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COMMENT RESPONSE LETTERS FOR FINAL SAMPLING AND ANALYSIS PLAN FOR FULL
RESOURCE CONSERVATION AND RECOVERY ACT FACILITY INVESTIGATION FOR
SOLID WASTE MANAGEMENT UNIT 77 (SWMU 77) WITH TRANSMITTAL LETTER NAVAL
ACTIVITY PUERTO RICO
08/29/2012
TETRA TECH



PITT-08-12-069

August 29, 2012

Project Number 112G02226

U.S. Environmental Protection Agency - Region II
290 Broadway - 22nd Floor
New York, New York 10007-1866

ATTN: Mr. Phil Flax
Chief, RCRA Programs Branch
Resource Conservation and special Projects Section

RE: Contract N62470-08-D-1001
Contract Task Order (CTO) JM04
U.S. Naval Activity Puerto Rico (NAPR)
EPA I.D. No. PR2170032703
Final Sampling and Analysis Plan for Full RFI and Comment Response Letters
SWMU 77 [Small Arms Range]

Dear Mr. Flax:

Tetra Tech, Inc., on behalf of the Navy, is pleased to provide you with one hard copy and one electronic copy provided on CD of the final Sampling and Analysis Plan (SAP) for Full RCRA Facility Investigation (RFI) at SWMU 77 [Small Arms Range] at Naval Activity Puerto Rico (NAPR). Note that Volume 1 presents the munitions constituents (MC) portion of the SAP while Volume 2 (Appendix A) presents the munitions and explosives of concern (MEC) portion of the SAP. Additional distribution has been made as indicated below. Also enclosed please find the response to regulatory initial and follow-up comments on the draft version of the document.

If you have questions regarding this submittal, please contact Mr. Stacin Martin, NAVFAC Atlantic Remedial Project Manager (RPM), at 757-322-4780.

Sincerely,

A handwritten signature in black ink that reads 'Linda Klink'.

Linda Klink, P.E.
Project Manager

LEK/cm

Attachments

cc: Ms. Debbie Sanders, BRAC PMO SE (letter only)
Mr. David Criswell, BRAC PMO SE (1 hard copy and 1 CD)
Mr. Stacin Martin, NAVFAC Atlantic (1 CD)
Mr. Pedro Ruiz, NAPR (1 CD)
Mr. Doug Pocze, US EPA Region II (1 hard copy and 1 CD)
Mr. Jose Font, US EPA Caribbean office (1 hard copy and 1 CD)
Ms. Wilmarie Rivera, PR EOB (1 hard copy and 1 CD)
Ms. Gloria Toro-Agrait, PR EQB (1 hard copy and 1 CD)
Mr. Felix Lopez, US F&WS (1 CD)
Mr. Doug Murray, NOSSA (1CD)
File N62470-08-D-1001, CTO JM04, 112G02226 (1 hard copy and 1 CD)
Mr. Glenn Wagner (1 hard copy and 1 CD for NIRIS)
Ms. Bonnie Capito (Librarian), NAVFAC LANT (cover letter only)

Response to PREQB Second Set of Follow-Up Comments Dated August 17, 2012

**RESPONSE TO PREQB SECOND SET OF FOLLOW-UP COMMENTS DATED AUGUST 17, 2012 INCLUDING TECHNICAL EVALUATION OF THE NAVY'S JULY 3, 2012 RESPONSES AND REDLINE TO ADDRESS PREQB FIRST SET OF FOLLOW-UP COMMENTS (RECEIVED BY THE NAVY JUNE 15, 2012)
DRAFT FULL RCRA FACILITY INVESTIGATION SAMPLING AND ANALYSIS PLAN FOR SWMU 77 [SMALL ARMS RANGE] DATED DECEMBER 2011
NAVAL ACTIVITY PUERTO RICO, CEIBA, PUERTO RICO**

General Comment: In January 2012, EPA's Office Solid Waste and Emergency Response published the following document *EPA Federal Facilities Forum Issue Paper: Site Characterization for Munitions Constituents*. It is noted that this document was published subsequent to the Phase I RFI and first draft of the Full RFI Sampling and Analysis Plan (SAP). EPA states the following for the investigation of metals and explosive constituents at small arms ranges "...a discrete sample yields results that are not reproducible and thus not representative of site conditions. In contrast, the systematic random MI sampling approach yielded results with significantly lower RPDs. Consequently, this sampling design will yield more reproducible results. Therefore, it is clear that MIS field sampling is necessary to reduce the sampling error to an acceptable level so that reproducible samples can be collected..." PREQB is concerned that the discrete sample design conducted during the Phase I RFI and proposed for the Full RFI may underestimate the concentration of munitions constituents (MC) at subareas that comprise SWMU 77, based on the research presented in this EPA document. However, PREQB will defer to EPA on this issue.

