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FIELD VARIANCE FORM

DATE: 08/15/09 **PROJECT NAME:** FORA ESCA RP **PROJECT LOCATION:** Former Fort Ord, CA
APPLICABLE DOCUMENT / SECTION: Final Group 1 RI/FS Work Plan - Volume 2; Section 5.25 Geophysical QC Surveys
(Supplemental)
SUBJECT: EM61 Hand-Held to be used as Geophysical Instrument for QC-1 Geophysical Surveys

FIELD CHANGE CONDITION:

The standard EM61-MK2 cart is unable to consistently detect 37 millimeter projectiles and grenades at or below 18 inches in depth during the QC-1 surveys to digitally check anomaly excavations. According to field tests performed by the Environmental Services Cooperative Agreement Remediation Program Team and the Army's Ordnance Detection and Discrimination Study, the EM61-MK2 Hand-Held is able to consistently meet the depth metric (see Corrective Action Report [CAR] No. G1WP-001 for results of EM61 Hand-Held evaluation).

RECOMMENDED APPROACH / CHANGE:

The EM61-MK2 Hand-Held will be used to perform the QC-1 verification for each geophysical target investigated.

IMPACT ON PRESENT AND COMPLETED WORK:

This step will not affect completed work or work currently being conducted.

REQUESTED BY: Don Kean, UXO Quality Control Specialist

CLARIFICATION/FOR INFORMATION ONLY

MINOR CHANGE

MAJOR CHANGE

ESCA RP TEAM APPROVALS:

COMMENTS

CORRECTIVE ACTION REPORT

DATE: 07/22/09 PROJECT NAME: FORA ESCA RP PROJECT LOCATION: Former Fort Ord, CA
 APPLICABLE DOCUMENT / SECTION: Final Group 1 RI/FS Work Plan - Volume 2, Section 5.25 (Geophysical QC Surveys) and Appendix F (Residential Quality Assurance Pilot Study Work Plan)
 SUBJECT: Munitions Debris, Post-Scrape DGM Anomaly Investigation, Seaside RQA Pilot Study Area (RQA-SEA.4)

SUMMARY AND ANALYSIS:

During the post-scrape anomaly investigation in grids C2A3B7 and C2A3C7 of the Seaside Residential Quality Assurance (RQA) Pilot Study area (RQA-SEA.4; Figure 1), eight munitions debris (MD) items (seven MK II Practice Hand Grenades and one MK I Training Hand Grenade) were found during target anomaly excavations, as indicated in the program memorandum to the Fort Ord Reuse Authority (FORA) provided in Attachment A. Seven of the eight MD items were selected as targets for excavation during the baseline digital geophysical mapping (DGM) survey; however, the dig teams and the QC-1 operator were unable to locate the MD items in the field using established procedures and equipment. Data from the post-scrape anomaly investigation indicated that the MD items were buried from 12 to 21 inches below ground surface (bgs) prior to scrape activities. The inability of the dig teams and the QC-1 operator to reacquire and successfully remove these MD items during the baseline DGM survey anomaly investigation caused the Environmental Services Cooperative Agreement Remediation Program (ESCA RP) Team to analyze established procedures and detection equipment for possible corrective actions.

The first step in the analysis was to evaluate the effectiveness of the QC-1 instrument (i.e., the EM61-MK2 cart) in detecting grenades at depth. For the analysis, the practice grenades excavated during the post-scrape anomaly investigation were suspended above the EM61-MK2 coils in the least favorable orientation (i.e., grenade lying on its side with long axis parallel to long axis of the coil). The EM61-MK2 cart readings were recorded for each practice grenade at different heights. Table 1 shows the results of the analysis. In accordance with the QC-1 process established in the above-referenced work plan, the operator was using the EM61-MK2 cart in manual mode by observing Channel 2 readings. Table 1 shows that at 12 inches, the millivolt (mV) responses for the practice grenades are at the background noise threshold for detection in manual mode (5 to 6 mV). At 18 inches, the mV responses for the practice grenades are in the background noise (2 to 3 mV) and, therefore, are not detectable.

**Table 1
Analysis of Practice Grenades using EM61-MK2 Cart (Channel 2)**

	Surface (mV)	6 inches above coils (mV)	12 inches above coils (mV)	18 inches above coils (mV)	24 inches above coils (mV)
Grenade 1	35	14	4	3	1
Grenade 2	44	17	5	2	1
Grenade 3	46	18	5	3	2
Grenade 4	46	18	6	3	1
Grenade 5	40	16	5	2	1
Grenade 6	49	18	5	3	2
Grenade 7	36	13	4	2	1
Grenade 8	30	11	4	2	1

CORRECTIVE ACTIONS:

Four corrective actions were implemented in response to the above summary and analysis:

1. Areas where grenade-related MD items were found during the post-scrape anomaly investigation (within grids C2A3B7 and C2A3C7) underwent a confirmation DGM survey using the EM61-MK2 towed array sled to confirm that anomaly targets were investigated and resolved.
 2. An additional confirmation DGM survey was conducted over seven selected non-scrape areas located across the entire Seaside RQA area using the EM61-MK2 towed array sled to confirm that anomaly targets were adequately investigated and resolved.
 3. Quality control (QC) process to include an intermediate DGM survey using the EM61-MK2 towed array sled in areas where grenades and grenade-related MD items were previously found was incorporated into the investigation QC process. This step occurred following the QC-1 process for investigated target anomalies. A DGM survey was conducted over a selected area and targets were excavated to depth of detection, then over-excavated to a depth of 18 inches bgs with the QC-1 process performed even if small metallic objects were found at shallower depths (this is similar to the QC-2 process that occurs during typical investigations and removal actions).
 4. An alternative instrument, the EM61-MK2 hand held unit, was evaluated for use in the QC-1 process.
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RESULTS:

The results of the four corrective actions implemented in response to the above summary and analysis included:

1. Confirmation DGM Survey in Scraped Area No. 1

A confirmation DGM survey was conducted over the area where the practice grenade MD items were found. A total of 53 targets were selected for anomaly investigation. The anomaly excavation results are shown in Table B.1 of Attachment B. No metal meeting or exceeding the mass criteria of a grenade or 37 millimeter (mm) projectile (i.e., 1.5 pounds) was found. The largest items found were 0.5 pound. These results confirm that the post-scrape DGM excavation activities were effective in removing the target materials.

