



**DEPARTMENT OF THE ARMY**  
FORT ORD OFFICE, ARMY BASE REALIGNMENT AND CLOSURE  
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MONTEREY, CA 93944-5008

REPLY TO  
ATTENTION OF:

MAY 13 2009

Fort Ord BRAC Office

Franklin Mark  
Department of Toxic Substances Control  
8800 Cal Center Drive  
Sacramento, CA 95826

**Approval Memorandum**  
**Proposed No Action**  
**Site HA-183 – Shoulder-Launched Projectile Area**  
**Former Fort Ord, California**

Dear Mr. Mark:

This letter presents the approval memorandum for No Action (NoA) Site HA-183 – Shoulder-Launched Projectile Area, also designated as MRS-53, former Fort Ord, California. Copies of this letter have been sent to the United States Environmental Protection Agency (EPA), and departments of the California Environmental Protection Agency (Cal/EPA), including the Central Coast Regional Water Quality Control Board (RWQCB) and the Department of Toxic Substances Control (DTSC).

No further action for chemical contamination in soil is proposed for site HA-183. Site HA-183 meets the criteria specified in the approved *No Action Plug-In Record of Decision, Fort Ord, California* (NoA ROD) dated February 1995. The NoA ROD outlined a process and established necessary criteria for identifying and approving sites for NoA. NoA sites at Fort Ord are either Category 1 sites that are already in a protective state and pose no current or potential threat to human health or the environment, or Category 2 sites where CERCLA does not provide authority to take any remedial action. This approval memorandum provides a description of the site and completed investigations, and demonstrates the site's conformance with the NoA criteria for Category 1 sites established in the NoA ROD. This memo evaluates the risk of the chemicals present in soil, and does not address possible physical hazards related to munitions and explosives of concern (MEC). The MEC hazards are identified in the *Final Track 2 Munitions Response Remedial Investigation Feasibility Study, Parker Flats Munitions Response Area, Former Fort Ord, California*, August 2006.

**CHARACTERIZATION REPORT SUMMARY**

The Army has documented the results of the HA-183 characterization in the *Comprehensive Basewide Range Assessment Report Revision 1C* dated November 2006. The results of the characterization are summarized below.

Site HA-183 is located within Parker Flats, just north of the Impact Area. This site (Plate 1) was used as a rifle grenade and shoulder-launched projectile firing range. During military munitions removal actions performed in October 1998, over 167 items were removed

including 81mm mortars, firing devices, and practice land mines. Additional site reconnaissance was conducted in August 2001. Military munitions training features identified during this survey include: firing positions, seven firing points, 14 areas with blank casings, one soil pit, two spent grenades (model, condition not identified), three spent pyrotechnics, and one rifle grenade (model, condition not identified). Ten of the firing positions are in the northeast corner of the site. The two remaining firing positions are located in the northwest corner of the site. Two sets of blank small arms ammunition casings and two sets of sandbags are located along the southern border of this site. An empty 55 gallon drum was also identified during the reconnaissance. During the removal action, several old ammunition burn pits were found that contained vehicle parts and assorted trash. This site was selected for sampling to evaluate potential contamination related to trash burials and the burn pit.

### **Field Program**

Twenty-nine soil samples were collected at fourteen locations in July 2002. Sample locations and concentrations of detected analytes are shown on Plate 2. Surface soil samples were collected from all locations and samples from one and two feet below ground surface were collected at locations HA183SI0008 through HA183SI0014. Specific pit locations were sampled based on field observations and to determine if further investigation was necessary at additional locations. All samples were analyzed for explosives and perchlorate. Samples which were collected near the empty 55 gallon drum to determine if the unknown former contents impacted the surrounding soil (HA183SI0011) were also analyzed for total petroleum hydrocarbons as gasoline, diesel, and motor oil (TPH-g, TPH-d, and TPH-mo) and semi volatile organic compounds (SVOCs). There was no further evidence or historical data that would indicate additional sampling for (TPH-g, TPH-d, and TPH-mo) and semi volatile compounds was necessary in other areas of the site. These specific analytes were chosen due to the specific historical site related activities. Sample locations and concentrations of detected analytes are shown on Plate 2.