Response: Although the Navy recognizes the cited guidance, the sampling program as designed will meet the intended objectives. Also, USEPA indicated in an e-mail of May 30, 2012 that their comments had been adequately addressed. Of note, the Phase I RFI discrete sampling results are consistent with the Conceptual Site Model for small arms ranges with high lead contamination at the berms and lesser concerns for firing lines and floors of the ranges. It is already established that a lead contamination problem exists at the three berms. Moreover, the discrete (versus incremental) sampling program as designed will allow for a better delineation of contamination to meet the objective of determining extent of contamination. For propellants (nitroglycerine), note the Phase I RFI did utilize composite sampling at firing points since contamination is typically diffuse; the discrete samples planned for the Full RFI will be used to identify hot spots, if any, and for delineation purposes if contamination is present.

EVALUATION OF RESPONSES TO COMMENTS

The Navy's responses to PREQB's comments received by the Navy on June 15, 2012 are accepted, with the exception of the following comment, as discussed below.

PREQB Comment 11(f)(i), Worksheet 17; Figure 17-3: Please clarify whether the kick-out zone surrounding the depression can be determined, based on what is known about the open detonation that occurred.

Navy Response: *A one-time detonation event occurred at this subarea under the direction of Mayport EOD. It is assumed that the detonation was successful. The kickoff zone is undefined.*

PREQB Evaluation of Response: Please provide the rationale for the locations selected for the surface soil samples surrounding the depression given that the Navy has indicated that the kickout zone is undefined.

Navy Response to PREQB Evaluation: *Sample locations were chosen in locations around the one-time detonation pit area and the low drainage area. These sample locations were biased to areas where contamination, if present at this site, would most likely be found. Samples will be collected at this subarea to characterize soil at the site and to collect additional samples to add to Phase I RFI data in order to have an adequate number of samples to conduct a risk assessment.*

PREQB Evaluation of Response: US Army Corp of Engineer's Guidance EM 200-1-15, Draft Final Technical Guidance for Military Munitions Response Actions, states in Section 10.9.3.4: "Post-detonation samples should be incremental samples unless there are state or local requirements to the contrary. The sample unit(s) size should be sufficient to determine the average concentration over the area affected by the detonation..." Figure 17-3 shows samples located within approximately 20 to 30 feet of the depression. Please provide the rationale for why this distance from the detonation pit was selected. If the locations vary based on field observations, please ensure that the samples are representative of the area affected by the detonation. Also, please clarify why surface soil samples are proposed outside of the low draining area near the concrete pad rather than within the low draining area as it appears that the depression would be the depositional area for runoff from the detonation area.

Navy Response: The cited USACE guidance document is in the draft final version, dated May 3, 2012. Also, USEPA indicated in an e-mail of May 30, 2012 that their comments had been adequately addressed.

The detonation was a one-time event high-order detonation and as is typical of high order detonations the materials are typically consumed and little residual MC would be expected. In support, no evidence remains on the ground surface and so it is assumed that the item being detonated and the donor explosives were either completely consumed during the detonation or any remnants of the detonation were immediately picked up following the detonation. Moreover, no subsurface anomalies are present at the depression area to indicating that no remnants of the detonation remain. The event occurred approximately six years ago; no post-detonation samples were collected at the time.

The Phase I RFI samples were biased toward the area where the one-time detonation event occurred and the center of the low-lying drainage area for the subarea; no site-related contamination was evident and the Navy's initial recommendation was No Further Action. The samples proposed for the Full RFI, in combination with the Phase I RFI samples, are planned to have a large enough data set to support risk assessment. The samples are located largely based on topography to target contamination migration pathway via overland flow. To address the PREQB comment, two of the samples will be moved inside the low draining area and additional rationale will be included. The Section 17.3.3 text will be expanded as follows:

"Nine discrete surface (0 to 6 inches bgs) soil samples (locations 77DASB003 through 77DASB011) will be collected from across the site, as illustrated on Figure 17-3. ***The samples are located largely based on topography to target contamination***

migration pathway via overland flow. Four of the Full RFI samples are located around the detonation area, one is in between the detonation area and the low-draining area, two are within the low-draining area (east and west side), and two samples are just outside of the low-draining area (to the south and east side)."

COMMENTS ON REDLINE MUNITIONS CONSTITUENTS SAMPLING AND ANALYSIS PLAN, DATED JULY 2012

1. **Comment:** Executive Summary: PREQB prefers that the this section clarify that the project action limits for the Phase I RFI did not include screening levels for the protection of groundwater (otherwise known as migration to groundwater soil screening levels) and that the Full RFI will evaluate the potential for mobile constituents to leach to groundwater.

