 2006b). • To make the surface safe and accessible for UXO removal crews, the predominantly maritime chaparral vegetation covering MRS-15 SEA 1-4 was cut. UXO teams visually searched the surface with the aid of Schonstedt magnetometers to help detect items that might be under debris. • All surface items that were observed or detected with a Schonstedt were removed.
NTCRA & Geophysical Operations	<ul style="list-style-type: none"> • During March 2002 to March 2004, an NTCRA and 100 percent digital geophysical survey were performed at the MRA. The NTCRA was performed on five distinct removal areas within the MRA that were determined based on the results of the previous investigations (portions of MRS-15 SEA 1-4 adjacent to the removal areas were also subjected to the NTRCA if MEC were found near the removal area boundaries). The NTCRA was performed by the Army to address the threat to human health (public safety) or the welfare or the environment posed by the presence of MEC of MRS-15 SEA 1-4 (Parsons 2006b). • A 100 percent digital geophysical survey was also conducted by the Army on all remaining portions of the site not covered by the NTCRA. The 100 percent digital geophysical survey was conducted to confirm the previous sampling work done. Prior to the geophysical survey, approximately 87 acres of vegetation in three areas were re-cut in fall 2003. • The geophysical operations specified in the Army's approved MRS-15 SEA 1-4 Site-Specific Work Plan were completed in all accessible portions (about 91 percent) of MRS-15 SEA 1-4 to the maximum capacity of the technologies and instruments used. Analog and digital ordnance detection instruments were used over all accessible portions of MRS-15 SEA 1-4 to locate subsurface anomalies, and all detected anomalies were resolved.
NTCRA Burial Pits	<ul style="list-style-type: none"> • During the NTCRA and Phase I Geophysical Operations, seven burial pits containing MEC were discovered (Parsons 2006b). • The MEC recovered from the seven burial pits consisted of 105 M10 series hand grenade fuzes, 17 ordnance components, three MKII practice hand grenades, and six 3-inch MK1 practice mortar (Table 4.3-3). • Military munitions recovered from other burial pits (containing MD) included 80 SAA and 22 items determined to be MD-E consisting mostly of expended 3-inch and 4-inch MK1 practice mortars. • All MEC items found below 8 inches and 86 percent of all items found in MRS-15 SEA 3 were located in a single burial pit.

Table 4.3-2
Seaside MRA – Removal Activities, Burial Pits, and Special Case Areas

Activity	Summary
<p>NTCRA Special Case Areas</p>	<ul style="list-style-type: none"> • During the NTCRA and Phase I Geophysical Operations, approximately 35 acres of land were inaccessible or near-surface sources of interference prevented the digital geophysical instruments from being able to distinguish individual anomalies (Parsons 2006b). These areas were categorized by the Army as SCAs, and include the following: <ul style="list-style-type: none"> • Existing Site Fence Area <p>The metallic site fence and associated chain-link access gates to the MRSs along General Jim Moore Boulevard and Eucalyptus Road interfered with the geophysical instruments in areas within 5 to 15 feet of the fence.</p> • Original Fence Line <p>The original fence line area is located 10 to 15 feet inside the boundaries for MRS-SEA 1-3, just east of General Jim Moore Boulevard. The original fence, which consisted of concertina, was removed, and electromagnet operations were performed over the area to collect metal debris associated with the deteriorating fencing. Following the electromagnetic operations, the digital instrument response was saturated in the immediate area of the original fence line because the soil surface was magnetized due to the electromagnetic operations. As a result, this area could not be geophysically surveyed for the presence of military munitions.</p> • Asphalt and Concrete <p>The asphalt range roads extending from General Jim Moore Boulevard and Eucalyptus Road into the Seaside MRA and the adjacent asphalt/concrete range pads made the surface inaccessible to the geophysical instruments at the time of the investigation. There are also several range structures (e.g., range towers, break areas, etc.) on top of the asphalt and culverts in the subsurface near the asphalt roads.</p> • Backhoe Excavations <p>Approximately 350 locations require backhoe excavations. These include areas where backhoe excavations were started but not completed due to budgetary constraints and areas containing buried cable/wire, grounding rods, range markers, reinforced concrete, and wood.</p> • Heavy Equipment Excavations <p>Approximately 40 locations require excavation with heavy equipment. These include concrete bunkers, fighting positions, flag/utility poles, target boxes, tie downs, utility poles, and wooden stairs.</p> • Berms <p>There are several berms in the Seaside MRA, some of which are reinforced with wooden retaining walls. The metal connectors of the retaining walls prevented geophysical surveys from being conducted in some of the areas near the berms, and the material in the berms was too thick to effectively detect military munitions.</p> • Structures/Latrines <p>There are several structures and latrines in the Seaside MRA. The surface underneath the structures and latrines was inaccessible, and the immediate areas around these buildings could not be surveyed because of interference.</p> • Range 46 Weather Station

Section 4 – Seaside MRA Conceptual Site Model

Table 4.3-2
Seaside MRA – Removal Activities, Burial Pits, and Special Case Areas

Activity	Summary
	<p>A remote automated weather station (RAWS) was situated on Range 46 during previous removal actions at the Seaside MRA and has since been removed. The ground surface underneath the former RAWS was inaccessible, and the immediate areas around the RAWS could not be geophysically surveyed because of interference.</p> <ul style="list-style-type: none"><li data-bbox="418 457 597 489">• Debris Piles <p>There are several locations where debris was piled that were inaccessible to the geophysical operations.</p>

Table 4.3-3
Seaside MRA – Burial Pits Containing MEC

Site	Grid	Pit No. *	Type	Description	Qty	Depth (inches bgs)
MRS-SEA 1	B1B8D5		UXO	Projectile, 3-inch, mortar, HE, MK I	5	20
	B1B8F7		UXO	Ordnance components	17	18
	B1C7G7		UXO	Projectile, 3-inch, mortar, practice, MK I	1	48
MRS-SEA 2	B1F9F3		UXO	Bulk, HE (Model Unknown)	1 pound	24
MRS-SEA 3	B2I1I9	1	DMM	Fuze, grenade, hand, M10 series	7	8
		2	UXO	Fuze, grenade, hand, M10 series	98	16
MRS-SEA 4	C2A3D0		UXO	Grenade, hand, practice, MK II	3	4

Note: * If more than one pit was found in a grid.

Reference: Fort Ord MMRP Database

Please note: Munitions descriptions have been taken directly from the Army's MMRP Database and/or other historical documents. Any errors in terminology, filler type, and/or discrepancies between model number and caliber/size are a result of misinformation from the data sources.

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Table 4.3-4
Seaside MRA – Types of MEC Removed and Hazard Classification

Location	MEC Item	UXO	DMM	Hazard Classification
MRS-15 SEA 1	Cap, blasting, electric, M6	0	4	1
	Cartridge, 40mm, practice, M781	0	20	1
	Fuze, grenade, hand, M10 series	0	86	1
	Fuze, grenade, hand, practice, M205 series	0	2	1
	Fuze, grenade, hand, practice, M228	2	3	1
	Fuze, projectile, combination, M1907	1	0	1
	Fuze, projectile, point detonating, M48 series	1	0	2
	Fuze, trench mortar, point detonating, MK VI	1	0	2
	Grenade, hand, fragmentation, MK II	1	0	3
	Grenade, hand, incendiary, TH3, AN-M14	1	0	1
	Grenade, hand, riot, CS, M7A3	1	0	1
	Grenade, hand, smoke, M18 series	5	0	1
	Ordnance Components	19	0	NS
	Projectile, 22mm, subcaliber, practice, M744	1	0	1
	Projectile, 37mm, low explosive, MK I	3	0	3
	Projectile, 3inch, trench mortar, practice, MK I (Stokes)	28	0	1
	Projectile, 40mm, parachute, illumination, M583 series	1	0	1
	Projectile, 4inch, mortar, screening smoke, FM (Stokes)	6	0	3
	Projectile, 4inch, mortar, smoke, HC (Stokes)	4	0	2
	Projectile, 4inch, trench mortar, practice, MK I (Stokes)	5	0	1
	Projectile, 4inch, trench mortar, smoke, white phosphorous, MK I (Stokes)	1	0	3
	Projectile, 75mm, high explosive, MK I	1	0	3
	Projectile, 75mm, Shrapnel, MK I	6	0	3
	Projector, Livens, screening smoke, FM	2	0	3
	Rocket, 35mm, subcaliber, practice, M73	1	0	1
	Signal, ground, rifle, parachute, M17 series	2	0	1
	Signal, illumination, M187	1	0	1
	Simulator, grenade, hand, M116A1	1	0	2
MRS TOTAL		95	115	
MRS-15 SEA 2	Bulk, high explosive (model unknown) – 1 pound *	0	0	NS
	Fuze, grenade, hand, M10 series	0	2	1
	Fuze, grenade, hand, practice, M205 series	0	2	1
	Grenade, hand, smoke, M18 series	1	0	1
	Projectile, 3inch, trench mortar, practice, MK I (Stokes)	6	0	1
	Signal, illumination, ground, M125 series	1	0	2
MRS TOTAL		8	4	
MRS-15 SEA 3	Cap, blasting, electric, M6	0	1	1
	Fuze, grenade, hand, M10 series	98	10	1
	Fuze, grenade, hand, practice, M205 series	2	0	1
	Fuze, grenade, hand, practice, M228	0	4	1

Section 4 – Seaside MRA Conceptual Site Model

Location	MEC Item	UXO	DMM	Hazard Classification
	Grenade, rifle, smoke, M22 series	1	0	1
	Projectile, 37mm, high explosive, MK II	1	0	1
	Projectile, 37mm, low explosive, MK I	1	0	3
	Rocket, 3.5inch, practice, M29 series	1	0	0
	Rocket, 35mm, subcaliber, practice, M73	2	0	1
	Signal, ground, rifle, parachute, M17 series	1	0	1
	Signal, illumination, ground, M21A1	1	0	1
	MRS TOTAL	108	15	
MRS-15 SEA 4	Activator, mine, antitank, practice, M1	0	1	1
	Cap, blasting, non-electric, M7	0	1	1
	Cartridge, ignition, M2 series	39	3	1
	Flare, surface, trip, M49 series	3	0	1
	Fuze, grenade, hand, M10 series	2	12	1
	Fuze, grenade, hand, practice, M228	1	11	1
	Fuze, mine, antitank, practice, M604	0	1	1
	Fuze, mine, combination, M6A1	0	1	1
	Fuze, projectile, point detonating, M503 series	1	0	2
	Grenade, hand, fragmentation, MK II	3	0	3
	Grenade, hand, practice, M30	22	0	1
	Grenade, hand, practice, MK II	32	0	1
	Grenade, hand, smoke, M18 series	1	0	1
	Grenade, rifle, smoke, M22 series	15	0	1
	Mine, antitank, practice, M1	1	0	1
	Ordnance Components	7	0	NS
	Pot, 10lb, smoke, HC, screening, M1	3	0	1
	Primer, igniter tube, M57	2	0	1
	Projectile, 3inch, Hotchkiss	1	0	3
	Projectile, 40mm, high explosive, M386	1	0	3
	Projectile, 57mm, high explosive, M306 series	14	0	3
	Projectile, 60mm, mortar, high explosive, M49 series	2	0	3
	Projectile, 75mm, Shrapnel, MK I	2	0	3
	Projectile, 81mm mortar, high explosive M43 series	1	0	3
	Rocket, 35mm, subcaliber, practice, M73	4	0	1
	Signal, illumination, ground, M125 series	1	0	2
	Simulator, flash artillery, M110	1	0	1
	MRS TOTAL	159	30	
	SEASIDE MRA TOTAL	370	164	

Notes: NS = Not Specified.

* = MMRP database identified item as UXO with a quantity of zero.

Reference: Fort Ord MMRP Database.

Please note: Munitions descriptions have been taken directly from the Army's MMRP Database and/or other historical documents. Any errors in terminology, filler type, and/or discrepancies between model number and caliber/size are a result of misinformation from the data sources.

Section 4 – Seaside MRA Conceptual Site Model

Table 4.3-5
Seaside MRA – Summary of Recovered MEC and MD

Type	Summary
UXO	370 items
DMM	164 items
MD	56,524 pounds (includes MD-E and MD-F items if weights were documented)
Aerial Extent	<ul style="list-style-type: none"> • The largest concentrations of MEC were located in MRS-15 SEA 4 between Ranges 18 and 46 in the northern portion of the MRA and in MRS-15 SEA 1 in the area of Range 23 and Watkins Gate Road in the southern portion of the MRA. • MEC were also recovered from several discrete locations. • The majority of the grids contained less than 100 pounds of MD. A majority of the grids that contained more than 100 pounds of MD were concentrated in the southwestern portion of Ranges 19, 20, and 59 and in the southern and western portions of Ranges 23 and 23M, respectively.
Vertical Extent	<ul style="list-style-type: none"> • The MMRP database indicates that the majority of the MEC recovered from the Seaside MRA were found on the surface, within 6 inches bgs, or in seven burial pits.