2. Confirmation DGM Surveys in Selected Non-Scraped Areas

An additional confirmation DGM survey was conducted over seven selected non-scrape areas located across the entire Seaside RQA area. Approximately 1.5 acres were surveyed in stripes running north/south across the area. A total of 96 targets were selected for anomaly investigation. The anomaly excavation results are shown in Table B.2 of Attachment B. No metal meeting or exceeding the mass criteria of a grenade or 37 mm projectile (i.e., 1.5 pounds) were found. The largest items found were 0.5 pounds. These results confirm that the baseline DGM survey and anomaly excavation activities in the Seaside RQA Pilot Study area were effective in removing the target materials, except for the grenade area discussed in item no. 1 above.

3. Implementation of an Additional QC Process Step

The additional QC process step will be implemented during future investigations and removal actions where grenades, 37 mm projectiles, and/or 40 mm projectiles have been found.

4. Evaluation of an Alternate QC-1 Instrument (EM61-MK2 Hand Held Unit)

The EM61-MK2 hand held unit and the EM61-MK2 cart were evaluated on a test strip containing inert practice grenades positioned at various depths (0 feet bgs, 6 inches bgs, 12 inches bgs, and 18 inches bgs). The instruments were moved over each practice grenade and the digital readings were recorded. The results of the evaluation for the EM61-MK2 hand held unit and the EM61-MK2 cart are shown in Table B.3 of Attachment B. Based on these results,



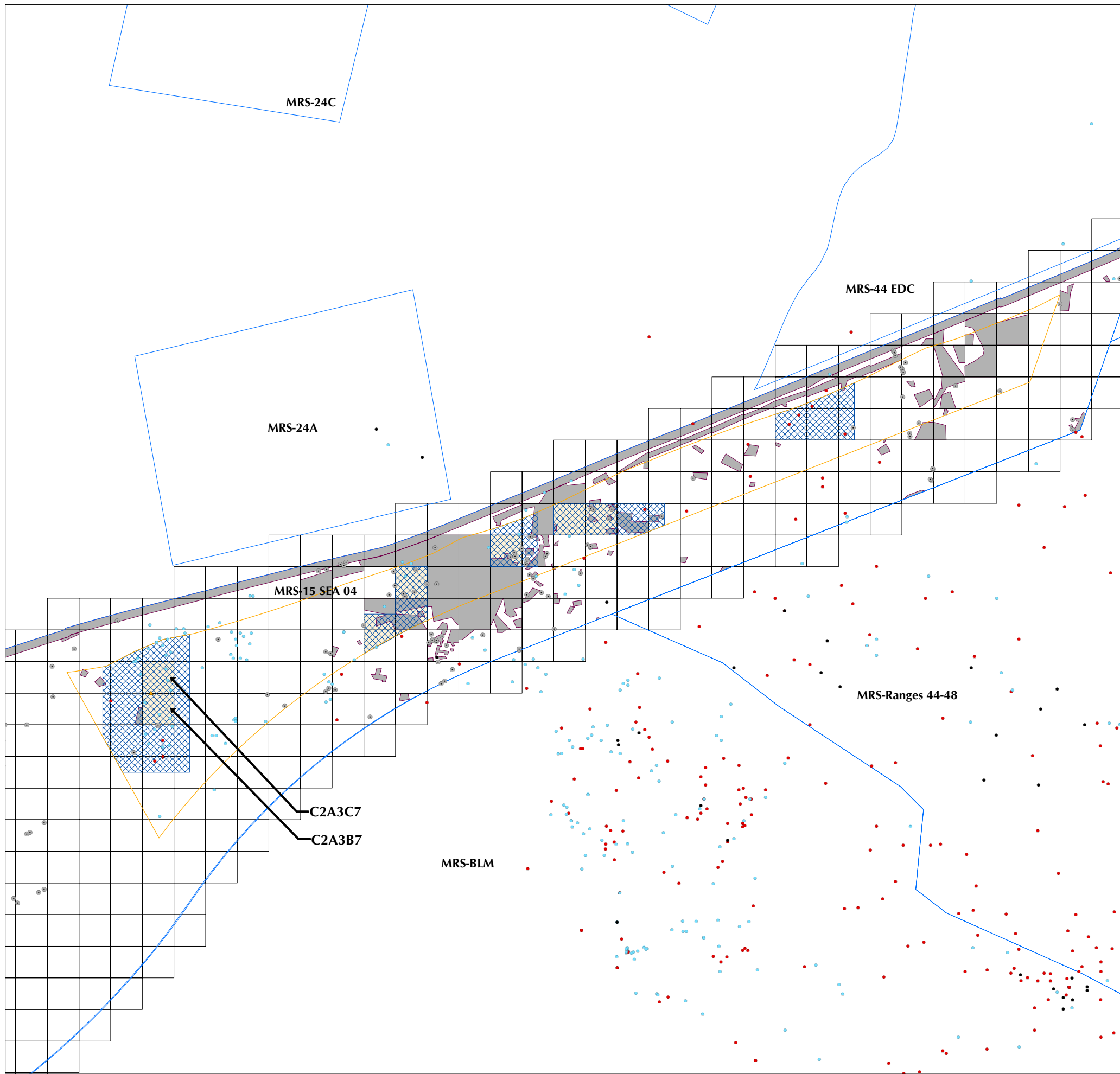
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the QC-1 operator can confidently detect and recover grenades at depths of 18 inches bgs using the EM61-MK2 hand held unit when compared to the EM61-MK2 cart. Therefore, the EM61-MK2 hand held unit will be the QC-1 instrument for the project going forward.