Response: Agree. The following sentence has been added: "*For clarification purposes, the project action limits for the Phase I RFI did not include screening levels for the protection of groundwater (otherwise known as migration to groundwater soil screening levels) and the Full RFI will evaluate the potential for mobile constituents to leach to groundwater.*"

2. **Comment:** Worksheet 9, Page 38 of 205, Third Bullet:
 - a. Minor editorial comment – Please correct spelling of "presented" in this bullet.
 - b. Consensus Decisions, Item 4:
 - i. Please clarify the second to last sentence in light of the first sentence where text indicating that background concentrations will be used for screening purposes has be struck out. PREQB prefers that background concentrations not be used for screening purposes to identify chemicals of potential concern to be quantified in the risk assessments.
 - ii. Please clarify the term "upper value of means" and provide a reference to the Baker documents referenced in this item.

Response:

- a. Agree. The spelling of "**presented**" has been corrected.
- b. Consensus Decisions, Item 4:
 - i. Consistent with Worksheet #11, the subject sentence from Worksheet #9 from the September 29, 2011 meeting has been revised as follows: "Facility background levels are applicable for use at SWMU 77 and can be used for screening purposes *in evaluating background risk versus total risk.*"
 - ii. As noted in Worksheet #9, one of the action items from the September 29, 2011 meeting was for Mark Kimes (Michael Baker Jr., Inc.) to send a link for the Revised Final Background Report with Addendum to all team members; Mark completed this action item on October 5, 2011. These background concentrations are included in Appendix B-5 of the SAP but the report was not included in the reference section. The following has been added to the reference list: "**Baker, 2010. Revised**

Final II Summary Report for Environmental Background Concentrations of Inorganic Compounds, Naval Activity Puerto Rico. July 30, 2010. The term “upper value of means” has been clarified to “upper ~~value~~-*limit* of means” to match the background report.

3. Comment: Worksheet 10:

- a. Section 10.2.3: As documented in the Navy’s Supplemental EA, the anticipated future use as an environmental retreat area includes hostels, cabanas and campsites. Please document this in this section. Please ensure that future land use described under Findings in the table provided as part of Worksheet 10 is consistent with this section.
- b. Section 10.4:
 - i. For each subarea, please document whether the Phase I RFI analytical results exceeded migration to groundwater SSLs (DAF 1) and address this transport pathway in the recommendations section for each subarea. This information is needed as the discussion presented in this section documents the basis for the analytes selected to be further investigated in the Full RFI. The Phase I RFI only used human health and ecological risk-based screening criteria to determine those areas and analytes requiring further investigation in the Full RFI. This is a datagap for the Phase I RFI that needs to be addressed in the Full RFI.
 - ii. Rifle Range Subarea: For the earthen constructed berm and wooded embankment areas where the Full RFI will investigate subsurface anomalies as part of the MEC investigation, please clarify the approach for investigation MC from MEC items identified during the Full RFI MEC investigation, including proposed laboratory analyses.

Response:

- a. Agree. The requested changes have been incorporated.
- b.i Considering that all Subareas and all analytes were carried forth to the Full RFI (since the Navy has agreed to add nitroglycerine as requested by PREQB), development and evaluation of site-specific SSLs can be conducted after the Full RFI data is available and the Phase I/Full RFI dataset is established.
- b.ii. This Subarea was largely used as a small arms range and MEC was incidental. Because the site ground surface was previously cleared (except for the new area transects up the hill of the wooded embankment) and MEC if present is expected at the ground surface, subsurface MEC is not anticipated. Four discretionary samples are included for the Rifle Range in the case MEC is identified that may have resulted in a release of MC.

4. Comment: Worksheet 11:

- a. Page 64 of 205: For screening purposes, please use the lower of the risk-based or MCL-based soil screening level.

- b. Page 65 of 205: Please clarify what reference presents agency-approved anthropogenic background concentrations and for which analytes. Background concentrations of naturally occurring inorganics have been determined, but is unclear that an anthropogenic background dataset has been approved by the agencies.

Response:

- a. Agree. The following sentence has been added: ***“For screening purposes, the lower of the risk-based or MCL-based soil screening level will be used.”***
 - b. “Anthropogenic” has been replaced with ***“naturally occurring”***
5. **Comment:** Worksheet 17: Page 110 of 205: Please review the last sentence of the redline text added to the first paragraph – it appears that text is missing.

Response: The redline has been corrected to reflect the original response provided to EPA General Comment 3: ***“, will be used to determine nature and extent of contamination.”*** has been added to the end of the sentence.