### **Subsurface Conditions**

In general, subsurface soil at the Site HA-183 consists predominately of light brown silty sand to a depth of 2.0 feet bgs (the maximum depth explored). Most of the sand was classified as loose, dry, and fine- to medium-grained. No groundwater was encountered during soil sampling procedures. Depth to groundwater at the site is approximately 250 feet bgs.

### **Analytical Results**

A comparison of maximum detected chemical concentrations in soil at HA-183 with preliminary remediation goals (PRGs) is provided in Table 1. PRGs are chemical concentrations in soil expected to result in acceptable cancer risks (i.e. one-in-one-million) and noncancer health effects. Based on historical uses of the site as a rifle grenade, shoulder-launched projectile firing range and general training area, TPH-g, TPH-d, and TPH-mo were analyzed by EPA Method 8015, SVOCs by EPA Method 8270C, perchlorate by EPA Method 314.0, and explosives by EPA Method 8330 in one location. All samples were analyzed for explosives and perchlorate. TPH-d and TPH-mo were the only chemicals detected from the two foot sample depth at location HA183SI0011 at HA-183 at maximum concentrations of 1.8 mg/kg and 14 mg/kg, respectively, which are below their PRGs of 500 mg/kg and 500 mg/kg, respectively. TPH-d and TPH-mo were retained as site-related chemicals (SRCs).

## Screening Risk Evaluation

MACTEC conducted a screening risk evaluation (SRE) based on the site characterization data presented in Table 1. The SRE consisted of the following:

- Comparing concentrations of chemicals detected in soil at HA-183 with chemical-specific PRGs to evaluate the need for further action at the site;
- Evaluating potential impacts to groundwater; and
- Providing a qualitative discussion of ecological receptors.

The NoA ROD identified Category 1 sites as sites where the level of contamination is below the levels required for protection of human health (e.g., PRGs) and the environment. PRGs were developed specifically for Fort Ord and represent soil concentrations considered to result in estimated daily doses (1) associated with an estimated one-in-one-million probability that an exposed individual would develop cancer (i.e.,  $10^{-6}$  cancer risk), or (2) expected to be without appreciable risk of deleterious noncancer health effects (i.e., hazard quotient less than 1). The methodology and assumptions used to develop PRGs were presented in the *Draft Final Technical Memorandum, Preliminary Remediation Goals*, dated June 24, 1994. Following review of soil sample analytical results from HA-183, TPH-d and TPH-mo were the chemicals addressed as SRCs at HA-183, which are chemicals that may be present as a result of Army activities at the site (i.e., site-related). Background concentrations were not established for TPHs because they are automatically assumed to be site-related chemicals.

### Comparison of Site Soil Data with PRGs

PRGs for chemicals detected in the soil at HA-183 were compared with site-specific data by calculating ratios of chemical concentrations to PRGs (Table 2). The chemical concentrations used in these ratios include maximum detected site concentration (MSC), which are the same as maximum concentration attributed to site activities (MSRC).

A chemical-specific ratio of 1 or less indicates that the maximum detected or calculated concentration is less than or equal to the PRG, and therefore, substantial health risks are not likely to be associated with that chemical. A ratio greater than 1 indicates that the concentration of the chemical exceeds the health-based PRG. To evaluate possible exposure to multiple chemicals, the effects of multiple chemicals were assumed to be additive, and the ratios were added together to calculate a ratio sum (RS). A RS less than 1 indicates that substantial health risks are not likely to be associated with exposure to the multiple chemicals evaluated; a RS greater than 1 indicates further action may be necessary.

### *Site-Related Chemicals*

The site-related components of SRCs evaluated at HA-183 were compared to PRGs (MSC/PRG and MSRC/PRG ratios, Table 2). The chemical-specific MSC and MSRCs for TPH-d and TPH-mo evaluated at HA-183 are below the PRGs, as indicated by the MSC/PRG and MSRC/PRG ratios of less than 1.0 (Table 2). The site-related RS total for the SRC is 0.03 (Table 2). This analysis indicates that health risks from possible exposure to the site-related components of the SRCs evaluated at HA-183 are acceptably low.

