



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-98 – Leary Hill Region
Former Fort Ord, California

Dear Mr. Mark:

This letter presents the approval memorandum for No Action (NoA) Site HA-98 – Leary Hill Region, also designated as MRS-10A, 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-98. Site HA-98 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 being addressed as part of the former Fort Ord Munitions Response Remedial Investigation / Feasibility Study Program.

CHARACTERIZATION REPORT SUMMARY

The Army has documented the results of the HA-98 characterization in the *Comprehensive Basewide Range Assessment Report Revision 1C* dated November 2006. The results of the characterization are summarized below.

Site HA-98 is centrally located within the eastern part of the former Fort Ord, just north of the Impact Area. This site (Plate 1) was used for training throughout Fort Ord's history. Training Site 9, an overnight bivouac area used in the 1970s and 1980s, is located within HA-

98. During military munitions removal actions performed in 1997, over 6,700 live small arms rounds (model unknown), 75mm projectiles and 81mm mortars (models and condition not specified), and other munitions debris were removed. Site reconnaissance was conducted in August 2001. Military training related features and munitions debris identified during this reconnaissance include: 13 foxholes, 10 areas with blank casings, two areas with spent flares, two empty 55-gallon drums, and part of a 55-gallon drum. The former contents of the 55-gallon drums were not identified. Eight of the foxholes are located in the northern portion of HA-98. This site was identified for sampling to evaluate whether chemical residue is present in areas where military munitions were identified or where drums were present.

Field Program

Twenty-two soil samples were collected at ten locations in June 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 foot depths below ground surface were collected at locations HA98SI0006 – HA98SI0010. Selected samples were analyzed for total petroleum hydrocarbons as diesel, motor oil, and gasoline (TPHd, TPHmo, TPHg by EPA Methods 8015D for diesel and motor oil, and 8015G for gasoline, explosives by EPA Method 8330, perchlorate by EPA Method 314.0, and semi volatile organic compounds (SVOCs) by EPA Method 8270C based on the history of the site and results of the site reconnaissance.

Subsurface Conditions

In general, subsurface soil at HA-98 consists predominately of 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-98 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 training area, TPHd, TPHmo, TPHg, SVOCs, perchlorate, and explosives were analyzed for. TPHd, TPHg, and TPHmo were the only chemicals detected at HA-98. The highest concentration of TPHg detected was at 1.1 mg/kg from both surface sample locations HA98SI0005 and HA98SI0006. Maximum concentrations of TPHd at 7.3 mg/kg and maximum concentrations of TPHmo at 35 mg/kg detected were from the surface sample at location HA98SI0009. TPHd, TPHg, and TPHmo concentrations are well below the No Action ROD cleanup goals of 500 mg/kg, 500 mg/kg, and 500 mg/kg, respectively. TPHd, TPHg, and TPHmo 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-98 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-98, TPHd, TPHg, and TPHmo were the chemicals addressed as SRCs at HA-98. SRCs 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-98 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-98 were compared to PRGs (MSC/PRG and MSRC/PRG ratios, Table 2). The chemical-specific MSC and MSRCs for TPHd, TPHg, and TPHmo evaluated at HA-98 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 0.09 (Table 2). This analysis indicates that health risks from possible exposure to the site-related components of the SRCs evaluated at HA-98 are acceptably low.

Potential Groundwater Impacts

The potential for TPHd 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 TPHd at a concentration of 500 mg/kg in near surface soil is relatively immobile with negligible chemical mass reaching the uppermost aquifer. The concentrations of the three surrogates (dodecane, naphthalene, and chrysene) used to model TPHd were below detection limits for the chemicals. Based on the modeling results presented in the Technical Memorandum and described above, TPH detected at HA-98 at a maximum concentration of 35 mg/kg for TPHmo is unlikely to impact groundwater at this 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-98 using the findings from the *Basewide RI/FS Ecological Risk Assessment (BERA; HLA, 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 Basewide RI/FS ERA (*HLA, 1995*). 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-98 were also compared to the Monterey County Action Level of 100 mg/kg. The concentrations of diesel, gasoline, and motor oil were one order of magnitude to three times lower than the action level. Therefore, no additional action is needed to address ecological receptors at HA-98.