**Navy Generated MEC SAP Text Additions Based on Navy Ordnance Safety and Security Activity (NOSSA) Comments on the Explosive Safety Submission (ESS)
(July 2012)**

NAVY GENERATED MEC SAP TEXT ADDITIONS BASED ON NAVY ORDNANCE SAFETY AND SECURITY ACTIVITY (NOSSA) COMMENTS ON THE EXPLOSIVE SAFETY SUBMISSION (ESS)

Note that text additions are shown in bold italics and deleted text is shown as strikethrough.

At the Rifle Range Subarea, small arms along with O-chlorobenzalmalonitrile or tear gas (CS) grenades and practice grenades, both civil and military, were used during police and military training conducted in this subarea. These items were discovered during prior investigation on the ground surface during Phase I RFI detector-aided surveys.

Currently a moratorium is in place on the Open Burn/Open Detonation (OB/OD) of CS items; therefore, revisions have been made to the MEC SAP Sections 17.15 and 17.16 to reflect this information.

Section 17.15, first two paragraphs:

"17.15 MEC MANAGEMENT – TREATMENT

If a UXO team member discovers a suspect MEC/MPPEH item, he/she will: (1) call for a temporary work stoppage of the team discovering the item and (2) request that the SUXOS identify and/or verify the identity of the item and the hazards associated with it. The SUXOS will have ultimate responsibility for proper identification of the item and its condition, and only the SUXOS can declare that an item is safe to move. MEC will not be moved until a positive identification is made by a UXO Technician III or higher, and the SUXOS concurs that the item(s) can be safely moved. ***Currently a moratorium is in place on the OB/OD of CS items. At no time will a CS item identified as MEC be moved. CS munitions that are identified as MEC will be flagged and recorded. Proper notification will be made and EOD support will be requested in all instances of chemical related MEC. Upon notification EOD will determine if the situation is either a level 1 or level 2 emergency response. This determination will be at the sole discretion of EOD:***

Level 1: EOD responds and handles all treatment and final disposition of the item.

Level 2: EOD gives direction that the UXO qualified team will perform treatment and final disposition of the item. All treatment of CS MEC items will be performed using BIP operations.

Detonation operations will be performed on the day the ***non-CS*** MEC item is discovered or when donor explosives are received; treatment operations may be delayed due to availability of donor explosives from the vendor or requirements for advance notification of the Navy. ***If it is not possible to treat items the day of discovery, item will be secured by Tetra Tech UXO specialists until treatment can be coordinated or until responsibility for its security is transferred per instructions from the NAPR POC (e.g., the SUXOS may be directed to transfer security to NAPR Security).*** Treatment/disposal of MEC will be performed in accordance with MRP SOP 07. ~~No consolidated shots will be allowed.~~ Suspect ***non-CS*** MEC items determined by the

SUXOS to be safe to move can be moved in a sand-filled wood container to a collection point established to keep better track of small items, and the SUXOS will coordinate treatment of the item at that location or when donor explosives are received. The collection point will be under the control of the SUXOS until the item has been treated by donor charge. The ESQD arc created by the NEW for each collection point will not extend beyond that established for the site to allow site operations to continue. Suspect MEC items that are not safe to move will be secured in place, and the SUXOS will coordinate for treatment of the item with a donor charge using BIP procedures.”

Section 17.16:

“17.16 MPPEH MANAGEMENT – INSPECTION

If MPPEH are encountered during the operation, the SUXOS and UXOQCS will independently inspect and separate the MPPEH into MDEH or MDAS in accordance with MRP SOPs 02, 07, and 09. Items will then be segregated into items that require demilitarization and those ready for certification. If any items are suspected to or found to contain HTRW, ~~procedures described in Section 17.8.4 will be~~ ***the field team will proceed in accordance with the HASP/APP; if warranted by the HASP/APP requirements, the work site may need to be evacuated until the Project HSM, with concurrence of the Navy RPM, identifies and implements appropriate protective measures. Recovered CS MPPEH will be reported to EOD Mayport for guidance/disposal. If required, the items will be packaged and shipped to Pine Bluff Arsenal for final disposition. A formal request for Interim Hazard Classification (IHC) will be submitted. All items transported will adhere to the specification set forth in the IHC. Shipping will be coordinated through the Item Inventory Manager from the Single Manager for Conventional Ammunition (SMCA) Mr. Lorin Daniels 309.782.4387 DSN: 793-4387; or with AMMOLANT 1.800.600.2666. Items identified as CS MEC/MPPEH will be handled as described in Sections 17.15 and 17.18.***

Response to PREQB Comments Provided via e-mail June 15, 2012

**RESPONSE TO PREQB COMMENTS DATED JUNE 15, 2012 (provided via e-mail)
Technical Evaluation of the Navy's Responses to PREQB's Comments on the
Draft Full RCRA Facility Investigation Sampling and Analysis Plan for SWMU 77,
Naval Activity Puerto Rico, Ceiba, Puerto Rico (e-mail May 24, 2012)**

Note that where the comment response provides revised text, text additions are shown in bold italics and deleted text is shown as strikethrough. Revision made to previous SAP text revisions in response to the June 15, 2012, comments are highlighted yellow.