**Table 4.3-6
Seaside MRA – HTW History and Conditions**

Location	Summary
MRS-SEA 1 (Parcel E24)	<ul style="list-style-type: none"> • Remediation at IRP Site 39, Range 21 (HA-21D), was conducted to remove lead, copper, and antimony in soil from spent SAA. The remedial action included the removal of approximately 9,600 cubic yards of affected soil. The average lead concentration of soil remaining in place following remedial activities at Range 21 was 35 milligrams per kilogram (mg/kg). Results of the confirmation sampling indicated that soil with chemical concentrations above target cleanup concentrations was removed. No further action related to munitions constituents (MC) was recommended for HA-21D under the BRA. • The evaluation of HA-112 (MRS-15 SEA 01) included a literature search, a review of the information gathered during the munitions response at the MRA, and a site reconnaissance. No suspect areas outside of the previously identified overlapping HAs were identified during the reconnaissance of the MRA, and no further action related to MC was recommended under the BRA. • The assessment of HA-22D (Range 22) included site reconnaissance and site investigation soil sampling for MC. Site reconnaissance identified targets and areas with concentrations of spent SAA. Soil sample results indicated that lead concentrations were below the Fort Ord maximum background concentration and copper concentrations were below screening levels and under the U.S. EPA residential preliminary remediation goal (PRG). No further action related to MC was recommended for HA-22D under the BRA. • The assessment of HA-23D (Range 23) included site reconnaissance and site investigation soil sampling for MC. Site reconnaissance identified some areas with concentrations of spent SAA. Soil sample results indicated that the lead concentrations were below screening levels under the U.S. EPA Region IX PRG in four of five samples collected. No further action related to MC was recommended for HA-23D under the BRA.
MRS-SEA 2 (Parcel E34)	<ul style="list-style-type: none"> • Remediation at IRP Site 39 Range 19 (HA-19D) was conducted to remove lead, copper, and antimony in soil from spent SAA. The remedial action included the removal of approximately 1,400 cubic yards of affected soil. Results of the confirmation sampling indicated that soil with chemical concentrations above target cleanup concentrations was removed. No further action related to MC was recommended for HA-19D under the BRA. • The evaluation of HA-113 (MRS-15 SEA 02) included a literature search, review of the information gathered during the munitions response at the MRA, and a site reconnaissance. No suspect areas outside of the previously identified overlapping HAs were identified during the reconnaissance of the MRA, and no further action related to MC is recommended under the BRA. • The assessment of HA-20D (Range 20) included site reconnaissance and site investigation soil sampling for MC. Soil sample results indicated that metals concentrations were below the Fort Ord maximum background concentrations and no further action related to MC was recommended for HA-20D under the BRA. • The evaluation of HA-59D (Range M1) included a literature search, review of the information gathered during the munitions response, and reconnaissance of the site. No targets, spent ammunition, or other MEC-related items were observed, and no further action related to MC was recommended for HA-59D under the BRA.
MRS-SEA 3 (Parcel E23.1)	<ul style="list-style-type: none"> • Remediation at IRP Site 39, Range 18 (HA-18D), was conducted to remove lead, copper, and antimony in soil from spent SAA. The remedial action included the removal of approximately 24,900 cubic yards of affected soil. Results of the confirmation sampling indicated that soil with chemical concentrations above target cleanup concentrations was removed. No further action related to MC was recommended for HA-18D under the BRA. • The evaluation of HA-114 (MRS-15 SEA 03) included a literature search and review of

Section 4 – Seaside MRA Conceptual Site Model

Table 4.3-6
Seaside MRA – HTW History and Conditions

Location	Summary
	<p>the information gathered during the munitions response at the site. Based on the limited number of items identified during the munitions response, no further action related to MC was recommended for HA-114 under the BRA.</p>
<p>MRS-SEA 4 (Parcel E23.2)</p>	<ul style="list-style-type: none"> • Remediation at IRP Site 39, Ranges 18 and 46 (HA-18D and HA-46D), was conducted to remove lead, copper, and antimony in soil from spent SAA. The remedial action at Range 18 included the removal of approximately 24,900 cubic yards of affected soil. Results of the confirmation sampling indicated that soil with chemical concentrations above target cleanup concentrations was removed. No further action related to MC was recommended for HA-18D under the BRA. • The remedial action at Range 46 included the removal of approximately 3,900 cubic yards of affected soil. The average lead concentration of soil remaining in place following remedial activities at Range 46 was 26 mg/kg. Results of the confirmation sampling indicated that soil with chemical concentrations above target cleanup concentrations was removed. No further action related to MC was recommended for HA-46D under the BRA. • The assessment of HA-48D (Range 48) included site reconnaissance and site investigation soil sampling for MC. Soil sample results indicated that metals concentrations exceeded the Fort Ord maximum background concentrations, but were below cleanup levels. Because sample results were below cleanup levels, no further action related to MC was recommended for HA-48D under the BRA. • The evaluation of HA-115 (MRS-15 SEA 04) included a literature search, review of the information gathered during the munitions response at the site, and a site reconnaissance. No suspect areas outside of the previously identified overlapping HAs were identified during the reconnaissance of the site, and no further action related to MC is recommended under the BRA. • The evaluation of HA-50D (Booby Trap Range) included a literature search and reconnaissance of the site. Blank casings, 50-caliber links, and concrete debris were found. No targets, fighting positions, or other MEC-related items were observed, and no further action related to MC was recommended for HA-50D under the BRA.

Reference: Army 2007

Table 4.4-1
Seaside MRA - Future Land Use by Parcel

USACE Parcel Number	MRS Number	Land Use Category	Description	Acreege
E24	MRS-15 SEA 1	Development	Residential - Single Family	108
E24	MRS-15 SEA 1	Development	Road and Inland Range Buffer	74
E24	MRS-15 SEA 1	Development	Residential - Single Family	16
E34	MRS-15 SEA 2	Development	Residential - Single Family	48
E34	MRS-15 SEA 2	Development	Road and Inland Range Buffer	40
E34	MRS-15 SEA 2	Development	Residential - Single Family	9
E23.1	MRS-15 SEA 3	Development	Residential - Single Family	42
E23.1	MRS-15 SEA 3	Development	Road and Inland Range Buffer	6
E23.2	MRS-15 SEA 4	Development	Residential - Single Family	65
E23.2	MRS-15 SEA 4	Development	Inland Range Buffer	11
MRA TOTAL				419

**Table 4.5-1
Seaside MRA – Ecological Information**

Type	Summary
<p>Biological</p>	<ul style="list-style-type: none"> • Dominant vegetation in the area is central maritime chaparral with patches of non-native grassland. Central maritime chaparral consists of variable sclerophyllous (hard-leaved) shrub communities within a scrub-live oak forest region that is best developed on sandy soils within the summer fog zone. This type of chaparral is considered rare by the CDFG and is declining statewide. Development has now limited the majority of this community type in the Monterey Bay Area to undeveloped portions of Fort Ord. As identified in the HMP, a number of species could be found on the Seaside MRA.
<p>Habitat Management Plan/ Biological Opinions</p>	<ul style="list-style-type: none"> • The USFWS BO required that an HMP be developed and implemented to reduce the incidental take of listed species and loss of habitat that supports these species. The HMP for former Fort Ord complies with the USFWS BO and establishes the guidelines for the conservation and management of wildlife and plant species and habitats that largely depend on former Fort Ord land for survival. The HMP incorporated conservation measures pursuant to USFWS BOs dated prior to issuance of the HMP in April 1997. • To maintain compliance with habitat management and monitoring requirements presented in the HMP, biological resources are monitored after MEC removal activities have been completed. The HMP specifies mitigation measures to monitor the successful regeneration of species and habitat following removal of MEC. Monitoring includes conducting follow-up monitoring for a period of 5 years after MEC removal to document habitat conditions. Since the inception of the MEC removal program, the Army had elected to augment the monitoring program, where feasible, to include the collection of baseline data prior to MEC removal. Baseline data have been collected to provide additional information on preexisting species composition and distribution of herbaceous annual sensitive species. Both baseline and follow-up data are used to compare community regeneration to HMP success criteria. • The HMP identifies the area as development and habitat reserve with borderland development areas along an NRMA interface (Figure 4.5-1). The NRMA separates the development category land from the adjacent habitat reserve area. The NRMA and habitat reserve areas support plant and animal species that require implementation of mitigation measures identified in the HMP to ensure compliance with the ESA and minimize impacts to listed species. • FORA will implement the mitigation requirements identified in the HMP in accordance with the BO developed during formal consultation between the Army and the U. S. FWS under Section 7 of the ESA. For habitat areas, these measures include conducting habitat monitoring in compliance with Chapter 3 of the HMP. For borderland areas, FORA will follow best management practices while conducting work to prevent the spread of exotic species, limit erosion, and limit access to the NRMA. • Since April 1997, a number of BOs have been issued that are relevant to MEC remediation activities (USFWS 1999, 2002, 2005). Future MEC remediation is required to be consistent with the applicable conservation measures.

**Table 4.5-1
Seaside MRA – Ecological Information**

Type	Summary
<p>Threatened and Endangered Species</p>	<ul style="list-style-type: none"> • Special-status biological resources are those resources, including plant, wildlife, and native biological communities, that receive various levels of protection under local, state, or federal laws, regulations, or policies. The closure and disposal of former Fort Ord is considered a major federal action that could affect several species proposed for listing or listed as threatened or endangered under the federal ESA. • Plant species identified at the former Fort Ord that are either threatened or endangered include Contra Costa goldfields (endangered), sand gilia (endangered), and Monterey spineflower (threatened). • In 2004, the CTS was identified as a threatened species. CTS may be found as far as 2 km from aquatic breeding habitats. As shown on Figure 4.5-2, it is possible the CTS may be found in the MRS-15 SEA 1 and MRS-15 SEA 2 as they lie within 2 km of an aquatic feature that is likely to have a presence of CTS. • Seaside MRA is identified within the HMP to require special management for the boundaries between developed areas and the NRMA. The requirements have both interim and long-term maintenance implications. As presented in the HMP, with the exception of boundary management requirements, the Seaside MRA is available for development without restrictions although future landowners will still be required to comply with environmental laws enforced by the federal, state, and local agencies, including the ESA.

Section 4 – Seaside MRA Conceptual Site Model

Table 4.5-2
Seaside MRA - HMP Category by Parcel and Possible Occurrence of HMP Species

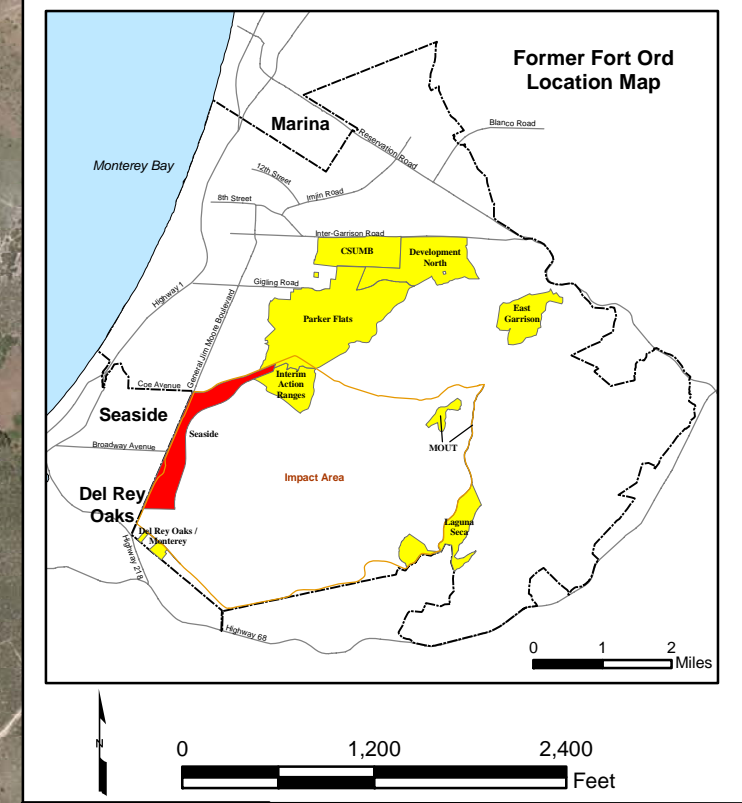
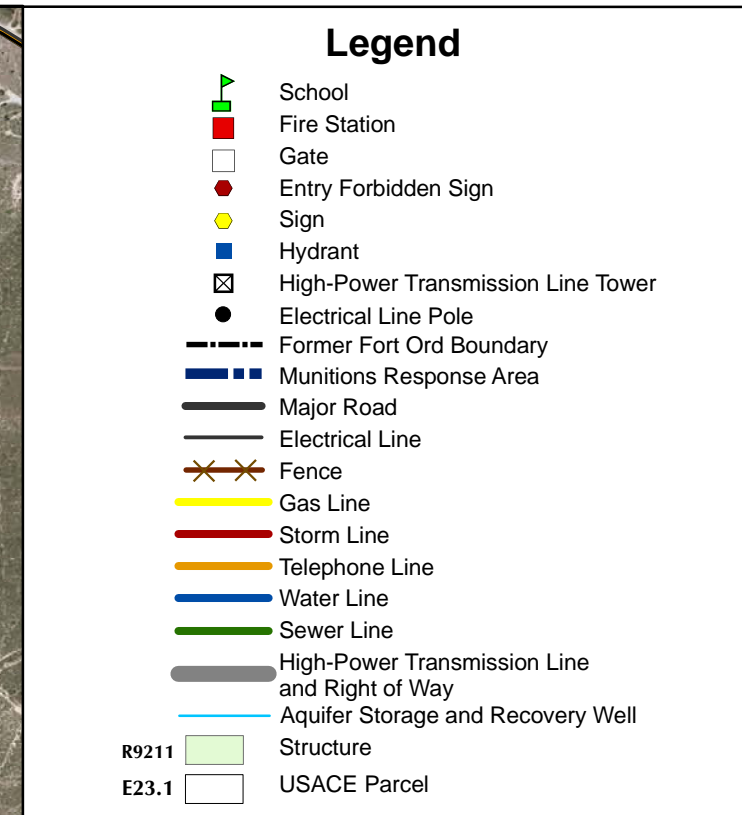
USACE Parcel Number	HMP Designated Use	HMP Species
E24	Development (includes residential and a borderland buffer along the NRMA Interface)	sand gilia; Monterey spineflower; Seaside Bird's beak; toro manzanita; sandmat manzanita; Monterey ceanothus; Eastwoods ericameria, coast wallflower; California black legless lizard; California tiger salamander
E34	Development (includes residential and a borderland buffer along the NRMA Interface)	sand gilia; Monterey spineflower; sandmat manzanita; Monterey ceanothus; Eastwoods ericameria, California black legless lizard; California tiger salamander
E23.1	Development (includes residential and a borderland buffer along the NRMA Interface)	sandmat manzanita; Monterey ceanothus; Eastwoods ericameria, California black legless lizard
E23.2	Development (includes residential and a borderland buffer along the NRMA Interface)	Monterey spineflower; sandmat manzanita; Monterey ceanothus; Eastwoods ericameria, California black legless lizard