The results of the implemented corrective actions will be presented in more detail as part of the RQA Pilot Study Technical Information Paper.

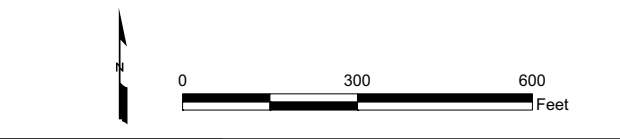
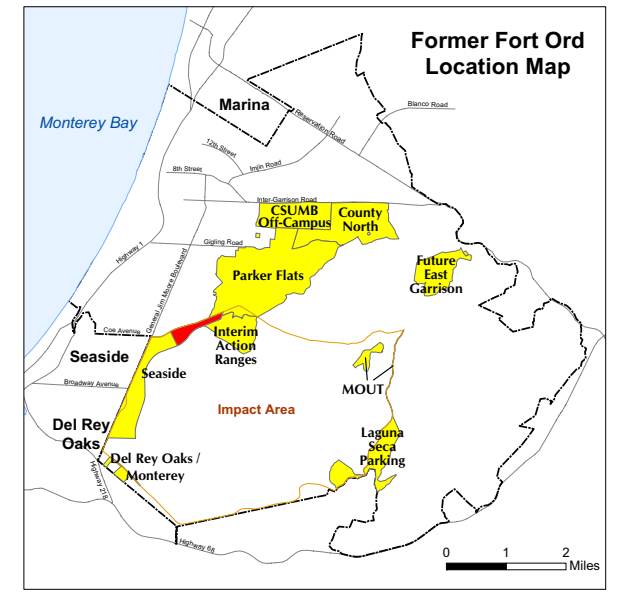
REPORTED BY: [Matt Gifford, Project Geophysicist, ESCA RP](#)

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Legend

- RQA-SEA4 Boundary
 - Scrape Polygon
 - Grids with Areas of High Instrument Response (Noise)
 - 100-ft Grid
 - MRS Boundary
- Locations Investigated by FORA ESCA RP Team**
- Special Case Area Point
 - Special Case Area Polygon (Investigation Areas Using EM61)
- MMRP MEC Found During Previous Sampling and Removal Actions by Hazard Classification**
- 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 (Hazard Classification 1)
 - MEC that will cause major injury or, in extreme cases, could cause death to an individual if functioned by an individual's activities (Hazard Classification 2)
 - MEC that will kill an individual if detonated by an individual's activities (Hazard Classification 3)
- RQA-SEA4 MEC Finds During Investigation by FORA ESCA RP Team**
- DMM
 - UXO



RQA Pilot Study RQA-SEA4 Scrape Areas

FORA ESCA RP
Monterey County, California

Figure 1

Attachment A

MEMORANDUM

Date: May 5, 2009

To: Stan Cook – FORA ESCA Program Manager

From: Linda Temple – ESCA RP Team Remediation Project Manager (WESTON)
Christopher Spill – ESCA RP Team Technical Project Manager (LFR)

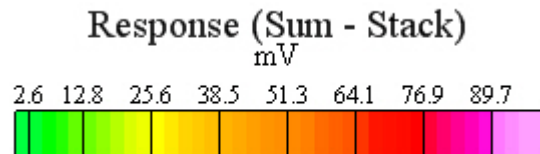
Subject: **Residential Quality Assurance (RQA) Pilot Study - Evaluation of Practice Hand Grenade Finds in the Seaside RQA Post-Scrape Area**

Evaluation

During the post-scrape anomaly investigation in Grids C2A3B7 and C2A3C7 of the Seaside RQA Pilot Study area (RQA-SEA.4; Figure 1), eight munitions debris (MD) items (seven MK II Practice Hand Grenades and one MKI Training Hand Grenade) were found during target anomaly digging (Table 1). A summary of the information related to the recovery of the practice/training hand grenade MD items is provided below:

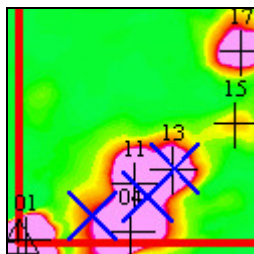
- one MD item (Post-Scrape Target 1001) was not selected as a target during the baseline digital geophysical mapping (DGM) and was more than 3 feet away from the nearest anomaly target so it was not within the search radius criteria for anomaly investigation.
- the remaining seven MD items were selected as targets during the baseline DGM, but were not recovered during anomaly resolution and quality control (QC) activities.
- all eight MD items were found at depths ranging from approximately 6 to 9 inches below post-scrape ground surface. The scrape operation removed approximately 6 to 12 inches of soil; therefore, the MD items were at depths ranging from approximately 12 to 21 inches below pre-scrape ground surface.

A series of DGM images and discussions on the items removed at baseline and post-scrape anomaly target locations is presented below. The images of the DGM survey data include Baseline DGM and Post-Scrape DGM. The numbered black crosses show the locations of targets picked during the Baseline DGM survey and the blue X's show the locations of targets where MD items were found during the Post-Scrape DGM survey. The X's are shown on the baseline and post-scrape images for each series for the purpose of comparison. The color scale is the same for all anomaly images as indicated in the bar scale below, and all anomaly images are approximately 10-feet by 10-feet in size.