Comment: The Navy's responses to PREQB comments are accepted with the exception of the following comments, as further discussed below. In addition, where responses indicate that worksheets or figures have been revised, please provide the revisions for agency review (e.g., Worksheet 17 figures where sample locations have been revised and Worksheet 15s).

Response: The red-line version of the MC SAP text, revised figures, and revised MC SAP appendix information (revisions to Appendices B-3, B-6, C, and D), and the red-line version of the MEC SAP text and revised MEC SAP attachment information (revisions to Attachments 1-4 and 2) are provided for PREQB's review.

VOLUME I MUNITIONS CONSTITUENTS SAP

- 1. PREQB General Comment 1:** Subsurface soil samples were not collected during the Phase I RFI and mobile MC were detected during the Phase I RFI (such as nitroglycerine [NG]). Therefore, please conduct a subsurface investigation in those areas where MC COPCs exceed EPA's Soil Screening Levels (SSLs). These areas include the Pistol Range firing lines, the Detonation area near the concrete pad, and Rifle Range (all firing lines). Note that where site conditions are similar, a reduced number of samples may be proposed, where the results apply across similar sites with similar NG and other detected explosives (RDX) concentrations. This additional data is needed to evaluate whether mobile MC has migrated to the subsurface sufficient to impact groundwater. Specific areas where these constituents exceed soil screening levels (SSLs) for the migration to groundwater transport pathway are discussed in the Worksheet-specific comments below.

Navy Response: *Subsurface soil sampling strategy is discussed below in the subarea-specific comment responses. However, with regard to NG, NG contains a hydrocarbon chain, which renders it susceptible to aerobic biodegradation; it is sufficiently biodegradable that mobility is seldom an issue and so usually will be attenuated before reaching groundwater. When NG is bound with nitrocellulose it is not susceptible to degradation in soil until the nitrocellulose is weathered away. In such circumstances, a low-level of NG will remain in the soil but will have no impact on groundwater (US Army Corps, 2006). Therefore, subsurface samples for NG analysis have not been added.*

PREQB Evaluation of Response: In order to confirm that NG is not of concern for subsurface soil and groundwater, please add NG analysis for subsurface soil samples as requested.

Response to PREQB Evaluation: As described above, NG contains a hydrocarbon chain which renders it susceptible to aerobic biodegradation and it is sufficiently biodegradable that mobility is seldom an issue. It should be noted that both the Pistol and Rifle Ranges closed on January 1, 2010, and had been heavily used until this date. Sampling for the Phase I RFI was conducted in May of 2010 and while NG was detected in Phase I RFI samples, this was most likely a result of the recent use of these ranges, and it is unlikely that NG will be present at concentrations of concern in samples collected during the Full RFI.

As requested, NG analysis and subsurface samples, have been selectively added to the sampling programs at the Pistol Range Subarea, Rifle Range Subarea, and Detonation Area Near Concrete Pad Subarea. The additional analysis and samples have been added to the MC SAP text, primarily Worksheets 11, 17, 18 and 20. Subsurface soil samples will be collected from 0.5 – 2 feet below ground surface (bgs), this depth will be sufficient to determine if NG is present and potentially migrating. It is not expected that if contamination is present it would be at greater depths as bedrock was encountered at shallow depths throughout SWMU 77 during the Phase I RFI.

Also refer to Comment 4 below, two discrete subsurface soil samples have been added at the locations of highest Phase I RFI NG detections for Phase I RFI soil samples at the firing lines at the Pistol Range Subarea. Figure 17-1 has been revised to include these additional samples. At the Rifle Range Subarea, a subsurface soil sample has been added at each of the five Full RFI sample locations proposed at the 200-yd firing line for NG analysis. Additionally one subsurface soil sample has been added at each of the six remaining Rifle Range firing lines for NG analysis. Figures 17-4 and 17-5 have been revised to include these additional samples. At the Detonation Area Near Concrete Pad Subarea, NG analysis has been added for each of the nine proposed Full RFI surface soil samples and two subsurface soil samples have been added at the locations of the two surface soil samples collected during the Phase I RFI. Figure 17-3 has been revised to include these additional samples.