Reference: USACE 1997b

Table 4.6-1
Seaside MRA – Potential Receptors and Exposure Media

Potential Receptor	Exposure Media			Exposure Media		
	Current	Ground Surface	Below Grade	Future	Ground Surface	Below Grade
Construction Workers	✓	✓	✓	✓	✓	✓
Utility Workers	✓	✓	✓	✓	✓	✓
Trespassers	✓	✓		✓	✓	
Firefighters	✓	✓	✓	✓	✓	✓
Emergency Response Workers	✓	✓		✓	✓	
Ancillary Workers	✓	✓	✓	✓	✓	✓
Residents				✓	✓	✓
Recreational Users				✓	✓	✓

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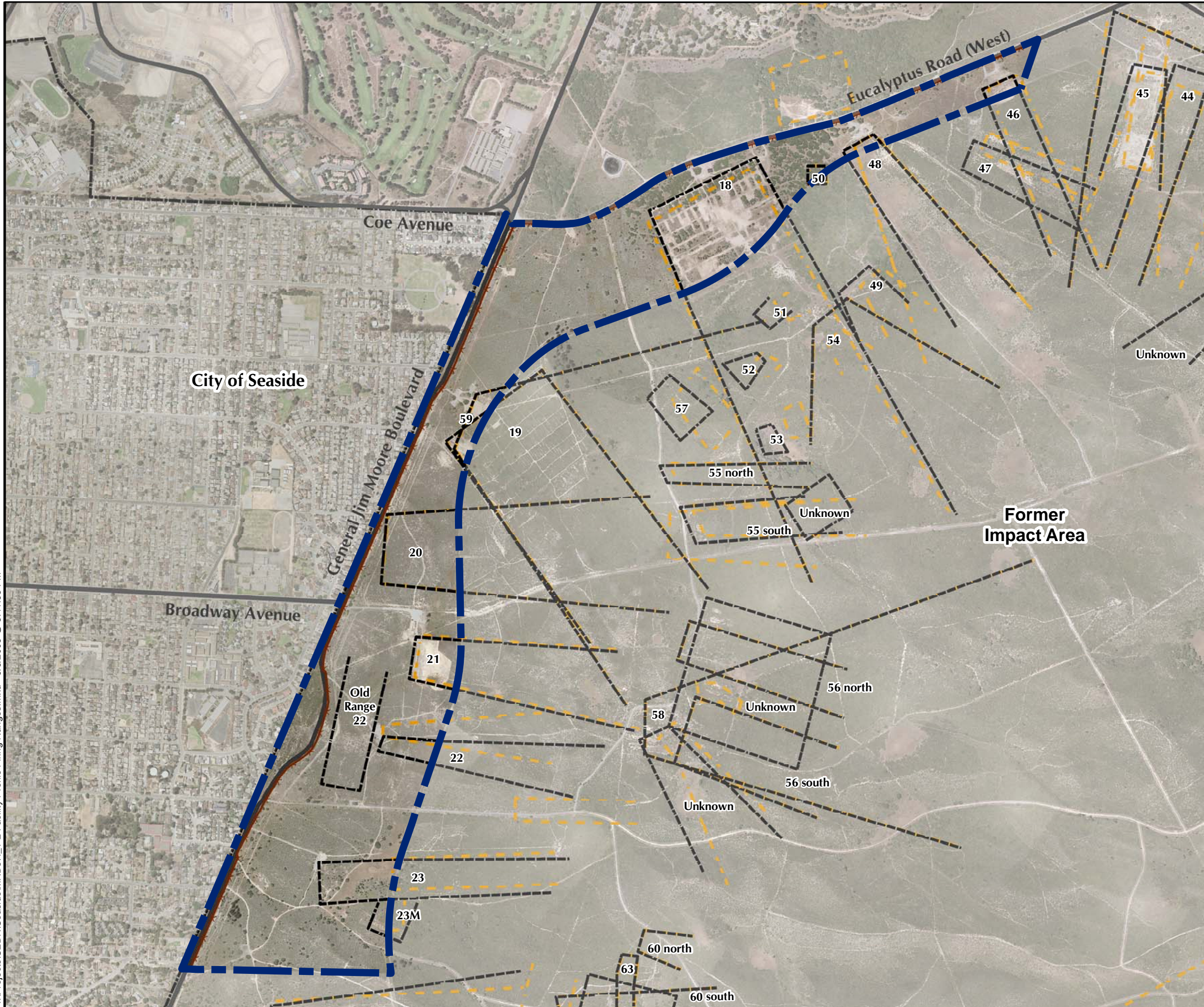
Westcliffe
Engineers, Inc.

**Seaside MRA Facility Profile
Physical Features**

FORA ESCA RP
Monterey County, California

Figure 4.1-1

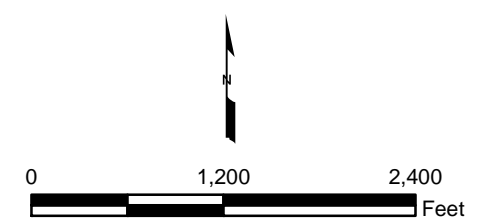
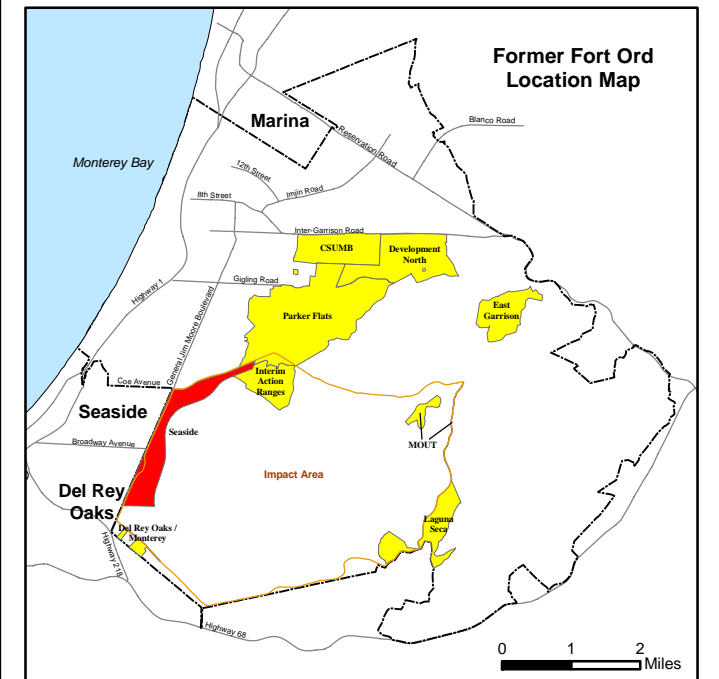
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Legend

- — — Munitions Response Area
- 42 Firing Range
- Historical Range
- Major Road
- /\ Fence
- Former Fort Ord Boundary

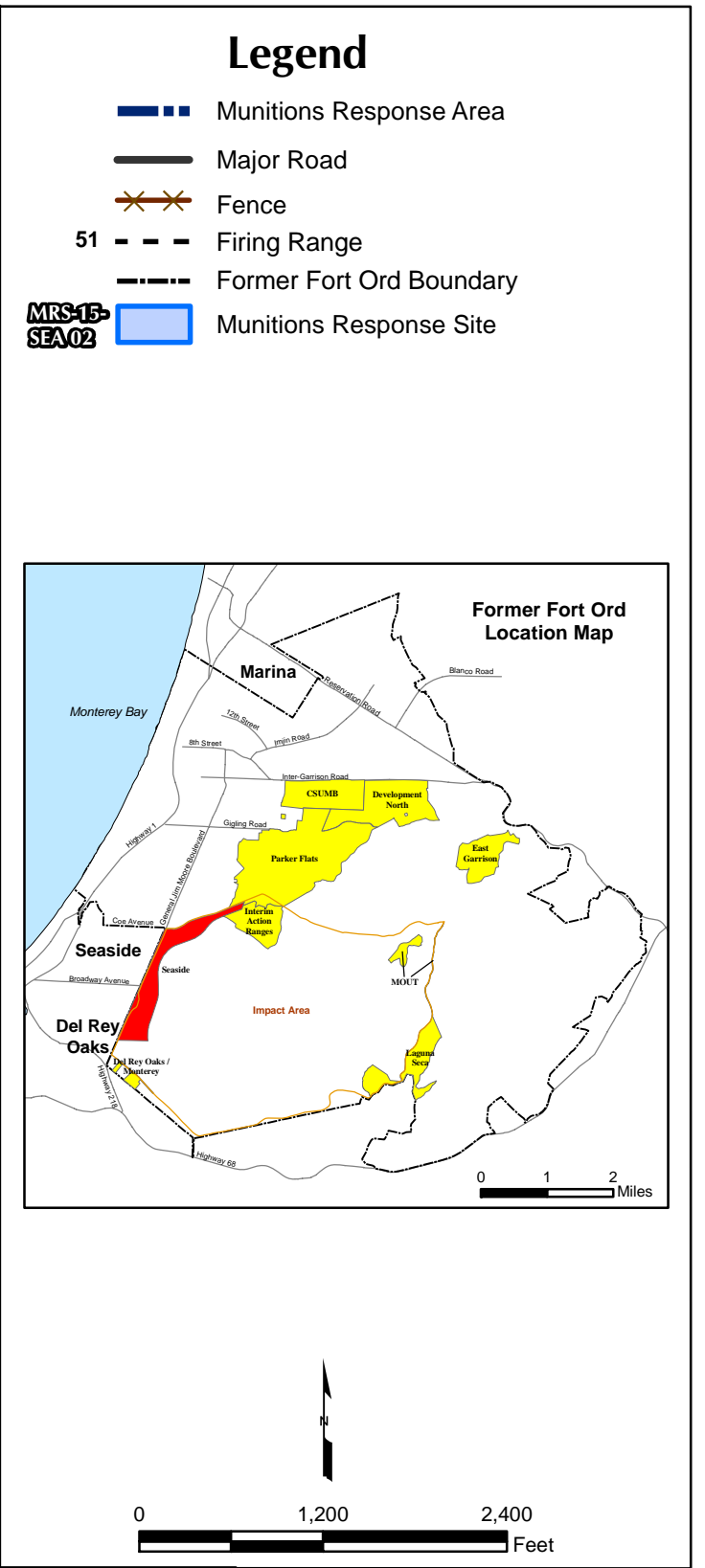
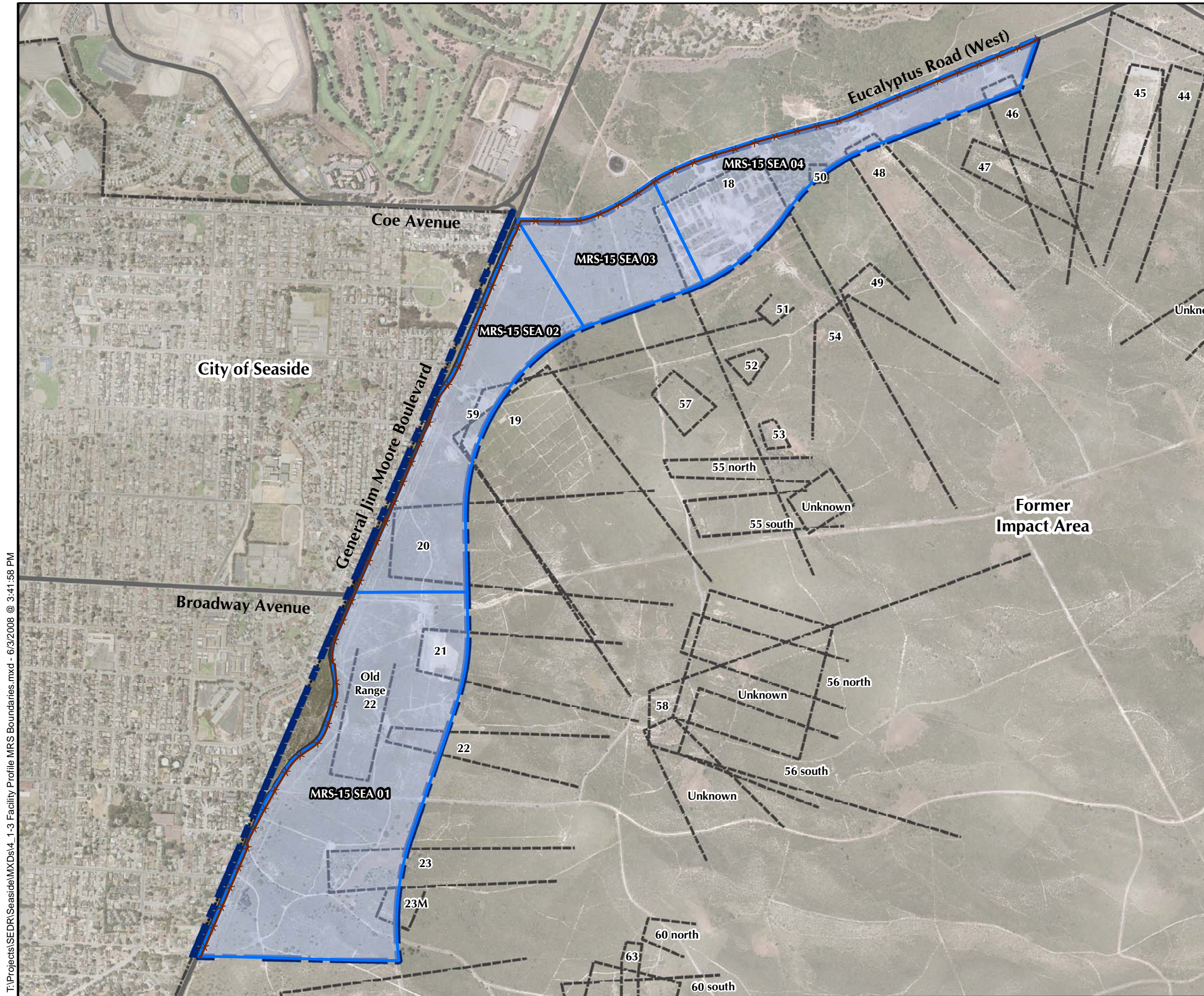
Note: Ranges 18, 19, 21, 22, 46 and 59 were reportedly used for small arms ammunition training only.