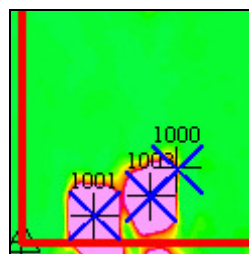


Series 1:

- During the Baseline DGM anomaly investigation, the following items were removed:
 - Target 04: approximately 3 pounds of metal scrap (cultural debris) at a depth of approximately 6 inches below ground surface (bgs) during target anomaly digging.
 - Target 04: MD (MKII Practice Hand Grenade) at a depth of approximately 18 inches bgs during QC-1.
 - Target 11: blind QC seed at a depth of approximately 6 inches bgs during target anomaly digging.
 - Target 13: no contact, which was recorded as a duplicate target for Target 11 (blind QC seed).
- During the Post-Scrape DGM anomaly investigation, three additional targets were identified resulting in the removal of the following items:
 - Target 1001: MD (MKII Practice Hand Grenade) at a depth of approximately 6 inches below post-scrape ground surface. Target 1001 was not selected as a target during the Baseline DGM and was more than 3 feet away from the nearest Baseline DGM target (Target 04), so it was not within the search radius criteria for anomaly investigation digging or QC-1.
 - Target 1003: MD (Practice Hand Grenade MK II) at a depth of approximately 6 inches below post-scrape ground surface.
 - Target 1000: MD (Practice Grenade Fuze) at a depth of approximately 3 inches below post-scrape ground surface.



Baseline DGM



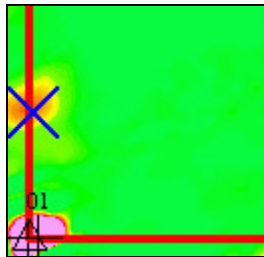
Post-Scrape DGM

Series 1: Baseline DGM and Post-Scrape DGM – Southwestern Portion of Grid C2A3C7

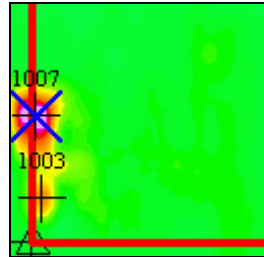
Series 2:

- During the Baseline DGM anomaly investigation, the target shown as a blue X was actually selected on the edge of the adjacent grid C2A3B6 and was identified as Target 10. A small metal scrap (cultural debris) item was reported for Target 10 at a depth of approximately 3 inches bgs during target anomaly digging.
- During the Post-Scrape DGM anomaly investigation, two additional targets were identified, one at approximately the same location selected during the Baseline DGM anomaly investigation discussed in the previous bullet (Target 1007), resulting in the removal of the following items:

- Target 1007: MD (MKII Practice Hand Grenade) found at a depth of approximately 9 inches below post-scrape ground surface.
- Target 1003: Cultural Debris.



Baseline DGM

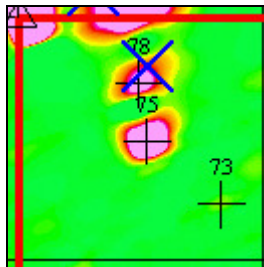


Post-Scrape DGM

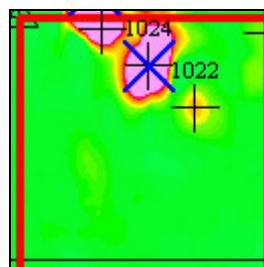
Series 2: Baseline DGM and Post-Scrape DGM – Southwestern Portion of Grid C2A3B7

Series 3:

- During the Baseline DGM anomaly investigation, a small metal scrap (cultural debris) item was found at a depth of approximately 6 inches bgs for Target 78.
- During the Post-Scrape DGM anomaly investigation, three additional targets were identified, one remaining at the approximate location of Target 78 for the Baseline DGM discussed in the previous bullet, resulting in the removal of the following items:
 - Target 1024: MD (MKI Training Hand Grenade) found at a depth of approximately 6 inches below post-scrape ground surface.
 - Target 1022: Cultural Debris.
 - Target 1023 (outside the frame of the image, north of Target 1024): no contact, which was recorded as a duplicate target selected for Target 1001 (MKII Practice Hand Grenade) in Grid C2A3C7 (as discussed in Series 1).



Baseline DGM

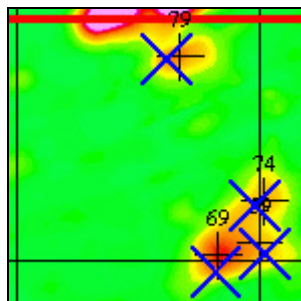


Post-Scrape DGM

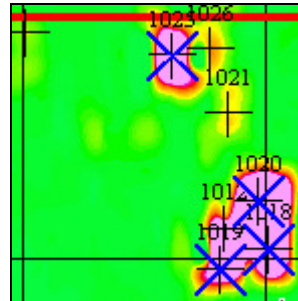
Series 3: Baseline DGM and Post-Scrape DGM – Northwestern Portion of Grid C2A3B7

Series 4:

- During the Baseline DGM anomaly investigation, four targets were investigated: Target 59, Target 69, Target 74, and Target 79. Small metal scrap (cultural debris) items were reported for each target at depths of approximately 3 inches bgs, 6 inches bgs, 0 inches bgs, and 6 inches bgs, respectively.
- During the Post-Scrape DGM anomaly investigation, seven additional targets were identified resulting in the removal of the following items:
 - Target 1025: MD (MKII Practice Hand Grenade) found at a depth of approximately 9 inches below post-scrape ground surface.
 - Target 1018: MD (MKII Practice Hand Grenade) found at a depth of approximately 9 inches below post-scrape ground surface.
 - Target 1019: MD (MKII Practice Hand Grenade) found at a depth of approximately 9 inches below post-scrape ground surface.
 - Target 1020: MD (MKII Practice Hand Grenade) found at a depth of approximately 6 inches below post-scrape ground surface.
 - Target 1021: Cultural Debris.
 - Target 1012: no contact, which was recorded as a duplicate target for an adjacent target.
 - Target 1026: Cultural Debris.