2. PREQB Comment 6, Worksheet 11:

a. Section 11.1:

ii. Pistol Range Area:

- 1. Nitroglycerin was detected in surface composite samples collected at the firing range at levels that exceeded the screening levels during the Phase I RFI investigation. NG is mobile in soil environments (USACE 2006), and NG was detected in surface soil indicating that natural processes have not eliminated NG as of yet nor have degradation rates been determined for this site. Therefore, further investigation to determine the extent of NG is warranted. As only surface soil was collected, please conduct subsurface soil sampling at the presumed firing lines for nitroglycerin analysis. This comment also applies to the Detonation Area near the concrete pad and Rifle Range.**

Navy Response: Refer to response to General Comment #1. Additionally, during the Phase I RFI, analytical results (NG) for the firing lines were

evaluated and NG was determined to be neither a human health nor ecological issue at the Pistol Range Subarea.

PREQB Evaluation of Response: Please refer to PREQB's Evaluation of General Comment 1.

Response to PREQB Evaluation: Refer to response to General Comment #1, the collection of subsurface soil samples for NG analysis has been added at the locations of highest Phase I RFI NG detections for Phase I RFI soil samples at the firing lines at the Pistol Range Subarea.

b. Section 11.2:

iii. Item 6, last paragraph: Please conduct further evaluation before determining chemicals with elevated detection limits are not COPCs for risk assessment. Consider whether the chemical is likely to be present, whether it is detected in other media, if it is part of a class of more toxic compounds (such as PAHs), etc. before excluding chemicals with elevated detection limits from the risk assessments. Please revise this section and the footnote to Worksheet 15 accordingly.

Navy Response: *Existing text in Section 11.2 has been clarified to reflect evaluation of chemicals with LODs greater than the PALs in the risk assessment as a component of the Uncertainty Analysis. The SAP text in Sections 11.2 and applicable Worksheet #15 footnotes have been updated as follows:*

Section 11.2 Item 6, last paragraph:

"Nondetected results reported for analytes where the LOD is greater than the PAL will not be considered COPCs and will not be retained for the quantitative risk assessment. However, the impact of such "non-detected results" will be further evaluated (qualitatively) these instances will be documented in the uUncertainty Analysis section of the Full RFI Report to determine if risk management decisions would be impacted by the fact that the LOD exceeds the PAL."

PREQB Evaluation of Response: Please clarify the response to indicate whether the chemical is nondetect in all samples for a particular media. If a chemical is detected, then nondetect results that would cause the exposure point concentration to exceed the maximum detected concentration may be eliminated per EPA RAGS Part A guidance. However, if all samples are nondetect, EPA guidance states that "...If information exists to indicate that the chemicals are present, they should not be eliminated..." Therefore, as part of the Data Collection and Evaluation step in the risk assessment, evaluate whether nondetect chemicals with elevated detection limits (above PALs) may be present based on site data before eliminating nondetect chemicals as COPCs.

Response to PREQB Evaluation: In the case where all sample results for a chemical are nondetect and there are elevated detection limits, the situation would first be addressed in the Data Quality Review (DQR). Sensitivity would be evaluated in the DQR and would include a comparison of all LODs, including

those where sample results for a chemical are all nondetect, to project screening criteria. Additionally, nondetect chemicals with elevated detection limits, including those where all sample results for a constituent are nondetect, will be evaluated in the Uncertainty Analysis section of the risk assessment section of the Full RFI Report to determine if there is an impact. Chemicals where all results are nondetect are not retained as COPCs in the risk assessment. The SAP text in Section 11.2 and applicable Worksheet #15 footnotes have been revised:

"Nondetected results reported for analytes where the LOD is greater than the PAL will not be considered COPCs and will not be retained for **the quantitative** risk assessment. However, the impact of **such "non-detected results" will be further evaluated (qualitatively)** these instances will be documented **in the DQR and** in the **Uncertainty Analysis** section of the Full RFI Report **to determine if risk management decisions would be impacted by the fact that the LOD exceeds the PAL.**"

3. PREQB Comment 10, Worksheet 15:

- b. Please provide the inputs to the RSL table used to calculate the lead RBSSL.

Navy Response: *The lead RBSSL shown on Worksheet #15 was not calculated from the USEPA website as indicated in footnote (4). The footnote (4) shown on Worksheet #15 is in error and has been deleted, "4-Calculated from the USEPA website (http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search)." A value of 280 mg/kg is presented as the RBSSL for lead on Worksheet #15, the value is 14 mg/kg (the value from the November 2011 RSL Table) times 20, the DAF.*

PREQB Evaluation of Response: Consistent with other Navy projects in Puerto Rico and as agreed to in the response to Comment 10b, the DAF is 1 for establishing PALs, noting that a site-specific value will be determined based on information collected during the Full RFI. Please revise the PAL accordingly.