### Potential Groundwater Impacts (HA-183)

The potential for unknown TPH-d at 500 mg/kg to impact groundwater was modeled using an EPA vadose zone leaching (VLEACH) and a groundwater mixing model as part of the *Draft Technical Memorandum: Approach to Evaluating Potential Groundwater Quality Impacts, Fort Ord, California* dated July 29, 1993. The results of modeling indicated that unknown TPH-d at a concentration of 500 mg/kg in near surface soil is relatively immobile with negligible chemical mass reaching the uppermost aquifer. Based on the modeling results presented in the Technical Memorandum and described above, TPH detected at HA-183 at a maximum concentration of 14 mg/kg for TPH-mo is unlikely to impact groundwater at this site. Based on the modeling results described above, no significant groundwater impacts are expected from the concentrations of the site-related chemicals detected at the site. All TPH concentrations are also below the Monterey County Action Level of 100 mg/kg which is considered protective of groundwater.

### Ecological Receptors

A qualitative ecological SRE was conducted for TPH compounds at HA-183 using the findings from the *Basewide RI/FS Ecological Risk Assessment (BERA)* dated October 1995. The BERA included a thorough evaluation of chemicals of potential ecological concern (COPECs) and the risks to ecological receptors associated with COPECs. Several chemicals were identified, sampled for in the RI, and evaluated as COPECs in the BERA. However, that evaluation indicated that the only chemicals which showed the potential for risk to ecological receptors were lead and the explosive compound cyclotetramethylene tetranitramine (HMX). TPH was found to be a risk driver for human health only. The TPH concentrations at HA-183 were also compared to the Monterey County Action Level of 100 mg/kg. The concentrations of diesel and motor oil were one order of magnitude to seven times lower than the action level. Therefore, no additional action is needed to address ecological receptors at HA-183.

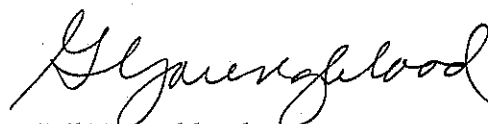
### **RECOMMENDED ACTION**

On the basis of investigations completed and summarized above, no further action at HA-183 is recommended.

Please feel free to contact me at (831) 242-7918 with any questions you may have regarding the proposed No Action. Notification of the proposed No Action will be placed in a major local newspaper within 2 weeks of approval of this memorandum.

Your prompt attention to this proposed No Action approval Memorandum is sincerely appreciated.

Sincerely,



Gail Youngblood  
BRAC Environmental Coordinator

## Enclosures:

Table 1	Soil Analytical Results for HA-183
Table 2	Comparison of Maximum Detected HA-183 Soil Chemical Concentrations and Preliminary Remediation Goals
Plate 1	Site Location Map
Plate 2	Investigation Results

Table 1. Soil Analytical Results for HA-183  
 No Action Approval Memorandum  
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Sample Location	Sample Date	Sample Depth (feet bgs)	TPH-Diesel mg/kg		TPH-Motor Oil mg/kg	
HA183SI0001	7/2/2002	0.08	NT		NT	
HA183SI0002	7/2/2002	0.08	NT		NT	
HA183SI0003	7/2/2002	0.08	NT		NT	
HA183SI0004	7/2/2002	0.08	NT		NT	
HA183SI0005	7/2/2002	0.08	NT		NT	
HA183SI0006	7/2/2002	0.08	NT		NT	
HA183SI0007	7/2/2002	0.08	NT		NT	
HA183SI0008	7/3/2002	0.08	NT		NT	
	7/3/2002	1.08	NT		NT	
	7/3/2002	2.08	NT		NT	
HA183SI0009	7/2/2002	0.08	NT		NT	
	7/2/2002	1.08	NT		NT	
	7/2/2002	2.08	NT		NT	
HA183SI0010	7/3/2002	0.08	NT		NT	
	7/3/2002	1.08	NT		NT	
	7/3/2002	2.08	NT		NT	
HA183SI0011 Duplicate	7/2/2002	0.08	1.8	J / A	14	J / A
	7/2/2002	0.08	1.5	J / A	11	J / A
	7/2/2002	1.08	1.7	J / A	7.3	J / A
	7/2/2002	2.08	1.2	J / A	4.1	J / A
HA183SI0012	7/2/2002	0.08	NT		NT	
	7/2/2002	1.08	NT		NT	
	7/2/2002	2.08	NT		NT	
HA183SI0013	7/2/2002	0.08	NT		NT	
	7/2/2002	1.08	NT		NT	
	7/2/2002	2.08	NT		NT	
HA183SI0014	7/2/2002	0.08	NT		NT	
	7/2/2002	1.08	NT		NT	
	7/2/2002	2.08	NT		NT	
Preliminary Remediation Goals <sup>a</sup>			500		500	

**Abbreviations:**

feet bgs = Feet below ground surface.

mg/kg = Milligram per kilogram.