Seaside MRA Facility Profile Ranges and Training Sites

FORA ESCA RP
Monterey County, California

Figure 4.1-2



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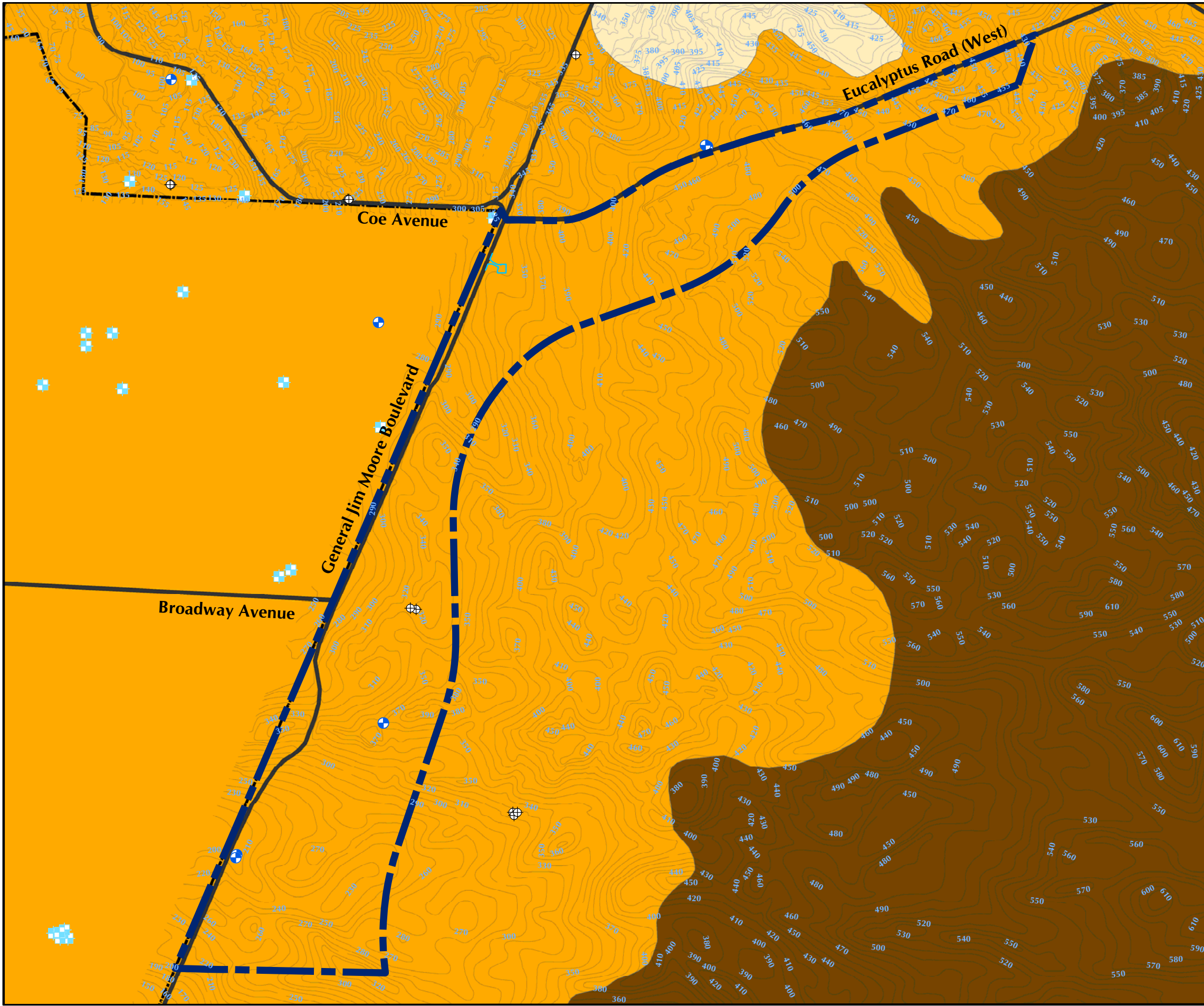
LFR
WESTON SOLUTIONS
 Westcliffe Engineers, Inc.

**Seaside MRA Facility Profile
 Munitions Response Site Boundaries**

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 Monterey County, California

Figure 4.1-3

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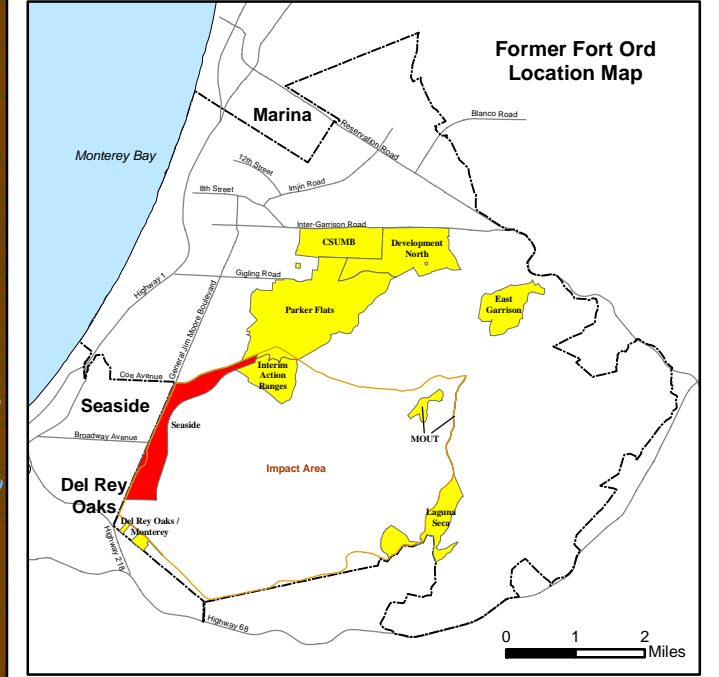


Legend

- Environmental Well
- Abandoned Well
- Water Supply Well
- Aquifer Storage and Recovery Well
- Topography 5 ft and 10 ft
- Munitions Response Area
- Major Road
- Former Fort Ord Boundary

Soil Type

- Arnold-Santa Ynez Complex
- Baywood Sand, 2 to 15 Percent Slopes
- Oceano Loamy Sand, 2 to 15 Percent Slopes

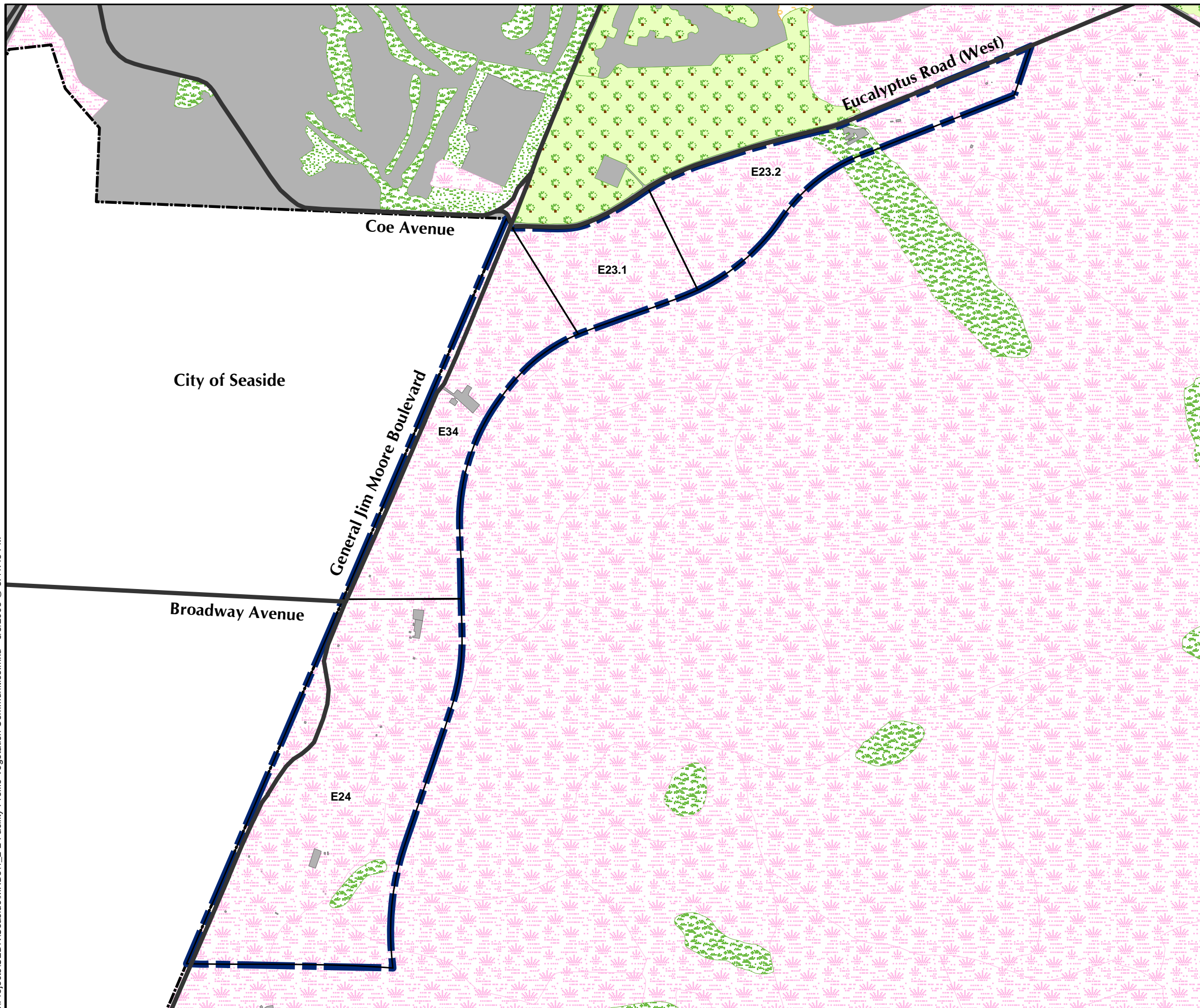


**Seaside MRA Physical Profile
Topography and Soil Type**





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Figure 4.2-1

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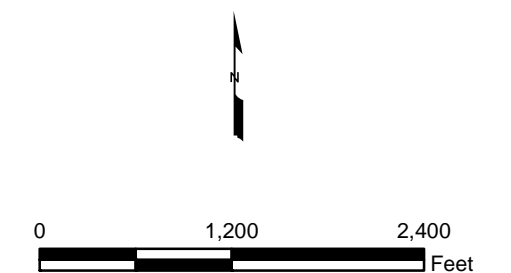
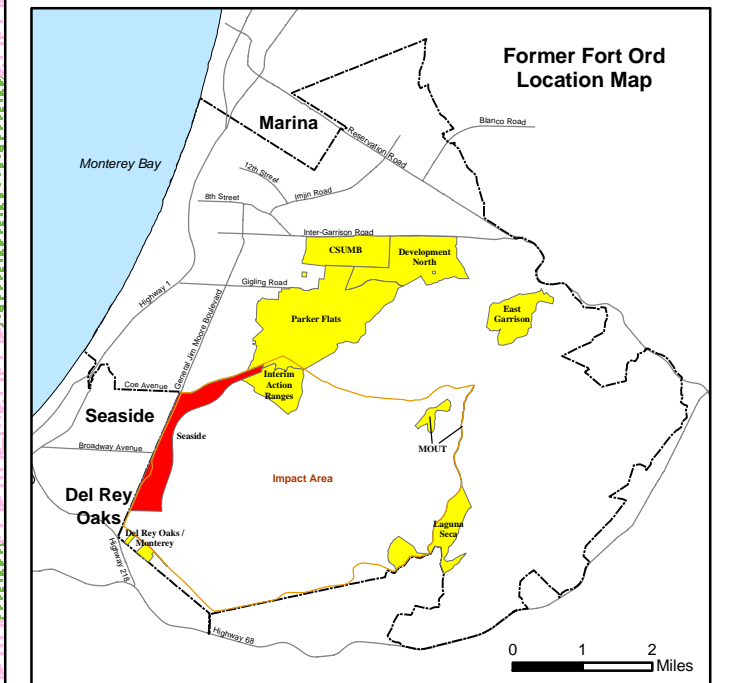
Legend