Response to PREQB Evaluation: Worksheet #15 has been revised to reflect RBSSLs with a DAF of 1 and a value of 14 mg/kg is shown as the RBSSL for lead in soil. Worksheet #15 footnotes have been revised, "A dilution attenuation factor of 20 **1** was applied to USEPA RBSSLs, **site-specific values will be determined based on information collected during the Full RFI.**"

4. PREQB Comment 11, Worksheet 17:

- a. **Page 96, Section 17.3.4, Rifle Range Subarea:** Please provide the rationale for the investigation proposed behind the target berm and at the short yardage target stand areas. It is unclear why a subsurface investigation is occurring here but not at other areas where mobile MC may be present.

Navy Response: *Subsurface soil sampling is planned for the constructed earthen berm, the wooded embankment, the area behind the concrete wall just before reaching the wooded embankment, and the area behind the target berm*

at the short yardage target stand areas. There were PAL exceedances in surface soil samples collected during the Phase I RFI which warranted the collection of subsurface soil samples in these areas to define the extent of horizontal contamination. Samples were not collected in the area behind the target berm at the short yardage target stand areas during the Phase I RFI; therefore, surface and subsurface soil samples are planned for collection in this area during the Full RFI.

Up to 14 surface soil samples are proposed for collection outside of the study area to define the lateral extent of the contamination, to see if wind may have spread dust and contaminants in this area; otherwise, it would not be expected that contaminants would be in the surface in this area, if present at all. Similarly, surface soil samples are planned for collected at the 200-yard firing line and, if present, contaminants would be expected to be present on the ground surface at the firing line.

PREQB Evaluation of Response: Please refer to PREQB's Evaluation of Response to General Comment 1.

Response to PREQB Evaluation: Refer to response to General Comment #1, the collection of subsurface soil samples for NG analysis have been added at the Rifle Range Subarea firing lines.

d. **Figure 17-1:**

- i. It appears from this figure that surface and subsurface soil samples will be collected from different locations. Please provide the rationale for this sample design, along with more detail on the rationale for the various sample locations selected:
2. It is unclear why samples are located behind and immediately in front of the viewing area.

Navy Response: *Sample locations were distributed throughout the site and at locations surrounding Phase I RFI sample locations in order to gain better spatial coverage of the site.*

PREQB Evaluation of Response: It is unclear that a viewing area is a potentially contaminated area. If sample results for this area as well as other such random samples collected outside the site confirms that no contamination is present, PREQB requests that these samples be excluded from the risk evaluation.

Response to PREQB Evaluation: The samples proposed in the general firing range area were scattered throughout the site to determine the lateral extent of MC (select metals) contamination around the natural embankment, including the firing lines. If sample results for this area as well as other random samples collected outside the site confirms that no contamination is present, the sample results will be excluded from the Risk Assessment for the Pistol Range Subarea.

4. NG was detected in surface soil samples; therefore, please add two subsurface soil samples at the locations of highest NG detections to document whether NG is migrating to subsurface soil.

Navy Response: Refer to response to General Comment #1. Additionally, during the Phase I RFI, analytical results (NG) for the firing lines were evaluated and NG was determined to be neither a human health nor ecological issue.

PREQB Evaluation of Response: Please refer to PREQB's Evaluation of Response to General Comment 1. Note also that samples are requested to evaluate potential migration of NG to the subsurface to evaluate the need for groundwater samples.

Response to PREQB Evaluation: Refer to response to General Comment #1, the collection of subsurface soil samples for NG analysis has been added at two of the firing lines at the Pistol Range Subarea.

f. **Figure 17-3:**

- i. Please clarify whether the kick-out zone surrounding the depression can be determined, based on what is known about the open detonation that occurred.

Navy Response: A one-time detonation event occurred at this subarea under the direction of Mayport EOD. It is assumed that the detonation was successful. The kickout zone is undefined.

PREQB Evaluation of Response: Please provide the rationale for the locations selected for the surface soil samples surrounding the depression given that the Navy has indicated that the kickout zone is undefined.

Response to PREQB Evaluation: Sample locations were chosen in locations around the one-time detonation pit area and the low drainage area. These sample locations were biased to areas where contamination, if present at this site, would most likely be found. Samples will be collected at this subarea to characterize soil at the site and to collect additional samples to add to Phase I RFI data in order to have an adequate number of samples to conduct a risk assessment.

- ii. NG was detected above SSLs in surface soil; therefore, this investigation needs to determine if NG has migrated to the subsurface.

Navy Response: Refer to response to General Comment #1. Additionally, during the Phase I RFI, analytical results (NG) the Detonation Area Near Concrete Pad Subarea were evaluated and NG was determined to be neither a human health nor ecological issue.

PREQB Evaluation of Response: Please refer to PREQB's Evaluation of Response to General Comment 1. Note also that

samples are requested to evaluate potential migration of NG to the subsurface to evaluate the need for groundwater samples.