Baseline DGM



Post-Scrape DGM

Series 4: Baseline DGM and Post-Scrape DGM – Northern Portion of Grid C2A3B7

Conclusions

The conclusions of this evaluation include the following:

- Except for one, all MD (Practice/Training Hand Grenades) items found during the post-scrape DGM survey were at anomaly locations flagged during the baseline DGM survey, but were not recovered during anomaly resolution (digging) or quality control activities (QC-1).
- Based on the number and consistency of the missed items (practice/training hand grenades at 6 to 9 inches below post-scrape ground surface), human error (failure to follow proper standard operating procedures [SOPs]) has been ruled out as the root cause.
- Anomaly resolution (digging) and QC-1 process (i.e., SOPs) were critically reviewed and evaluated, and the SOPs are not believed to be the root cause.

- All blind QC and QA seeds placed at depths of 7 and 12 inches below post-scrape ground surface were found either during digging or QC-1; therefore, there is no concern with items being missed within the top 12 inches. The instruments used for anomaly resolution were effective to at least 12 inches bgs.
- Sled-based EM61 array gets a greater signal response from anomalies and is capable of detecting hand grenades at depths greater than 12 inches bgs.
- Instruments currently used to detect anomalies during digging and QC-1 were not effective in resolving targets of this type deeper than 12 inches bgs.

Please note that practice grenade fuzes (MD items) found during the post-scrape anomaly investigation were not included in this evaluation for the following reasons:

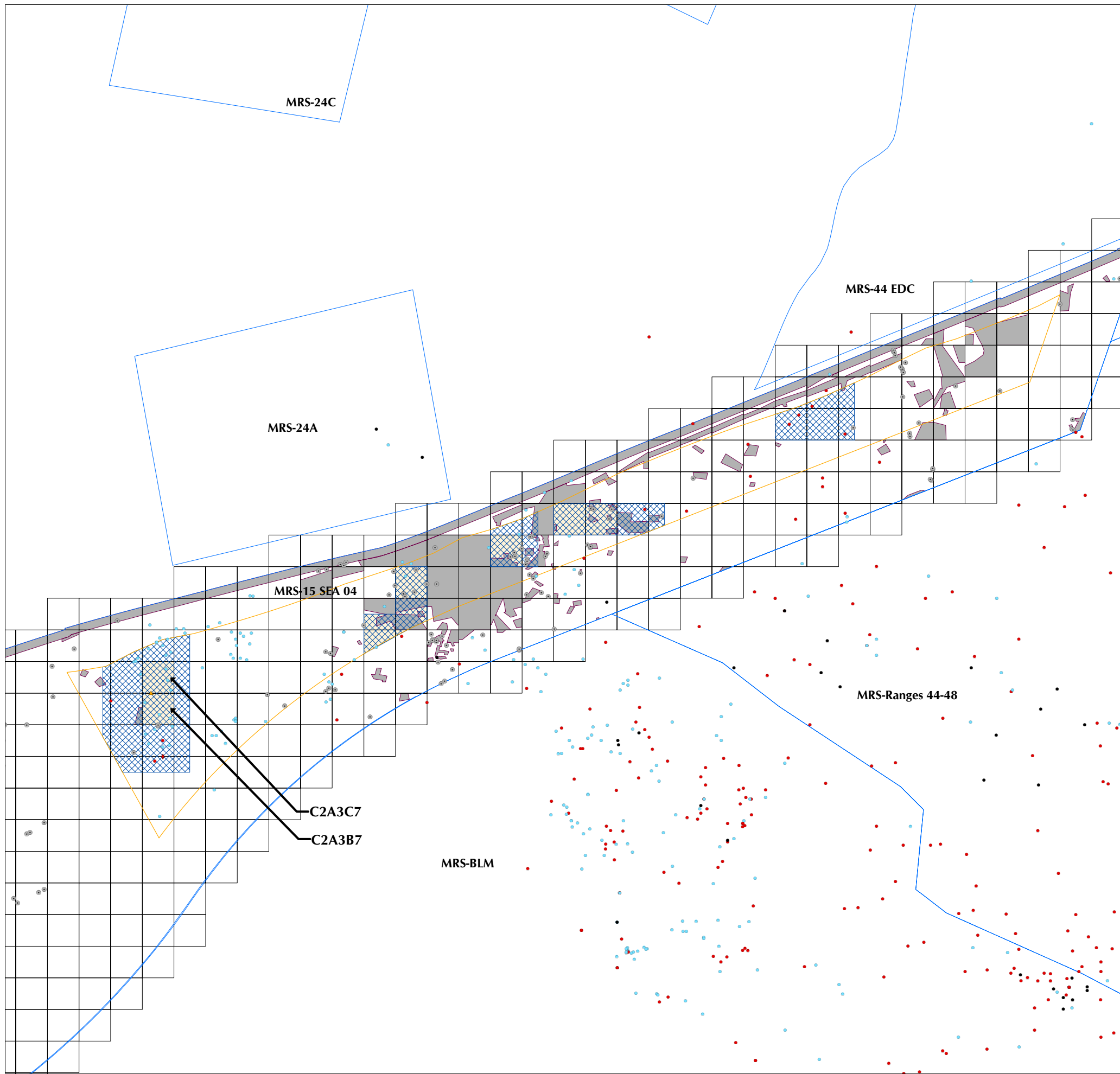
- Smaller than smallest item of interest
- Not detectable at depth prior to scrape

Recommendations

The following recommendations will be implemented as a result of this evaluation:

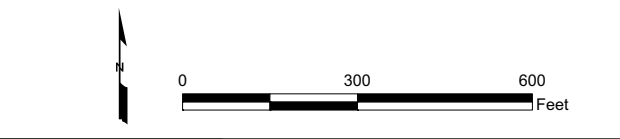
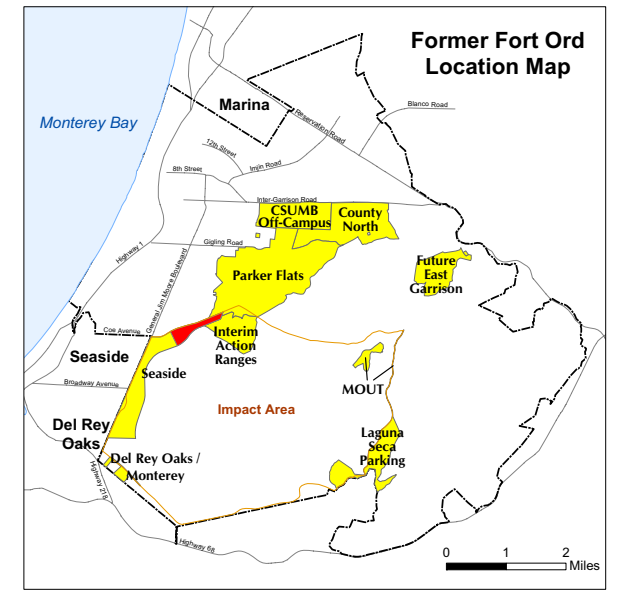
- Area where grenade-related MD was found during the post-scrape anomaly investigation (within Grids C2A3C7 and C2A3B7) will undergo an additional DGM data collection using the sled to confirm that all targets above 20 millivolts (summed) were removed.
- During future response actions in areas where grenade-related MD (also 37 millimeter [mm] and 40 mm projectiles) has been found, the QC process will include an intermediate DGM survey using the sled. This step will occur following the QC-1 of targets. A DGM survey will be conducted over a selected area and targets will be excavated to depth and QC-1 performed. This is similar to the QC-2 process that occurs during investigations and removal actions.
- Alternative QC-1 instruments, such as the EM61 hand held unit, will be evaluated for the QC-1 process.

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Legend

- RQA-SEA4 Boundary
 - Scrape Polygon
 - Grids with Areas of High Instrument Response (Noise)
 - 100-ft Grid
 - MRS Boundary
- Locations Investigated by FORA ESCA RP Team**
- Special Case Area Point
 - Special Case Area Polygon (Investigation Areas Using EM61)
- MMRP MEC Found During Previous Sampling and Removal Actions by Hazard Classification**
- 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 (Hazard Classification 1)
 - MEC that will cause major injury or, in extreme cases, could cause death to an individual if functioned by an individual's activities (Hazard Classification 2)
 - MEC that will kill an individual if detonated by an individual's activities (Hazard Classification 3)
- RQA-SEA4 MEC Finds During Investigation by FORA ESCA RP Team**
- DMM
 - UXO



**RQA Pilot Study
RQA-SEA4
Scrape Areas**

FORA ESCA RP
Monterey County, California

Figure 1

Table 1
Summary of Practice Hand Grenade Finds in RQA-SEA.4 Scrape Area (Grids C2A3B7 and C2A3C7)
RQA Pilot Study, Seaside MRA

FORA ESCA RP
Former Fort Ord, Monterey County, California

Project Site Name	Area of Concern Name	Search Area ID	Easting	Northing	Target Number	Item Count	Dig Date	Is MEC	Item Category	Item Type	MEC Condition	Depth	Depth Units	Weight	Weight Units
RQA	R-SEA-4	C2A3C7	5738106.00	2122202.25	1001	1	4/8/2009	FALSE	MD (standard)	gren, hand, prac, MKII	Inert	6	in	1.5	lbs
RQA	R-SEA-4	C2A3C7	5738110.66	2122203.85	1003	1	4/8/2009	FALSE	MD (standard)	gren, hand, prac, MKII	Inert	6	in	1.5	lbs
RQA	R-SEA-4	C2A3B7	5738100.25	2122110.50	1007	1	4/8/2009	FALSE	MD (standard)	gren, hand, prac, MKII	Inert	9	in	1.5	lbs
RQA	R-SEA-4	C2A3B7	5738140.25	2122180.75	1018	1	4/8/2009	FALSE	MD (standard)	gren, hand, prac, MKII	Inert	9	in	1.5	lbs
RQA	R-SEA-4	C2A3B7	5738136.22	2122179.20	1019	1	4/8/2009	FALSE	MD (standard)	gren, hand, prac, MKII	Inert	9	in	1.5	lbs
RQA	R-SEA-4	C2A3B7	5738139.41	2122184.72	1020	1	4/8/2009	FALSE	MD (standard)	gren, hand, prac, MKII	Inert	6	in	1.5	lbs
RQA	R-SEA-4	C2A3B7	5738110.50	2122196.00	1024	1	4/8/2009	FALSE	MD (standard)	gren, hand, trng, MKI	Inert	6	in	1.5	lbs
RQA	R-SEA-4	C2A3B7	5738132.25	2122916.75	1025	1	4/8/2009	FALSE	MD (standard)	gren, hand, prac, MKII	Inert	9	in	1.5	lbs

Attachment B

Table B.1
Summary of Confirmation DGM Survey in Scraped Area No. 1 of RQA-SEA.4
RQA Pilot Study, Seaside MRA