-  Munitions Response Area
-  Major Road
-  Former Fort Ord Boundary
-  USACE Parcel

Vegetation Type

-  Grassland
-  Maritime Chaparral
-  Coastal Coast Live Oak Woodland
-  Developed / Disturbed

Source: Flora and Fauna Baseline Study of Fort Ord, California, Jones and Stokes Association Inc., December 1992.

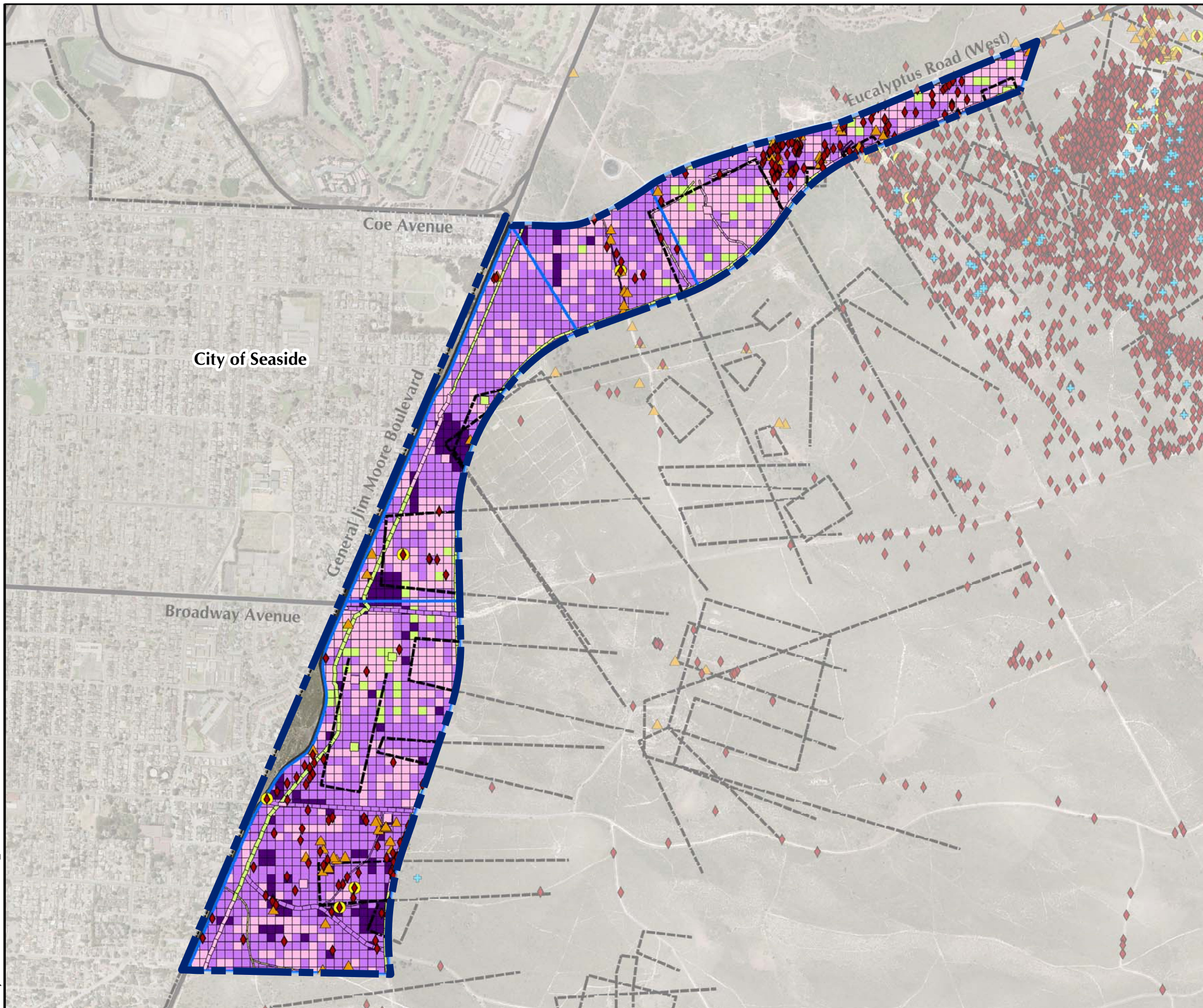


Seaside MRA Physical Profile Generalized Vegetation Communities

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Monterey County, California

Figure 4.2-2

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Legend

- ▬▬▬ Munitions Response Area
- - - Firing Range
- ▬ Munitions Response Site
- ▬▬▬ Major Road
- - - - - Former Fort Ord Boundary

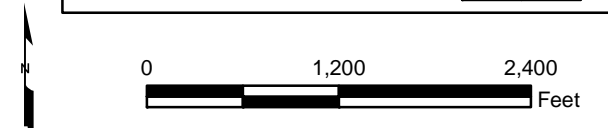
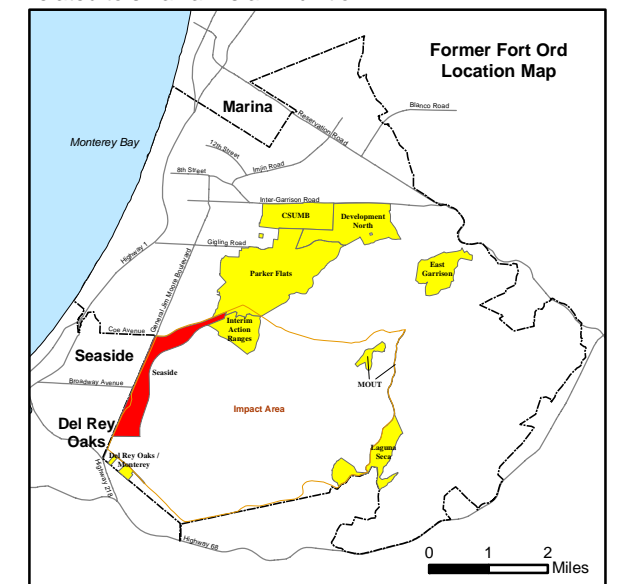
MEC Type

- ◆ Unexploded Ordnance (UXO)
- ▲ Discarded Military Munition (DMM)
- + Insufficient Data (ISD)
- Burial Pit Containing MEC

Munitions Debris (MD) by Weight (total pounds per grid)

- No Data
- 0
- < 10
- 10 to 100
- > 100

Note: Munitions Debris (MD) includes scrap related to small arms ammunition.

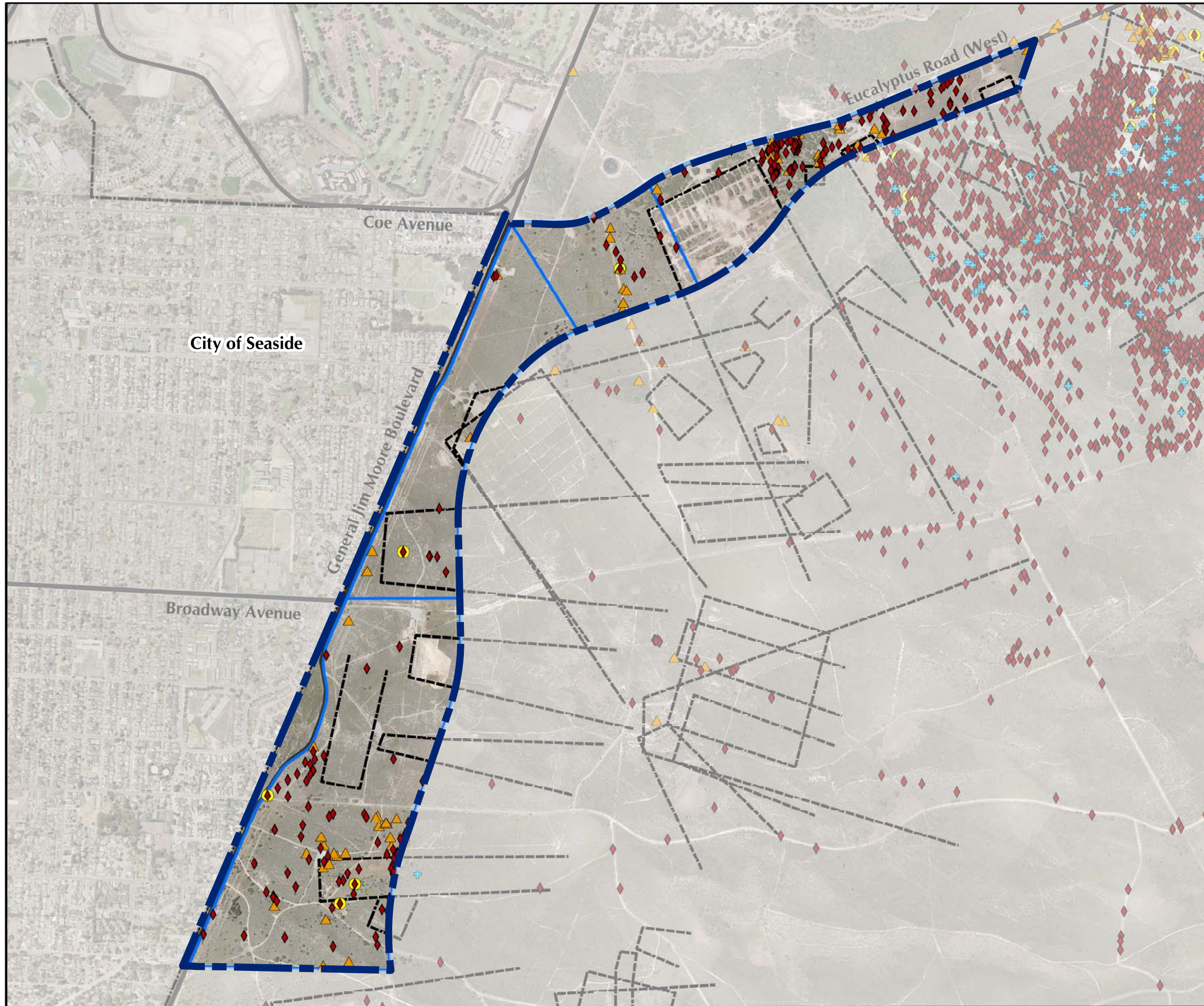


Seaside MRA Release Profile MEC and MD Locations

FORA ESCA RP
Monterey County, California

Figure 4.3-1

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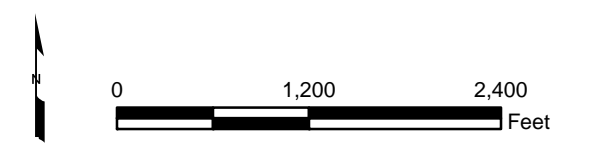
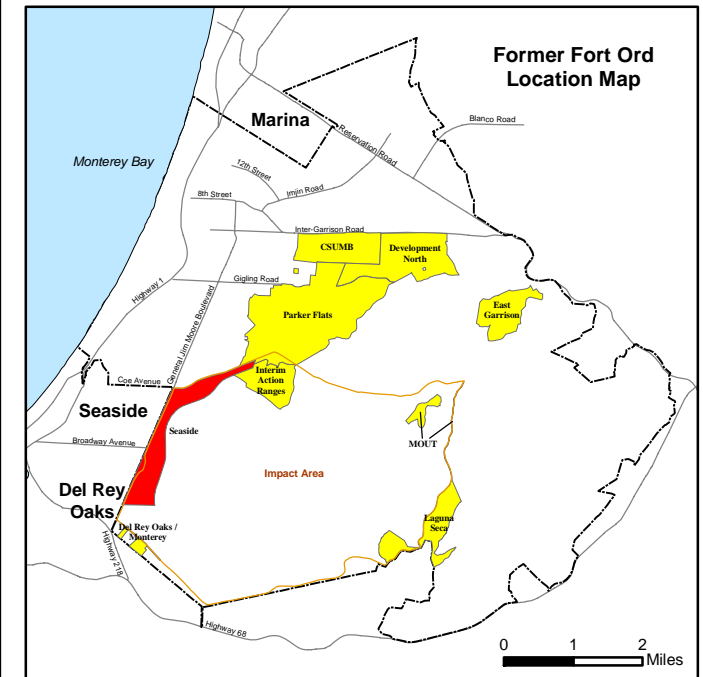
Legend

- - - Munitions Response Area
- Munitions Response Site
- - - Firing Range
- Major Road
- - - Former Fort Ord Boundary

MEC Type

- ◆ Unexploded Ordnance (UXO)
- ▲ Discarded Military Munition (DMM)
- + Insufficient Data (ISD)
- Burial Pit Containing MEC

Note: MEC locations may include more than one item.