NT = Not analyzed.

J / A = Laboratory qualifier / validation qualifier.

= maximum detected concentration

Laboratory Qualifiers:

J = Result is detected below the reporting limit, but greater than the method detection limit.

Validation Qualifiers:

A = Data were subjected to routine data validation.

<sup>a</sup> The Preliminary Remediation Goals (PRGs) are from the No Action Plug-In Record of Decision, Fort Ord, California (*Army, 1995*).

Table 2. Comparison of Maximum Detected HA-183 Soil Chemical Concentrations with Background Concentrations and Preliminary Remediation Goals  
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Chemical	Maximum Detected Site Concentration (MSC) (mg/kg)	Maximum Background Concentration in Soil (MBC) <sup>a</sup> (mg/kg)	Maximum Site-Related Concentration (MSRC) <sup>b</sup> (mg/kg)	Preliminary Remediation Goal (PRG) <sup>c</sup> (mg/kg)	Chemical Total MSC/PRG <sup>d</sup> Ratio	Background-Related MBC/PRG <sup>e</sup> Ratio	Site-Related MSRC/PRG <sup>f,g</sup> Ratio
<b>Site-Related Chemicals</b>							
TPH-Diesel	1.8	NA	NA	500	0.004	NA	0.004
TPH-Motor Oil	14	NA	NA	500	0.028	NA	0.028
Ratio Sum Total (site-related)					0.03	NA	0.03

**Abbreviations:**

MSC = Maximum detected site concentration.  
 mg/kg = Milligram per kilogram.  
 MBC = Maximum background concentration in soil.  
 MSRC = Maximum site-related concentration.  
 PRG = Preliminary Remediation Goal.  
 NA = Not applicable.

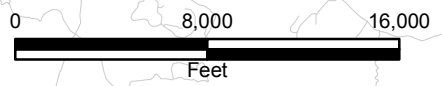
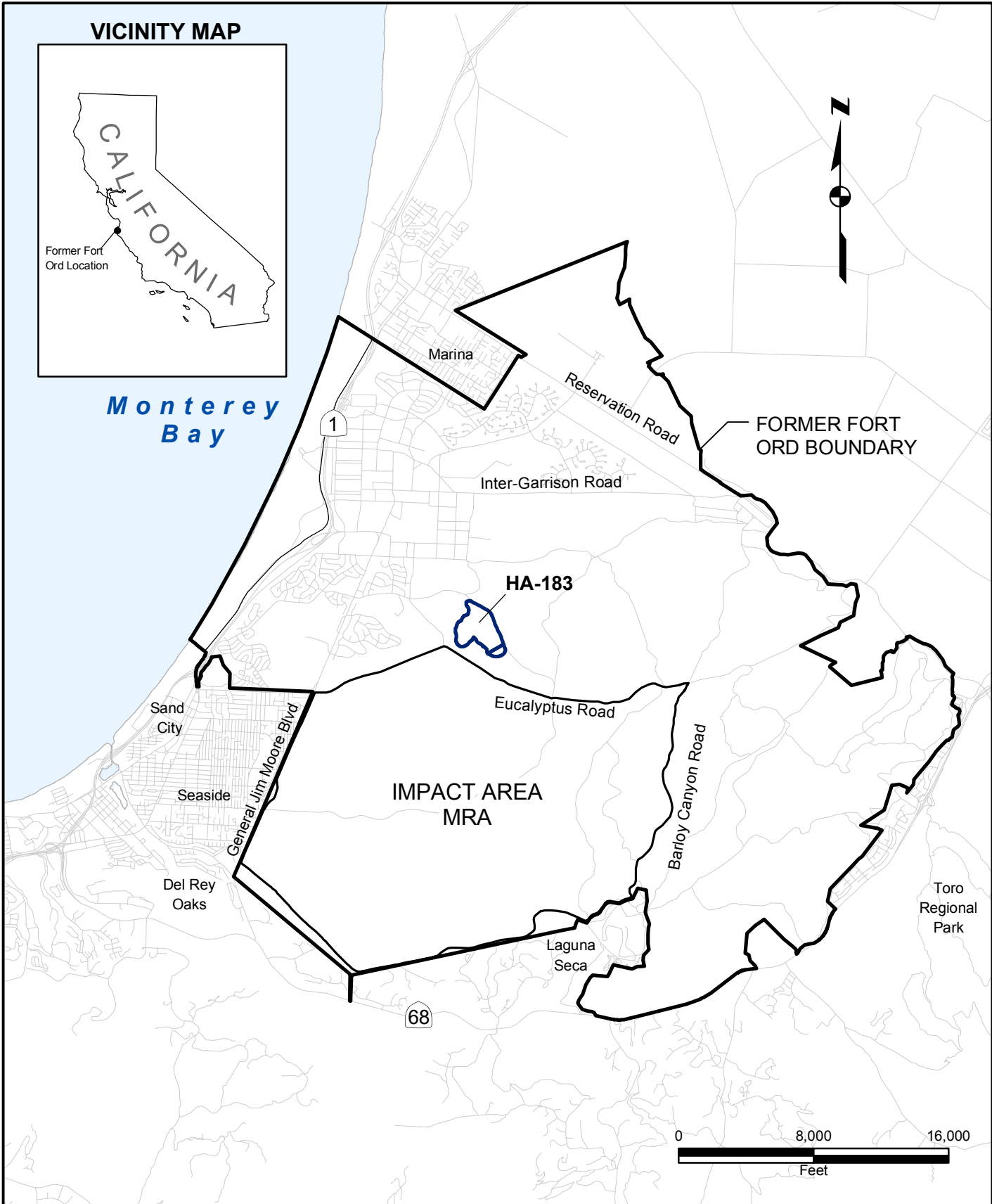
**Footnotes:**