FORA ESCA RP
Former Fort Ord, Monterey County, California

Project Site Name	Area of Concern Name	Search Area ID	Target Number	Response Amplitude (milliVolts)	Item Category	Item Type	Weight (pounds)
RQA	R-SEA-4	B2J3J7	2003	21.40	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	B2J3J7	2003	21.40	Cultural Debris	Construction Debris	0.1
RQA	R-SEA-4	B2J3J7	2003	21.40	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	B2J3J7	2002	30.40	Cultural Debris	Nail	0.1
RQA	R-SEA-4	B2J3J7	2002	30.40	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	B2J3J7	2001	20.74	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	B2J3J7	2001	20.74	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	B2J3J7	2000	32.70	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	B2J3J7	2000	32.70	Cultural Debris	Nail	0.1
RQA	R-SEA-4	B2J3J7	2000	32.70	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3A7	2008	49.95	Cultural Debris	Nail	0.1
RQA	R-SEA-4	C2A3A7	2009	25.05	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3A7	2007	25.75	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3A7	2020	30.66	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3A7	2018	27.35	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3A7	2019	22.15	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3A7	2006	19.51	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3A7	2014	23.51	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3A7	2011	20.17	Cultural Debris	Metal Scrap	0.01
RQA	R-SEA-4	C2A3A7	2130	18.35	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3A7	2016	22.96	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3A7	2010	22.15	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3A7	2005	24.44	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3A7	2012	25.71	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3A7	2015	34.77	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3A7	2017	20.75	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3A7	2013	21.21	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3A8	2004	42.17	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3B7	2026	30.18	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3B7	2129	20.38	MD (standard)	fuze, gren, hnd, pra, M205	0.1
RQA	R-SEA-4	C2A3B7	2024	23.35	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3B7	2022	24.26	Cultural Debris	Nail	0.1
RQA	R-SEA-4	C2A3B7	2027	39.88	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3B7	2023	58.07	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3B7	2030	24.73	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3B7	2029	20.18	MD (standard)	fuze, gren, hnd, pra, M205	0.1
RQA	R-SEA-4	C2A3B8	2035	34.32	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3B8	2034	20.09	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3B8	2032	19.27	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3B8	2033	65.10	Cultural Debris	Metal Scrap	0.5
RQA	R-SEA-4	C2A3B8	2025	37.72	MD (standard)	fuze, gren, hnd, pra, M205	0.1
RQA	R-SEA-4	C2A3B8	2031	56.15	Cultural Debris	Metal Scrap	0.5
RQA	R-SEA-4	C2A3C7	2037	20.01	MD (standard)	fuze, gren, hnd, pra, M205	0.5
RQA	R-SEA-4	C2A3C7	2036	31.79	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3C7	2036	31.79	Cultural Debris	Nail	0.1
RQA	R-SEA-4	C2A3C7	2036	31.79	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3C7	2040	27.71	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3C7	2040	27.71	Cultural Debris	Nail	0.1
RQA	R-SEA-4	C2A3C7	2128	18.51	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3C7	2128	18.51	Cultural Debris	Iron Scrap	0.1
RQA	R-SEA-4	C2A3C7	2039	27.90	MD (standard)	fuze, gren, hnd, pra, M205	0.5
RQA	R-SEA-4	C2A3C7	2127	19.03	MD (standard)	fuze, gren, hnd, pra, M205	0.5
RQA	R-SEA-4	C2A3C7	2041	26.26	MD (standard)	fuze, gren, hnd, pra, M205	0.5

Table B.2
Summary of Confirmation DGM Survey in Selected Non-Scraped Areas of RQA-SEA.4
RQA Pilot Study, Seaside MRA

FORA ESCA RP
Former Fort Ord, Monterey County, California

Project Site Name	Area of Concern Name	Search Area ID	Target Number	Response Amplitude (milliVolts)	Item Category	Item Type	Weight (pounds)
RQA	R-SEA-4	C2A3B8	2021	20.02	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3B8	2028	24.92	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3C0	2132	20.72	Cultural Debris	Nail	0.5
RQA	R-SEA-4	C2A3C0	2043	36.84	Cultural Debris	Nail	0.5
RQA	R-SEA-4	C2A3C0	2044	25.12	MD (standard)	fuze, gren, hnd, pra, M205	0.5
RQA	R-SEA-4	C2A3C0	2042	24.00	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3C8	2045	21.99	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3C8	2045	21.99	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3C8	2045	21.99	Cultural Debris	Construction Debris	0.1
RQA	R-SEA-4	C2A3C8	2131	15.12	MD (standard)	fuze, gren, hnd, pra, M205	0.5
RQA	R-SEA-4	C2A3C8	2131	15.12	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3D8	2050	39.83	Cultural Debris	Nail	0.1
RQA	R-SEA-4	C2A3D8	2050	39.83	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3D8	2049	23.16	Cultural Debris	Nail	0.1
RQA	R-SEA-4	C2A3D8	2049	23.16	Cultural Debris	Nail	0.1
RQA	R-SEA-4	C2A3D8	2053	55.60	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3D8	2053	55.60	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3D8	2048	24.03	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3D8	2047	24.49	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A3D8	2047	24.49	MD (standard)	fuze, gren, hnd, pra, M205	0.5
RQA	R-SEA-4	C2A4C1	2038	39.30	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A4D2	2046	57.34	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A4E6	2068	39.10	Cultural Debris	Hot rock	0.5
RQA	R-SEA-4	C2A4E6	2058	85.62	Cultural Debris	Nail	0.5
RQA	R-SEA-4	C2A4E6	2058	85.62	Cultural Debris	Nail	0.1
RQA	R-SEA-4	C2A4E6	2060	28.78	Cultural Debris	Hot rock	0.5
RQA	R-SEA-4	C2A4E6	2064	27.48	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A4E6	2069	20.36	Cultural Debris	Hot rock	0.5
RQA	R-SEA-4	C2A4E6	2067	20.33	Cultural Debris	Hot rock	1
RQA	R-SEA-4	C2A4E6	2057	76.02	Cultural Debris	Nail	0.1
RQA	R-SEA-4	C2A4E6	2062	28.00	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A4E6	2063	26.12	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A4E6	2065	19.34	Cultural Debris	Hot rock	0.5
RQA	R-SEA-4	C2A4E6	2066	34.60	Cultural Debris	Nail	0.5
RQA	R-SEA-4	C2A4E6	2061	43.06	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A4F6	2133	19.40	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A4F6	2076	21.40	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A4F6	2074	27.84	Cultural Debris	Metal Scrap	1
RQA	R-SEA-4	C2A4F6	2071	37.62	Cultural Debris	Nail	0.5
RQA	R-SEA-4	C2A4F6	2070	27.97	Duplicate Target Pick	Not Applicable	--
RQA	R-SEA-4	C2A4F6	2072	58.75	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A4F6	2075	42.24	Cultural Debris	Nail	0.1
RQA	R-SEA-4	C2A4F6	2078	117.88	Cultural Debris	Asphalt	1
RQA	R-SEA-4	C2A4F6	2073	28.01	Cultural Debris	Nail	0.1
RQA	R-SEA-4	C2A4F6	2077	32.17	Cultural Debris	Metal Scrap	0.5
RQA	R-SEA-4	C2A4G6	2134	35.08	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A5H4	2081	19.55	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A5H5	2135	19.96	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A5H5	2079	22.63	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2A5J4	2082	23.08	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6A1	2083	40.45	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6A2	2084	32.50	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6B2	2095	22.90	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6B2	2136	19.80	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6B2	2098	31.91	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6B2	2086	80.21	Cultural Debris	Metal Scrap	0.1