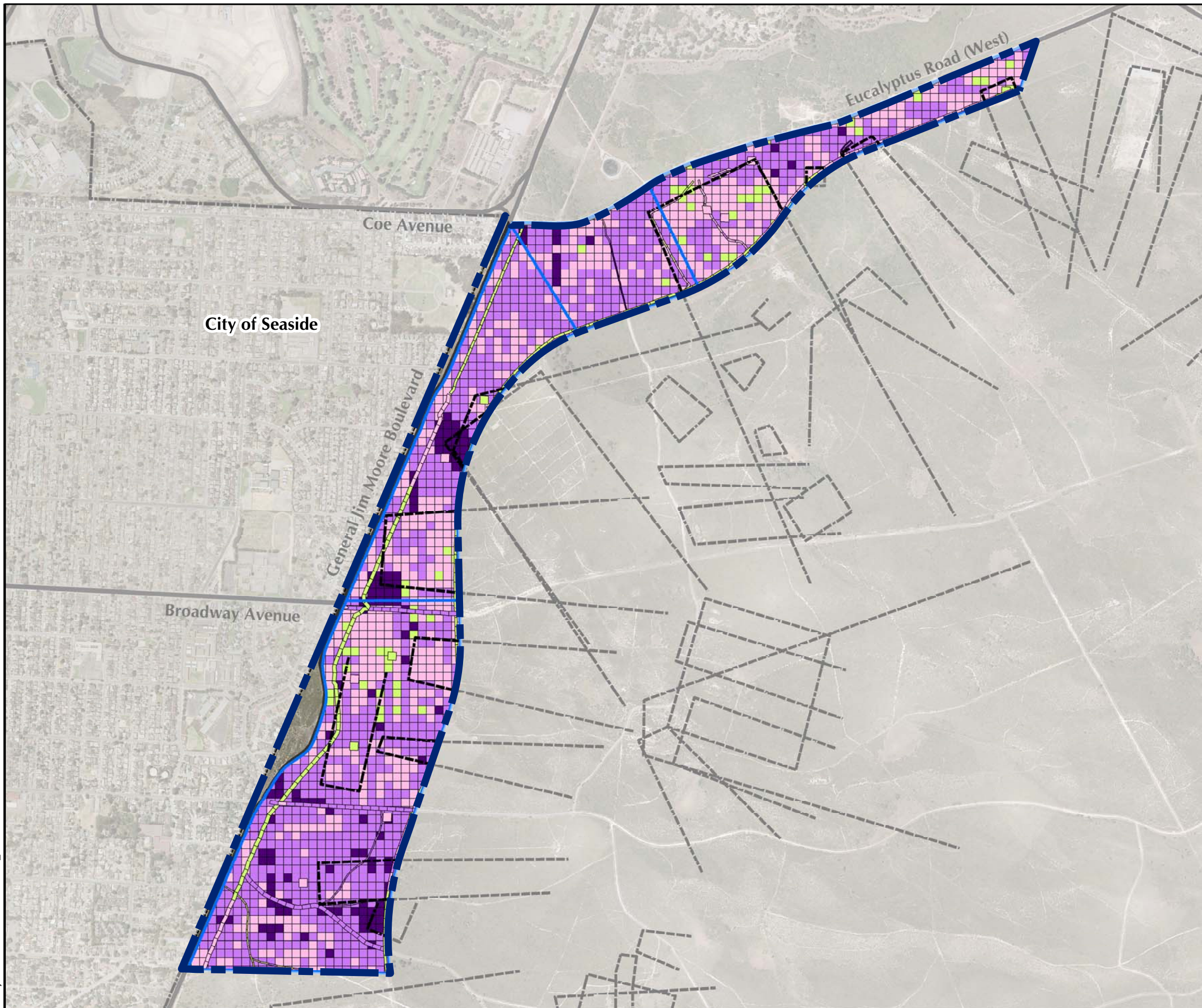


Seaside MRA Release Profile MEC Locations

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Monterey County, California

Figure 4.3-2

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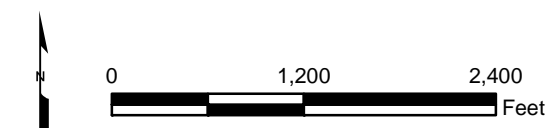
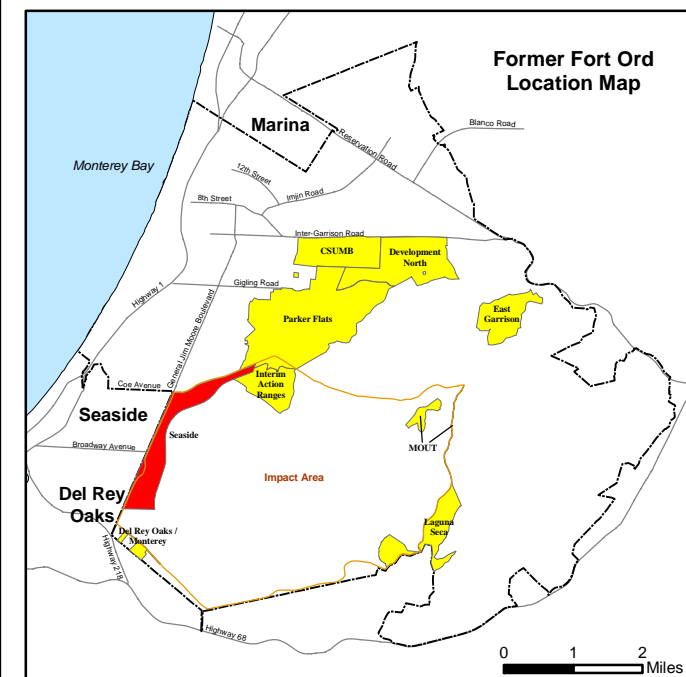
Legend

- Munitions Response Area
- Munitions Response Site
- Firing Range
- Major Road
- Former Fort Ord Boundary

Munitions Debris (MD) by Weight (total pounds per grid)

- No Data
- 0
- < 10
- 10 to 100
- > 100

Note: Munitions Debris (MD) includes scrap related to small arms ammunition.

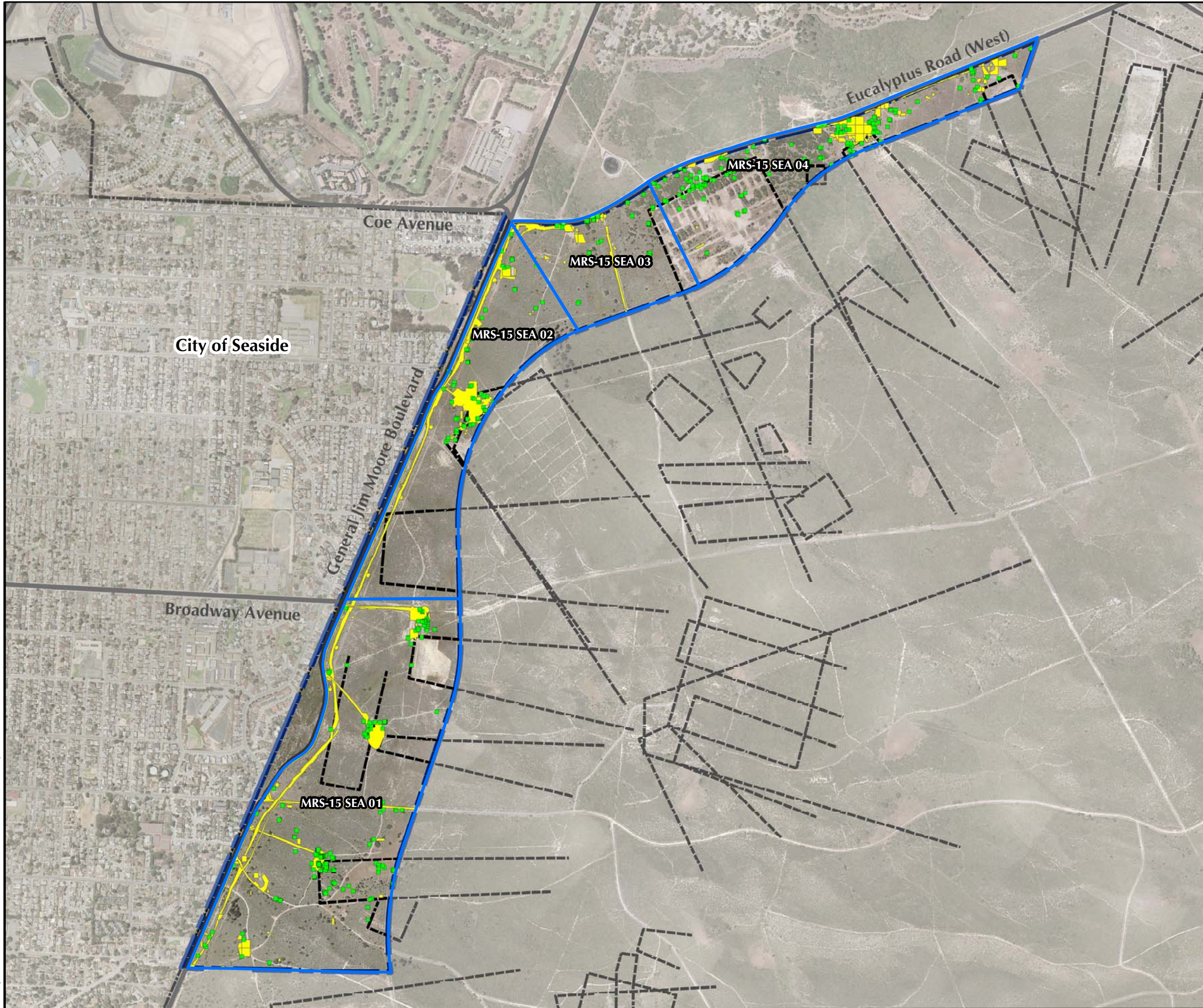


Seaside MRA Release Profile MD Locations

FORA ESCA RP
Monterey County, California

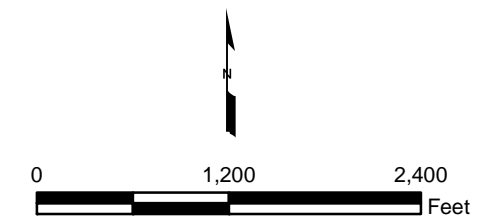
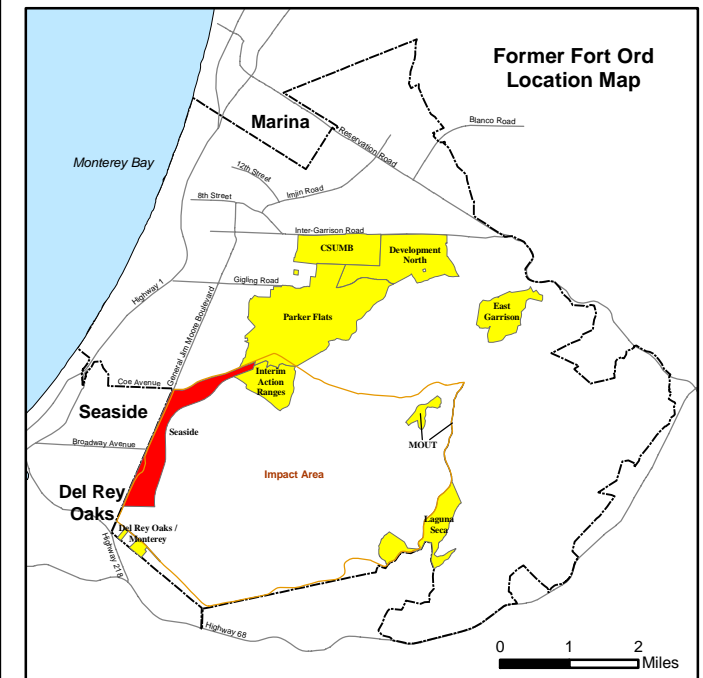
Figure 4.3-3

T:\Projects\SEDR\Seaside\MXD\4_3-4 Release Profile Special Case Areas.mxd - 6/3/2008 @ 3:41:57 PM