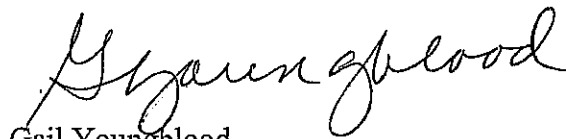
RECOMMENDED ACTION

On the basis of investigations completed and summarized above, no further action at HA-98 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-98
Table 2	Comparison of Maximum Detected HA-98 Chemical Concentrations and Preliminary Remediation Goals
Plate 1	Site Location Map
Plate 2	Investigation Results

Table 1. Soil Analytical Results for HA-98
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Sample Location	Sample Date	Sample Depth (feet bgs)	TPH-Diesel mg/kg		TPH-Gasoline mg/kg		TPH-Motor Oil mg/kg	
HA98SI0001	6/27/2002	0.08	3.2	J / A	ND(1.2)	U / A	17	J / A
HA98SI0002	6/27/2002	0.08	1.3	J / A	ND(1.1)	U / A	4.3	J / A
HA98SI0003	6/27/2002	0.08	2.5	J / A	ND(1.4)	U / A	9.2	J / A
HA98SI0004	6/27/2002	0.08	2	J / A	ND(1.4)	U / A	8.7	J / A
HA98SI0005	6/27/2002	0.08	5.9	J / A	1.1	J / A	23	J / A
HA98SI0006	7/1/2002	0.08	1.5	J / J+	1.1	J / A	6.3	J / J+
	7/1/2002	1.08	2.2	J / A	ND(0.99)	U / A	4.9	J / A
	7/1/2002	2.08	1.8	J / A	ND(1)	U / A	3.6	J / A
HA98SI0007	7/1/2002	0.08	1.4	J / A	ND(1.3)	U / A	18	J / A
	7/1/2002	1.08	1.3	J / A	1	J / A	6	J / A
	7/1/2002	2.08	ND(10)	U / A	ND(1.1)	U / A	5.3	J / A
HA98SI0008 Duplicate	7/1/2002	0.08	2	J / A	ND(1.2)	U / A	16	J / A
	7/1/2002	0.08	1.8	J / A	ND(1.3)	U / A	14	J / A
	7/1/2002	1.08	4.4	J / J+	ND(1)	U / A	21	J / J+
	7/1/2002	2.08	2.3	J / J+	ND(1.1)	U / A	9.5	J / J+
HA98SI0009 Duplicate	7/1/2002	0.08	7.3	J / J+	ND(1.2)	U / A	35	J / J+
	7/1/2002	0.08	7	J / A	ND(1.1)	U / A	32	J / A
	7/1/2002	1.08	7.1	J / J+	ND(1)	U / A	26	J / J+
	7/1/2002	2.08	3.5	J / A	ND(1)	U / A	7.9	J / A
HA98SI0010	7/1/2002	0.08	2.9	J / A	ND(1.2)	U / A	9.2	J / A
	7/1/2002	1.08	1.8	J / A	ND(1.1)	U / A	7	J / A
	7/1/2002	2.08	1.3	J / A	ND(1.1)	U / A	2.5	J / A
Preliminary Remediation Goals ^a			500		500		500	

Abbreviations:

feet bgs = Feet below ground surface.

mg/kg = Milligram per kilogram.

ND = Not detected.

J / A = Laboratory qualifier / validation qualifier.

Laboratory Qualifiers:

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

U = Compound was analyzed for but not detected.

Validation Qualifiers:

A = Data were subjected to routine data validation.

J+ = Data are qualified as estimated with a high bias likely to occur; false positives or false negatives are unlikely to have been reported.

= maximum detected concentration

^a 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-98 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) ^a (mg/kg)	Maximum Site-Related Concentration (MSRC) ^b (mg/kg)	Preliminary Remediation Goal (PRG) ^c (mg/kg)	Chemical Total MSC/PRG ^d Ratio	Background-Related MBC/PRG ^e Ratio	Site-Related MSRC/PRG ^{f,g} Ratio
Site-Related Chemicals							
TPH-Diesel	7.3	NA	NA	500	0.015	NA	0.015
TPH-Gasoline	1.1	NA	NA	500	0.002	NA	0.002
TPH-Motor Oil	35	NA	NA	500	0.070	NA	0.070
Ratio Sum Total (site-related)					0.09	NA	0.09

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:

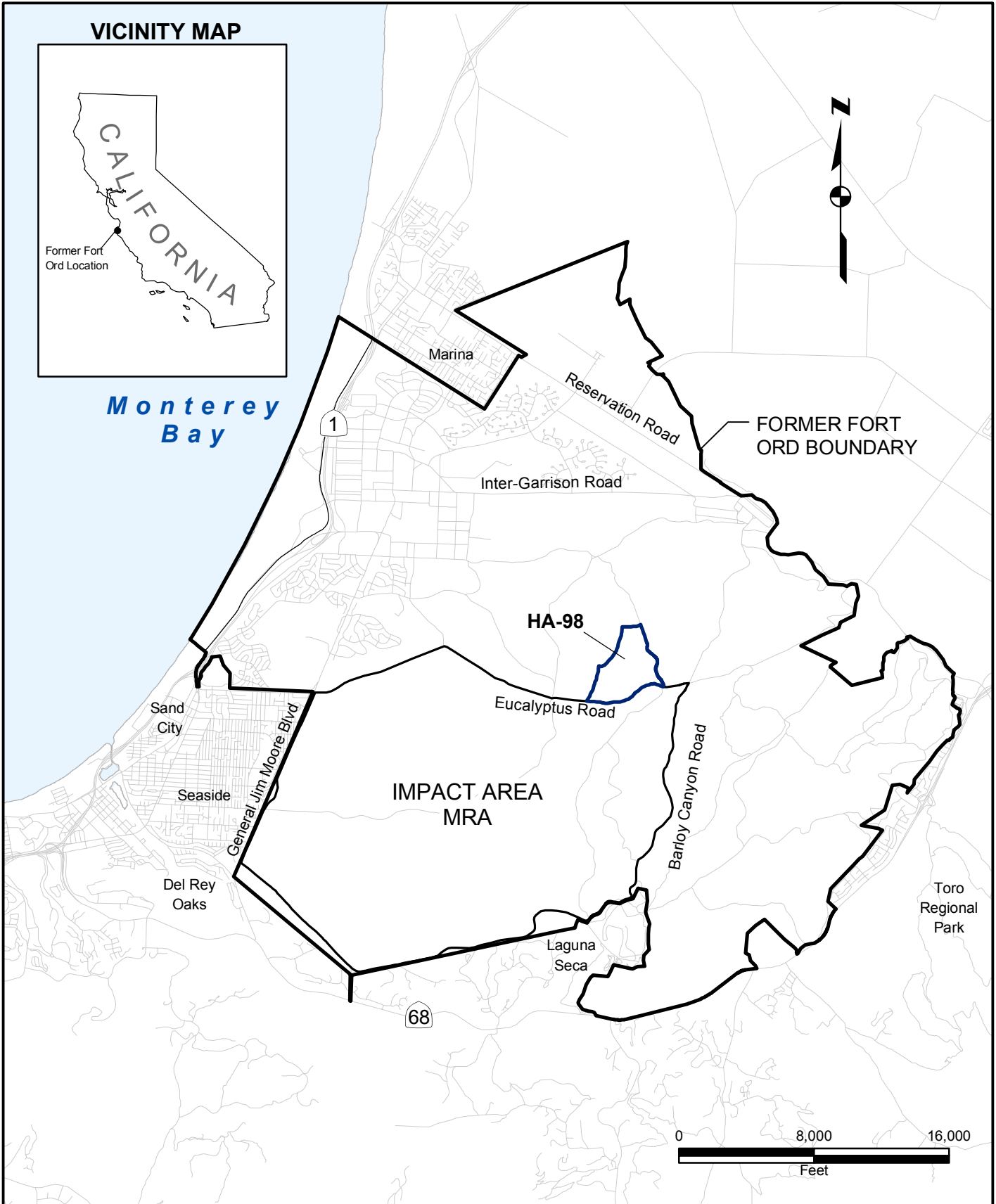
- ^a Background concentrations in soil are from *Basewide Remedial Investigation/Feasibility Study, Fort Ord, California, Volume II - Remedial Investigation, Basewide Background Soil Investigation, Final* (HLA, 1995).
^b MSRC = MSC - MBC
^c The Preliminary Remediation Goals (PRGs) are from the *No Action Plug-In Record of Decision, Fort Ord, California (Army, 1995)*.
^d Chemical Total = MSC ÷ PRG.
^e Background-Related = MBC ÷ PRG.
^f Site-Related = MSRC ÷ PRG.
^g 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



Former Fort Ord Location

Monterey Bay

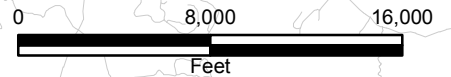


IMPACT AREA MRA

FORMER FORT ORD BOUNDARY

HA-98

Toro Regional Park



Site Location Map

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Site HA-98 - Leary Hill Region
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PLATE