Table B.2
Summary of Confirmation DGM Survey in Selected Non-Scraped Areas of RQA-SEA.4
RQA Pilot Study, Seaside MRA

FORA ESCA RP
Former Fort Ord, Monterey County, California

Project Site Name	Area of Concern Name	Search Area ID	Target Number	Response Amplitude (milliVolts)	Item Category	Item Type	Weight (pounds)
RQA	R-SEA-4	C2B6B2	2094	124.28	Cultural Debris	Bolt	0.1
RQA	R-SEA-4	C2B6B2	2092	33.46	Cultural Debris	Metal Scrap	
RQA	R-SEA-4	C2B6B2	2089	51.34	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6B2	2101	35.55	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6B2	2097	20.59	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6B2	2087	19.86	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6B2	2091	31.08	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6B2	2093	28.42	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6B2	2090	22.89	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6B2	2100	24.99	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6B2	2096	22.34	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6B2	2085	20.94	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6B2	2088	29.79	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6B2	2099	20.74	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6C2	2107	41.46	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6C2	2108	22.85	Cultural Debris	Nail	0.1
RQA	R-SEA-4	C2B6C2	2106	26.15	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6C2	2102	26.72	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6C2	2104	30.68	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6C2	2137	19.42	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6C2	2105	29.83	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6C2	2103	28.39	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6C5	2112	51.85	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6C5	2116	50.53	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6C5	2115	21.35	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6C5	2110	29.95	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6C5	2113	37.24	Cultural Debris	Metal Scrap	0.2
RQA	R-SEA-4	C2B6C5	2109	44.50	Cultural Debris	Bolt	0.1
RQA	R-SEA-4	C2B6C5	2111	38.51	Cultural Debris	Metal Scrap	0
RQA	R-SEA-4	C2B6C5	2118	19.28	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6D4	2126	27.18	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6D5	2117	60.36	Cultural Debris	Metal Scrap	0.2
RQA	R-SEA-4	C2B6D5	2124	24.18	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6D5	2120	85.99	Cultural Debris	Metal Scrap	0.3
RQA	R-SEA-4	C2B6D5	2125	304.57	Cultural Debris	Metal Scrap	0.5
RQA	R-SEA-4	C2B6D5	2119	54.83	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6D5	2121	36.78	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6D5	2123	34.11	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6D5	2122	50.57	Cultural Debris	Metal Scrap	0.1
RQA	R-SEA-4	C2B6D5	2114	209.42	Cultural Debris	Metal Scrap	0.3

Table B.3
Comparison of EM61-MK2 Hand Held Unit and EM61-MK2 Cart Test Strip Readings
RQA Pilot Study

FORA ESCA RP
Former Fort Ord, Monterey County, California

EM61-MK2 Hand Held Unit

Surface (mV)	6 inches bgs (mV)	12 inches bgs (mV)	18 inches bgs (mV)
-1.50	-0.64	1.49	-3.62
-2.75	-0.34	1.79	-2.13
-1.98	-0.23	1.43	-0.63
-1.63	-0.41	1.01	-0.45
-1.39	-0.35	1.97	0.38
1.35	0.60	3.77	3.91
42.69	10.34	11.27	2.83
733.42	46.10	23.92	6.41
1060.43	72.71	22.54	7.67
162.81	33.84	13.66	3.96
-2.47	6.03	4.42	0.61
-0.87	0.12	2.55	-0.70
-2.24	-0.36	2.13	0.07
-2.18	-0.72	1.59	-0.11
-2.12	-0.60	2.79	0.43
-1.71	0.59	1.47	0.43
-1.47	0.53	0.87	0.43

EM61-MK2 Cart

Surface (mV)	6 inches bgs (mV)	12 inches bgs (mV)	18 inches bgs (mV)
2.02	0.46	1.34	0.41
3.45	0.91	1.43	0.23
5.69	1.45	2.06	0.15
9.26	1.90	2.51	0.42
12.03	2.97	3.58	0.96
14.71	3.87	5.00	1.14
17.30	5.39	5.72	1.77
18.47	7.35	6.07	2.05
17.57	8.33	6.16	2.05
15.61	8.79	5.62	2.05
12.74	9.06	5.17	2.05
9.53	8.17	4.82	1.97
6.76	6.75	4.28	1.88
3.27	5.68	3.47	1.88
1.66	4.61	2.94	1.61
0.86	3.54	2.13	1.17
0.32	2.56	1.15	0.90

bgs below ground surface
mV milliVolts