- <sup>a</sup> Background concentrations in soil are from *Basewide Remedial Investigation/Feasibility Study, Fort Ord, California, Volume II - Remedial Investigation, Basewide Background Soil Investigation, Final* (HLA, 1995).  
<sup>b</sup> MSRC = MSC - MBC  
<sup>c</sup> The Preliminary Remediation Goals (PRGs) are from the *No Action Plug-In Record of Decision, Fort Ord, California (Army, 1995)*.  
<sup>d</sup> Chemical Total = MSC ÷ PRG.  
<sup>e</sup> Background-Related = MBC ÷ PRG.  
<sup>f</sup> Site-Related = MSRC ÷ PRG.  
<sup>g</sup> For non-metals this value is the same as the chemical-related ratio because the organic compounds do not have a background concentration.

**VICINITY MAP**



**Monterey Bay**



**Site Location Map**  
Approval Memorandum  
Site HA-183 - Shoulder-Launched Projectile Area  
Former Fort Ord, California

PLATE

**1**

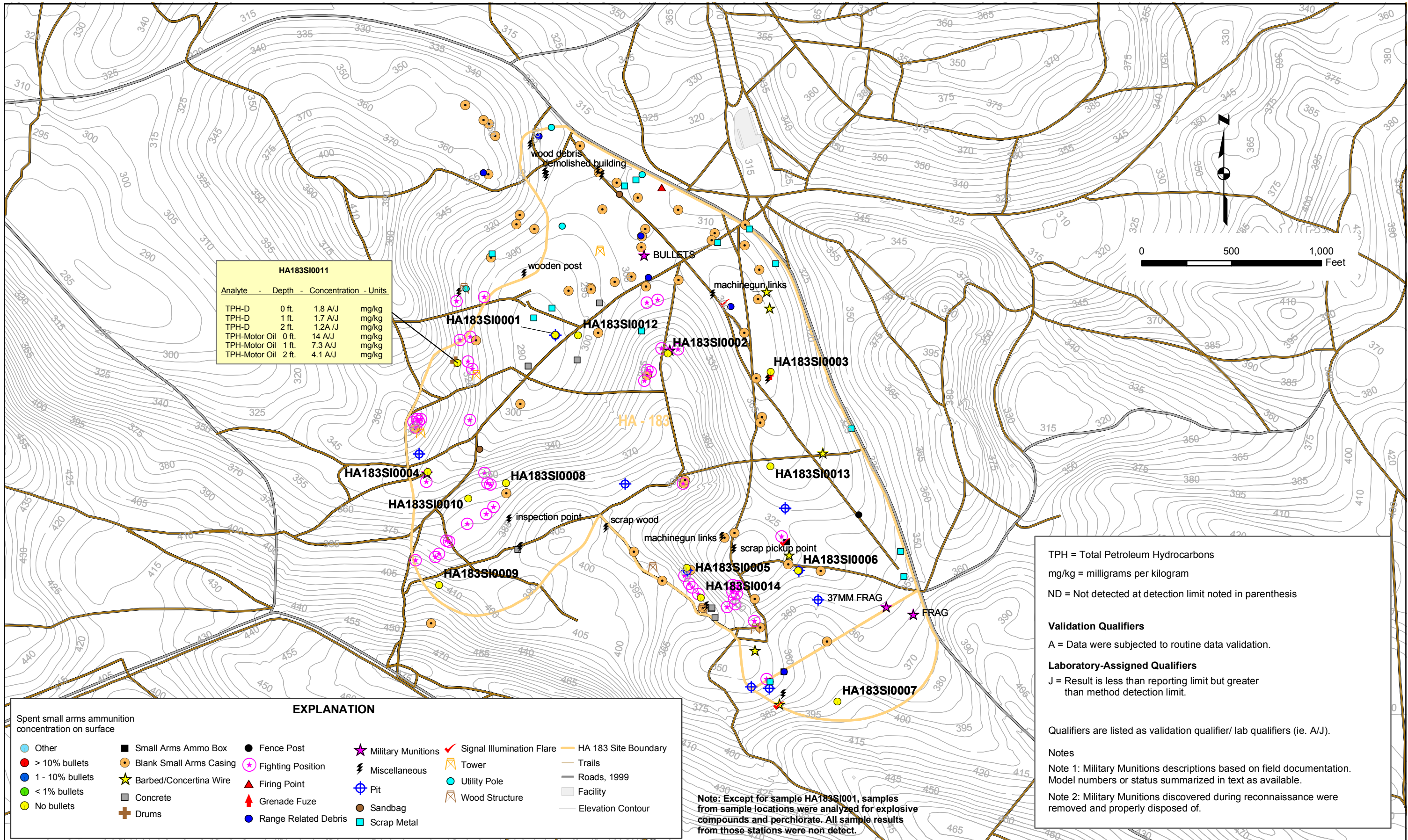
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HA183-Plate1.mxd - 2/1/08



TPH = Total Petroleum Hydrocarbons  
 mg/kg = milligrams per kilogram  
 ND = Not detected at detection limit noted in parenthesis

**Validation Qualifiers**  
 A = Data were subjected to routine data validation.

**Laboratory-Assigned Qualifiers**  
 J = Result is less than reporting limit but greater than method detection limit.