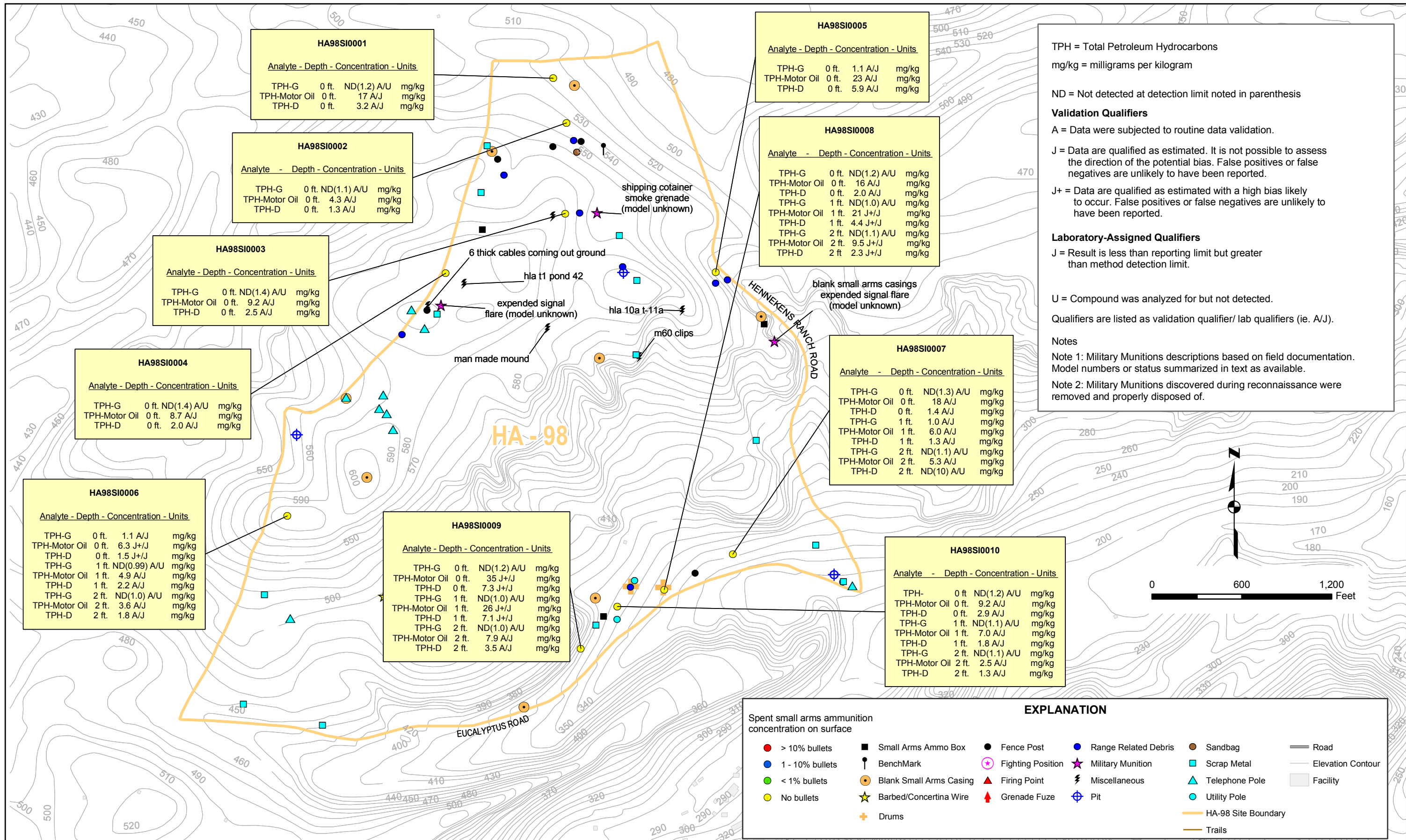
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TJH

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4084075127 01

CHECKED CHECKED DATE

APPROVED APPROVED DATE
2/2008



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.

J = Data are qualified as estimated. It is not possible to assess the direction of the potential bias. False positives or false negatives are unlikely to have been reported.

J+ = Data are qualified as estimated with a high bias likely to occur. False positives or false negatives are unlikely to have been reported.

Laboratory-Assigned Qualifiers

J = Result is less than reporting limit but greater than method detection limit.

U = Compound was analyzed for but not detected.

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.

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Investigation Results
HA-98

HA098-Plate2.mxd - 2/28/08