



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
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October 27, 2005

Mr. Jerry Dunaway
Dept of the Navy
Base Realignment and Closure
Program Management Office
1455 Frazee Road, Suite 900
San Diego, CA 92108-4301

RE: Draft Conceptual Site Model and Geophysical Investigation Work Plans, South Shore Area and Production Manufacturing Area, Former Mare Island Naval Shipyard, Vallejo, California, September 2005

Dear Mr. Dunaway:

EPA has reviewed the above referenced documents. The Work Plans should be sufficient for the conduct of the subject actions, providing that the issues noted in the attached comments are appropriately resolved.

GENERAL COMMENT:

It should be noted that the ability of the geophysical instruments listed in the Work Plan to detect ordnance at specific depths varies greatly with the size of the ordnance being detected. For example, as a general rule under ideal conditions, a magnetometer (MAG) will detect a 6-inch gun projectile at approximately 78 inches below ground surface (BGS), and an electromagnetic (EM) detector will detect it at approximately 66 inches BGS. A 3-inch gun projectile can be detected to around 30 inches and 32 inches, respectively, with the same instruments. (There is a detection depth "crossover" at around 3.5 inches in ordnance diameter, with MAG detecting the same item at deeper depths for the larger ordnance and EM detecting at deeper depths for the smaller items.) A 20mm projectile is detectable at approximately 5 inches BGS with MAG and 9 inches BGS with EM. Therefore, a stated clearance depth for a site means that all ordnance *detected* was removed to that depth. In the case of smaller ordnance, it cannot be assumed that all of these items were removed below the maximum detection depth for that particular item (i.e., any 20mm projectiles located below the 9-inch depth may not have been detected) and, therefore, may still be present after the intrusive activities are completed. While the actions included in the Work Plan do not include the intrusive activities required to remove the detected ordnance items, a removal will be conducted using the results derived from the execution of the Work Plan. While this situation exists at virtually every site where MEC (munitions and explosives of concern) contamination is present, this information is provided here to ensure that all concerned

are aware of the intrinsic shortcomings of any geophysical investigation and the removal which follows.

SPECIFIC COMMENTS

- 1. Section 4.6 MEC Identification Procedure, Page 4-4:** The process is provided here for dealing with the discovery of munitions and explosives of concern (MEC) items which can be moved and stored in the magazine area for future disposal action. No process or reference thereto is provided, however, for dealing with the possibility that a munitions item may be discovered which is determined to be too hazardous to move. Please provide a discussion of the process for handling the aforementioned situation should it occur, or a reference as to where this procedure may be found.
- 2. Section 5.1.2 Initial CSM Findings, Page 5-2:** The Third paragraph on this page begins with, "No evidence of MEC contamination being present at the IR-04 site has ever been identified." This is the first introduction of IR-04 into the verbiage in the document, and no explanation of what IR-04 is or exactly where it is located is provided in the sentences which follow. Also, it is stated that IR-04 "...represented a potential MEC disposal area." with no explanation as to why this is believed to be the case. Please expand the cited section to include an explanation of the location and prior function of IR-04 and the reason for suspecting that it could have been a MEC disposal area.
- 3. Section 5.4.5 Anomaly Selection and Decision Criteria, Page 5-16:** This section describes the process for establishing the anomaly "dig list" and provides a ranking criteria for anomalies according to their perceived potential for representing MEC. While this process is often used as an anomaly discrimination tool, the process noted in Section 5.4.6 Dig Sheet Development (Page 5-17) for the implementation of the ranking criteria requires some clarification.

Section 5.4.6 states that, "As the dig information is analyzed, the number of priority ranks may be decreased if all identified MEC falls within an obvious range." As the investigations covered by the Work Plan do not include any intrusive investigation of anomalies, it is unclear as to how and when the determination will be made that the "identified MEC" will fall "within an obvious range."

Please expand the referenced sections as necessary to explain in detail how the MEC will be identified as falling within a specific range as stated in Section 5.4.6.

- 4. Section 5.4.9 Corrective Actions, Page 5-19:** The second sentence in this section states that, "Based on the QC checks described in the previous section, ..." A review of the previous section (Section 5.4.8 Interim Reporting and Submittals) indicated that the section describes the types of reports which will be submitted, but it does not describe any quality checks per se. Please revise the sentence to correctly state where these quality checks are located in the Work Plan.

5. **Section 7 References, Page 7-1:** The last reference on the page cites a memorandum from the Office of the Assistant Secretary of the Army, Installations and Environment (ASA, I&E), dated October 28, 2003. This memorandum has been replaced by another memorandum from the ASA, I&E, dated April 21, 2005. However, both of these memoranda were based on a memorandum from the Office of the Under Secretary of Defense, Acquisition, Technology and Logistics (USD, AT&L), dated December 18, 2003, which required use of the cited definitions in all Department of Defense and subordinate elements in communications related to munitions response. As the site where the Work Plan will be used belongs to the U.S. Navy, the Department of Defense memorandum would likely be more appropriate as a reference. Please correct the cited reference as necessary.