Legend

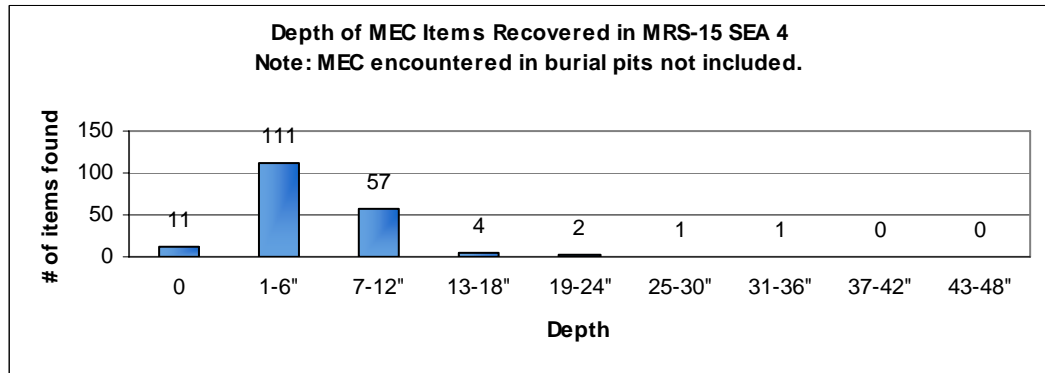
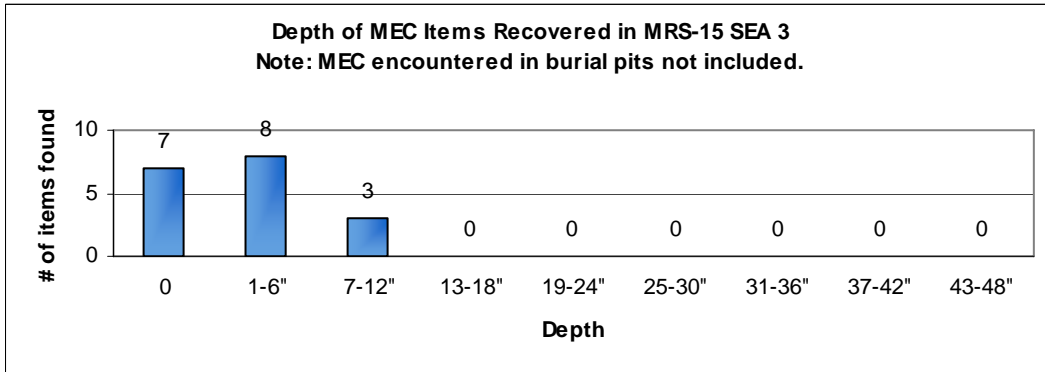
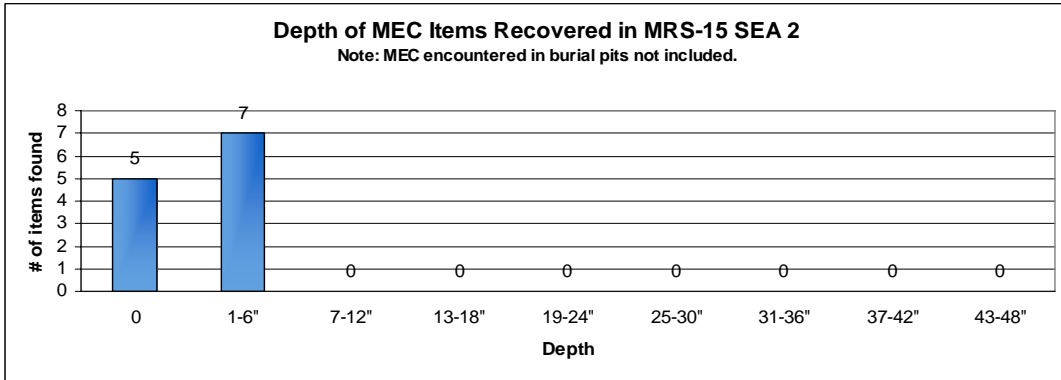
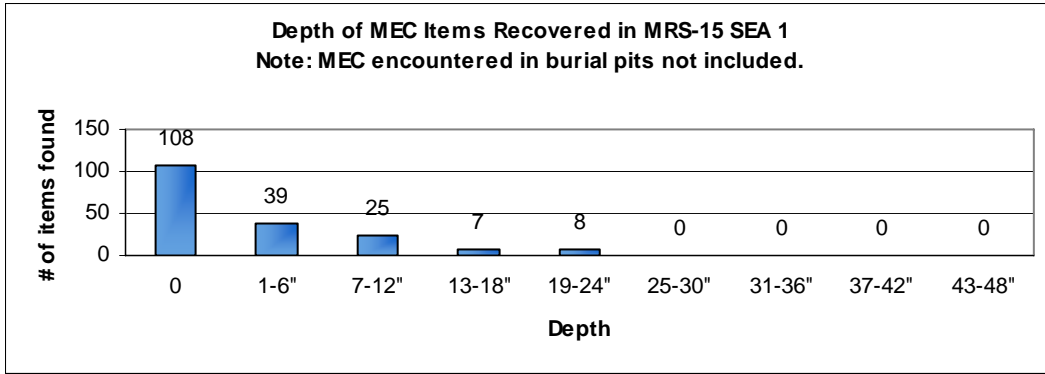
- Munitions Response Area
- Munitions Response Site
- Firing Range
- Major Road
- Former Fort Ord Boundary
- Special Case Area Point
- Special Case Area



**Seaside MRA Release Profile
Special Case Areas**

FORA ESCA RP
Monterey County, California

Figure 4.3-4



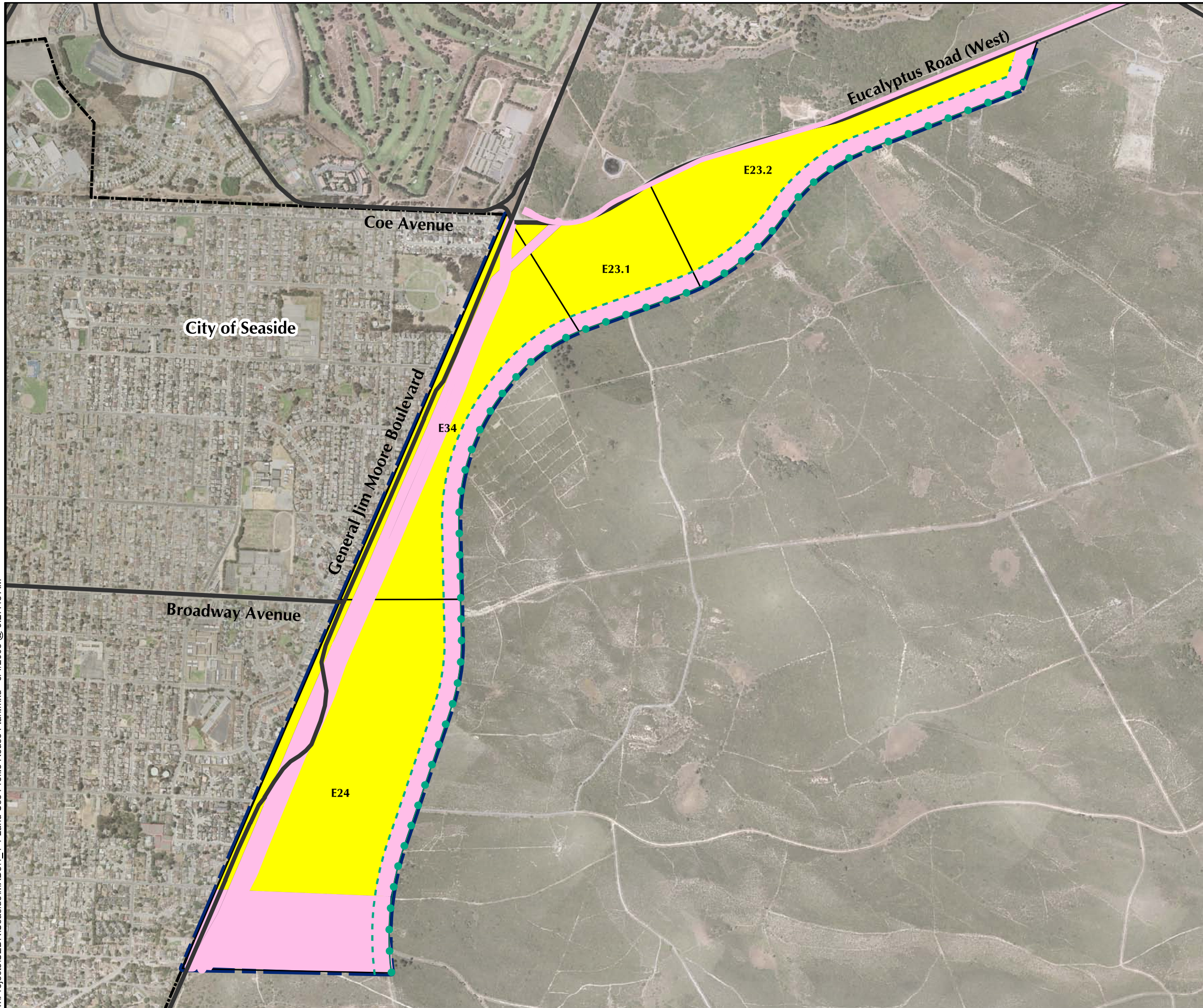
**Westcliffe
 Engineers, Inc.**

**Seaside MRA
 Distribution of MEC
 Recovered by Depth Interval**




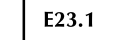
FORA ESCA RP
 Monterey County, California

Figure 4.3-5


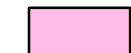



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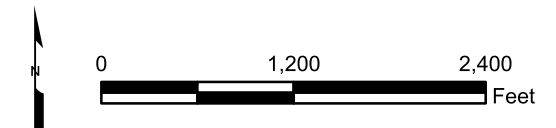
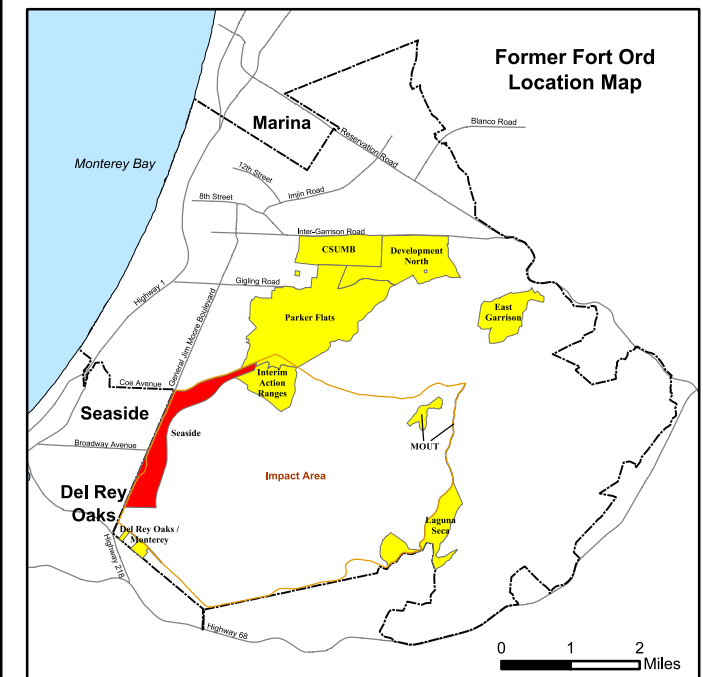


Legend

-  Munitions Response Area
-  Major Road
-  Former Fort Ord Boundary
-  E23.1 USACE Parcel