Qualifiers are listed as validation qualifier/ lab qualifiers (ie. A/J).

Notes  
 Note 1: Military Munitions descriptions based on field documentation. Model numbers or status summarized in text as available.  
 Note 2: Military Munitions discovered during reconnaissance were removed and properly disposed of.

**EXPLANATION**

Spent small arms ammunition concentration on surface

● Other	■ Small Arms Ammo Box	● Fence Post	★ Military Munitions	✓ Signal Illumination Flare	— HA 183 Site Boundary
● > 10% bullets	● Blank Small Arms Casing	★ Fighting Position	⚡ Miscellaneous	🗼 Tower	— Trails
● 1 - 10% bullets	★ Barbed/Concertina Wire	⚡ Firing Point	⊕ Pit	🗺 Utility Pole	— Roads, 1999
● < 1% bullets	■ Concrete	🔥 Grenade Fuze	● Sandbag	🏠 Wood Structure	■ Facility
● No bullets	⊕ Drums	● Range Related Debris	■ Scrap Metal	— Elevation Contour	

**Note:** Except for sample HA183SI001, samples from sample locations were analyzed for explosive compounds and perchlorate. All sample results from those stations were non detect.

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 Site HA-183- Shoulder-Launched Projectile Area  
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Investigation Results  
 HA-183