6. **Appendix A Conceptual Site Model, Section 1.2 Terminology, Page A-1-2:** This section cites the memorandum from the Office of the Assistant Secretary of the Army, Installations and Environment (ASA, I&E), dated October 28, 2003, as the source for the Munitions Response (MR) definitions used in the Conceptual Site Model (CSM). As is noted in the preceding comment, this memorandum has been replaced by another memorandum from the ASA, I&E, dated April 21, 2005. However, both of these memoranda were based on a memorandum from the Office of the Under Secretary of Defense, Acquisition, Technology and Logistics (USD, AT&L), dated December 18, 2003, which required use of the cited definitions in all Department of Defense and subordinate elements in communications related to munitions response. As the site where the Work Plan and accompanying CSM will be used belongs to the U.S. Navy, the Department of Defense memorandum would likely be more appropriate as a reference. Please correct the cited reference as necessary.

7. **Appendix A Conceptual Site Model, Section 1.3.4.2 Production Manufacturing Area Intrusive Investigation, Page A-1-10:** The first paragraph of this section on Page A-1-10 refers to projectiles discovered as part of a cache as "4-inch grapeshot (shrapnel) rounds from World War I." It should be noted that shrapnel projectiles in general are nose ejection projectiles filled with small (0.75 inches in diameter or less) lead balls which are usually suspended in a resin matrix. Shrapnel projectiles could have either a black powder or a high explosives loading that is designed to expel the shrapnel balls upon expiration of the time fuze at a selected distance downrange. Shrapnel projectiles were used until the early years of World War II, although they were considered obsolete by most countries by the mid-1930s. Grapeshot, however, usually consisted of nine relatively large iron balls (2.06-inches to 3.36-inches in diameter) held together by a central bolt between four metal plates (the design often varies). Grapeshot was used in smoothbore muzzle-loading artillery pieces and was declared obsolete by the Army Ordnance Department several years before the beginning of the Civil War, although it was listed in the 1861 Ordnance Manual as ammunition for certain siege and seacoast weapons.

Shrapnel projectiles and Grapeshot are, therefore, not the same ordnance item, and this misidentification should be corrected. Please revise the identification of the 4-inch projectile in question to read shrapnel projectile, or shrapnel round if it is a complete

round (i.e., fuze, projectile, propellant, cartridge case with primer).

8. **Appendix A Conceptual Site Model, Section 2.2 Physical Description, Page A-2-1:** This section states that, "The SSA was created in several stages between 1930 and 1947 (Figure 2-1) utilizing primarily rock and soil taken from the upland areas of Mare Island." A check of Figure 2-1, however, reveals dates which extend out to 1950. These seem to conflict with the dates found in Section 2.4.2 South Shore Area (Page A-2-8), where it states that the area was "...created in several stages between 1930 and 1940." Please review the Section 2.2 narrative, the Section 2.4.2 narrative, and Figure 2-1, and correct them as necessary to make them consistent.
9. **Appendix A Conceptual Site Model, Table 1-2 South Shore Area Intrusive Investigation MEC Summary:** The table lists a number of different types of "MEC Anomalies" recovered as listed in the report entitled "*Unexploded Ordnance Intrusive Investigation-South Shore Area*" dated January 2003. However, the document entitled "*Unexploded Ordnance Intrusive Investigation Summary Report-South Shore Area,*" dated January 2003, has a listing in Appendix E of somewhat different quantities and types of MEC recovered by that investigation. For example, Table E1 Recovered Live Ordnance Material additionally includes live cartridge cases, bulk propellant, loose high explosives, and drift flares. These items are not listed in Table 1-2 of Appendix A of the Work Plan. Please review the two tables and correct Table 1-2 as necessary.
10. **Appendix B Geophysical Prove-Out Work Plan, Acronyms and Abbreviations, Page B-v:** The acronym "DDESB" is incorrectly defined. It should read, "Department of Defense Explosives Safety Board." Please make this correction.
11. **Appendix B Geophysical Prove-Out Work Plan, Table 2-1 Open Area GPO Seed Items, Page B-2-6:** The table lists a number of types of target items to be used as seed items for the geophysical prove-out. However, it was noted that the listing of MEC previously recovered in the area that is found in Appendix E of the document entitled "*Unexploded Ordnance Intrusive Investigation Summary Report-South Shore Area,*" dated January 2003, included cartridge cases separated from their projectiles. No seeds identified as representing these types of MEC are noted in the cited table found in Appendix B of the Work Plan. (Note: This is also true of Table 2-2 Building Footprint GPO Seed Items found on page B-2-7.) Please explain this or correct the exclusion of these items from both tables as necessary.

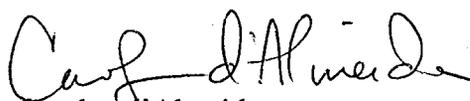
In addition, the cited table lists "40mm" without specifying the type (i.e., 40mm Bofors or 40mm grenade launcher) and without specifying whether it is a projectile or projectile with cartridge case. The latter is also the case (projectile or projectile with cartridge case) for the 20mm item listed. (Note: This is also true of Table 2-2 Building Footprint GPO Seed Items found on page B-2-7.) Please correct this in the two tables as necessary.

12. **Appendix B Geophysical Prove-Out Work Plan, Section 2.2 Target Items, Page B-2-7:** This section lists the typical MEC targets expected to be found in the sites under

investigation. It was noted that all of the MEC listed are projectiles or medium caliber projectile fuses. No projectiles assembled to their cartridge cases or cartridge cases without projectiles are included in the list, even though these items have been found in the areas under investigation. Please provide an explanation for this omission or include these items in the listing.

EPA appreciates the opportunity to review these reports. If you have any questions, please call me at (415) 972-3150.

Sincerely,


Carolyn D'Almeida
Remedial Project Manager

cc: Chip Gribble, DTSC
George Leyva, RWQCB