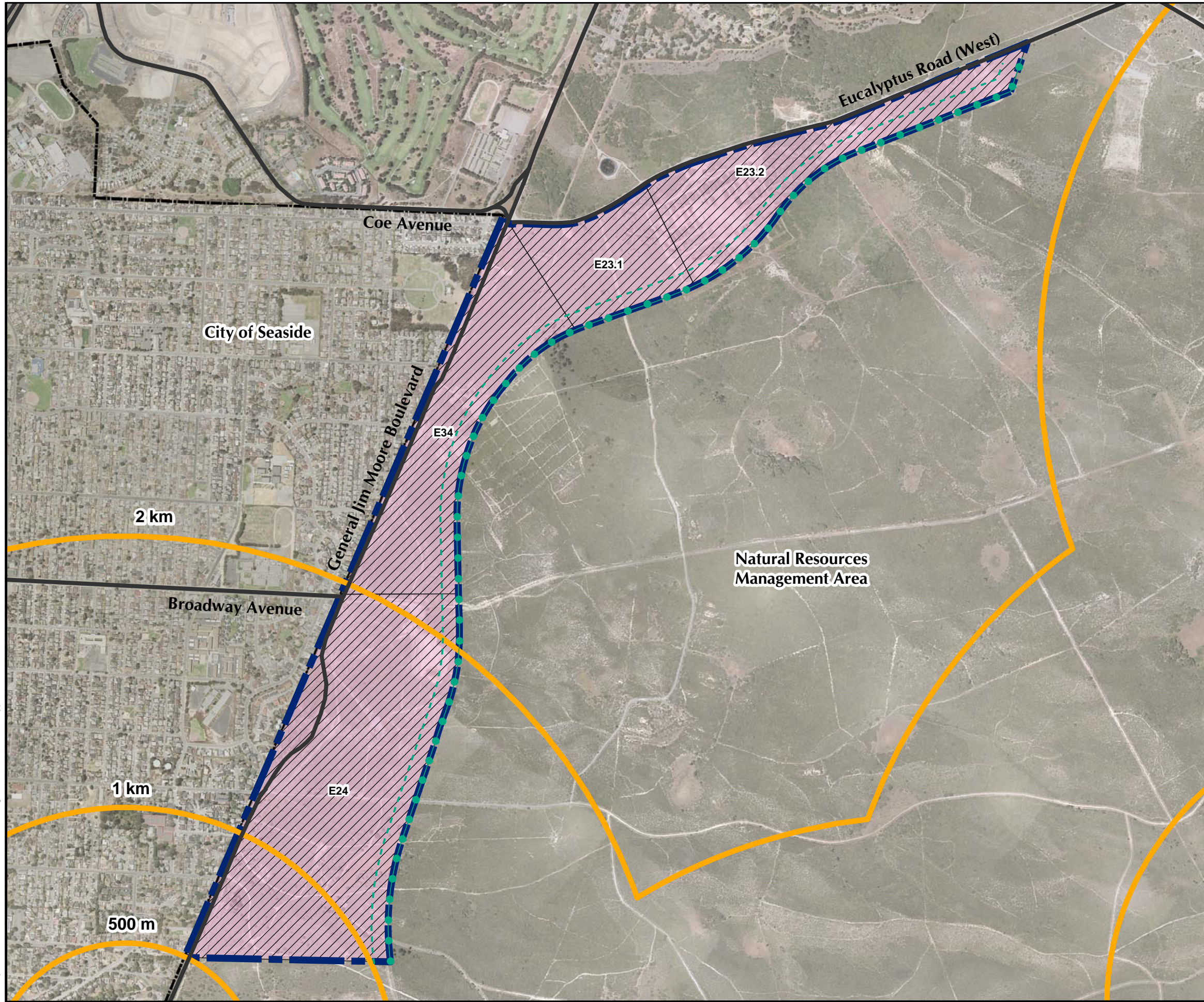
Future Land Use

-  Residential
-  Non-Residential
-  Habitat Reserve
-  Borderland Interface
-  200-Foot Buffer from Borderland Interface










Seaside MRA Land Use Profile Reuse Plan
 FORA ESCA RP
 Monterey County, California






Figure 4.4-1

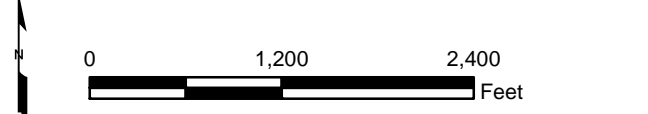
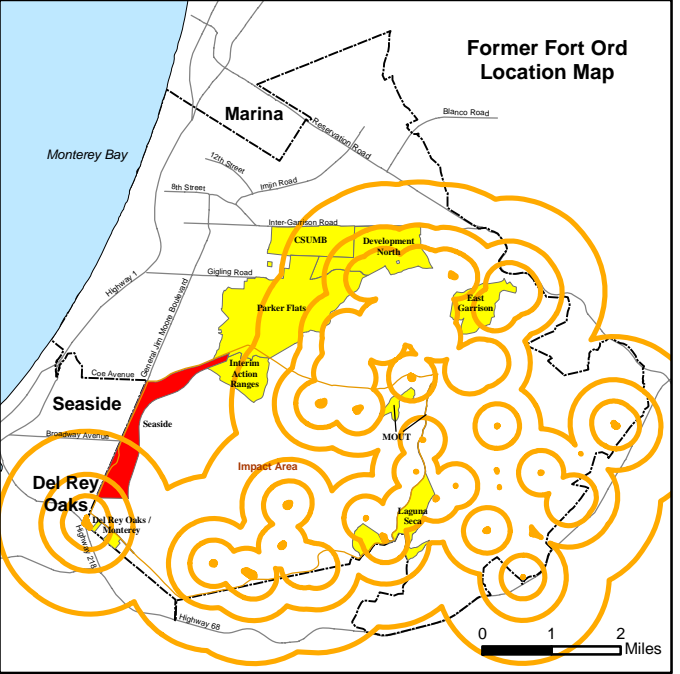


Legend

-  Munitions Response Area
-  California Tiger Salamander Buffer
-  Major Road
-  Former Fort Ord Boundary
-  Borderland Interface
-  200-Foot Buffer from Borderland Interface
-  Aquatic Features

Habitat Management Plan Category

-  Development (includes future Residential and Non-Residential areas)
-  Development with Reserve or Restrictions
-  Habitat Corridor
-  Habitat Corridor with Development
-  Habitat Reserve



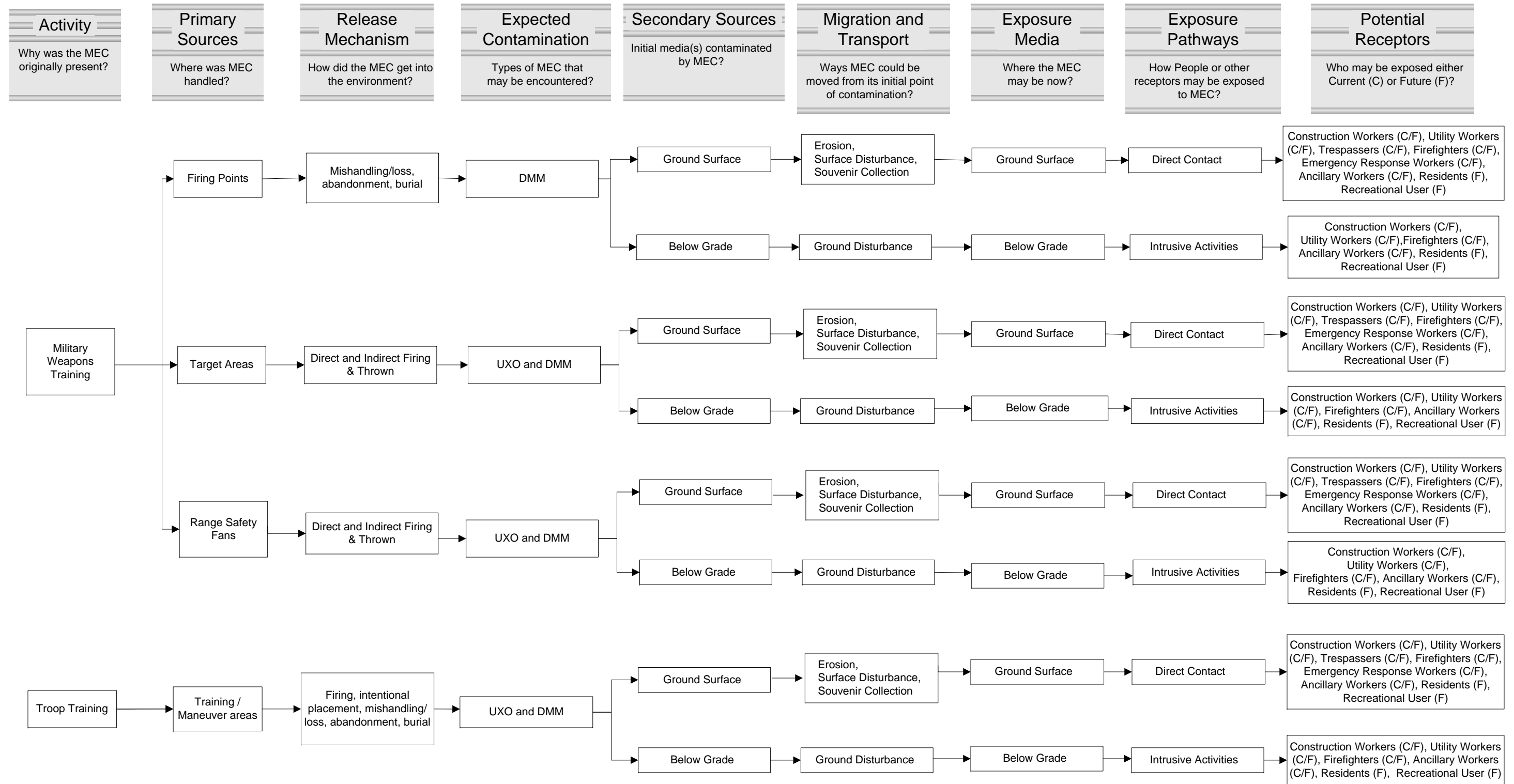
T:\Projects\SEDR\Seaside\MXD\4.5-1 Ecological Profile Habitat Type.mxd - 6/3/2008 @ 3:41:59 PM



**Seaside MRA Ecological Profile
Habitat Type**

FORA ESCA RP
Monterey County, California

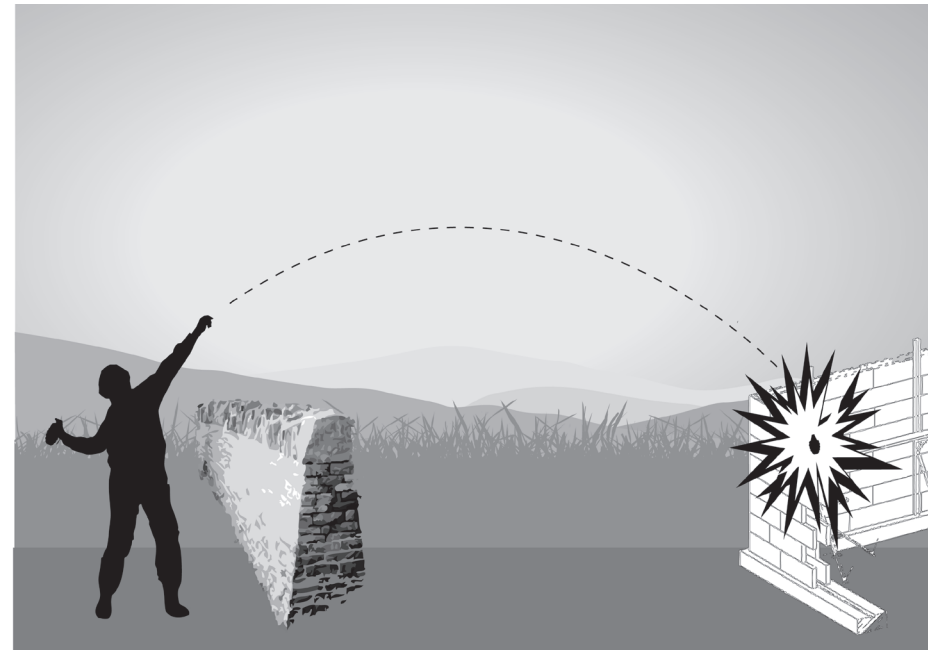
Figure 4.5-1



**Seaside MRA
Pathway Analysis
Flowchart**

FORA ESCA RP
Monterey County, California

Figure 4.6-1



Thrown Ordnance



Burial / Mishandling / Loss



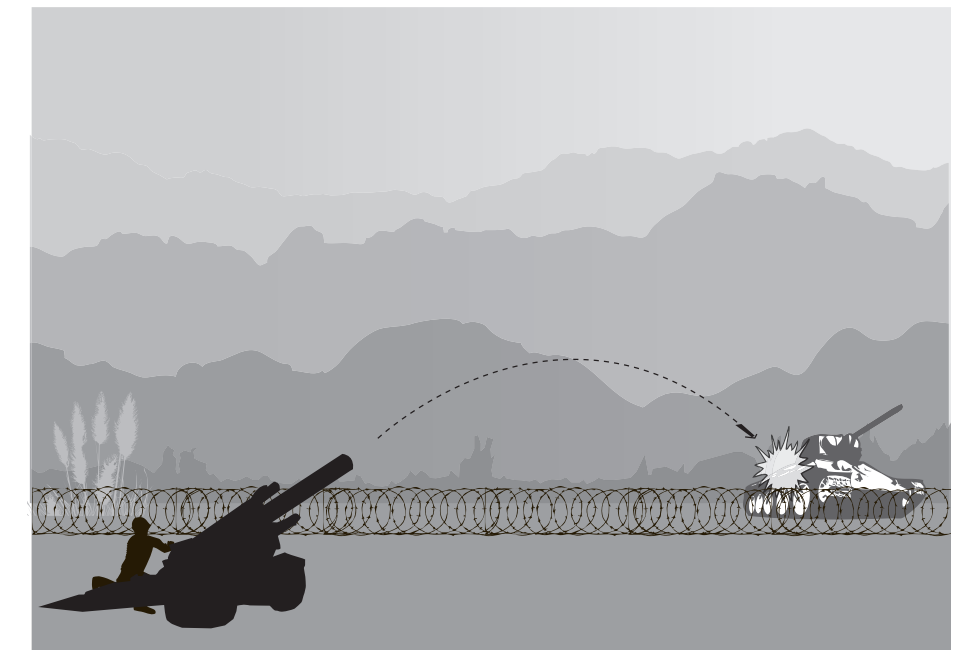
Firing



Direct Fire



Indirect Fire



Indirect Fire