Response to PREQB Evaluation: Refer to response to General Comment #1, NG analysis for surface soil samples and the collection of subsurface soil samples for NG analysis have been added at Detonation Area Near Concrete Pad Subarea.

g. Figure 17-4:

- i. NG was detected at the firing lines during the Phase I RFI above RSLs and SSLs; therefore, please include a subsurface investigation to determine the extent of NG impacts in subsurface soil at each firing line.

Navy Response: Refer to response to General Comment #1. Additionally, during the Phase I RFI, analytical results (NG) were evaluated and NG was determined to be only a potential human health risk concern and only at the 200 yard firing line for the Rifle Range.

PREQB Evaluation of Response: Please refer to PREQB's Evaluation of Response to General Comment 1. Note also that samples are requested to evaluate potential migration of NG to the subsurface to evaluate the need for groundwater samples.

Response to PREQB Evaluation: Refer to response to General Comment #1, the collection of select subsurface soil samples for NG analysis has been added at the Rifle Range Subarea.

- ii. RDX was detected above the SSL in all three samples from the Phase I RFI; therefore, please include RDX in the analysis of subsurface soil samples to evaluate the potential for impacts to groundwater.

Navy Response: During the Phase I RFI, samples 77RRSB036, 77RRSB037, 77RRSB038, and 77RRSB039, shown on Figure 17-4 were analyzed for NG, samples were not analyzed for RDX.

PREQB Evaluation of Response: The Phase I RFI Report states "Ten composite samples were collected, one from each of the seven firing lines and three from the wooded embankment. These composite samples were all analyzed for the propellant NG and the three from the wooded embankment were additionally analyzed for explosives. The only explosive detected was cyclotrimethylenetrinitramine (RDX), which was detected in all three samples.." As RDX was detected above SSLs (note that the Phase I RFI PALs did not consider SSLs), as requested, please include RDX in the analysis of subsurface soil samples to evaluate the potential for impacts to groundwater.

Response to PREQB Evaluation: There is a distinction between the firing lines and the wooded embankment. Figure 17-4 shows the firing

line area of the Rifle Range subarea, composite samples collected at the firing lines during the Phase I RFI were analyzed for nitroglycerin. As stated above, "and the three from the wooded embankment were additionally analyzed for explosives", these Phase I sample locations (77RRSB040, 77RRSB041, and 77RRSB042) are shown on Figure 17-5. In the Full RFI, surface and subsurface soil samples are will be collected from the area between the constructed earthen berm and the wooded embankment, all these samples will be analyzed for explosives and select metals.

5. **PREQB Comment 1, Appendix C, SOP-07:** Please expand the SOP to include a more robust 8-step decontamination procedure to be used in the event that gross contamination is encountered (in particular, in the areas where former landfilling may have occurred). At the least, as elevated levels of metals have been encountered during previous sampling efforts, please use a 10% nitric acid solution as part of the decontamination effort to minimize the potential of cross-contamination.

Navy Response: Alconox®/deionized water wash/rinse is sufficient to prevent cross contamination during sampling and the aggressive use of 10% nitric acid during decontamination is not warranted. In addition the use of nitric acid poses potential safety concerns and regulatory requirements with the shipment, storage, disposal, and handling of a hazardous material.

PREQB Evaluation of Response: In lieu of using nitric acid in the decontamination process while in the field, please ensure that an equipment rinsate blank is collected following a field decontamination event, as opposed to being collected at the beginning of the day when an implement may be new or has undergone a more rigorous decontamination process prior to be taken out in the field.

Response to PREQB Evaluation: The following note has been added to SOP-07, Decontamination of Field Sampling Equipment, "Note: Equipment rinsate blanks will be collected following a field decontamination event."

VOLUME 2 MUNITIONS AND EXPLOSIVES OF CONCERN SAP Worksheet Specific Comments

1. **PREQB Comment 4, Worksheet 17:**

- c. Section 17.2.2 requires, "If non-site personnel or non-essential non-UXO personnel enter the EZ, all MEC operations will cease until the EZ is reestablished". Please note that this doesn't account for the presence in the EZ of "authorized visitors" as described in Section 17.1: "Authorized visitors will be allowed to enter the EZ during intrusive operations in accordance with requirements in NOSSA guidance, OP-5, and the DDESB-approved ESS." Please revise Section 17.2.2 accordingly.

Navy Response: Section 17.2.2, third sentence has been revised in response to the comment, "If non-site personnel or non-essential non-UXO personnel enter the EZ, all MEC operations will cease until the EZ is re-established."

PREQB Evaluation of Response: The recommended change says that the contractor will stop work anytime "non-essential personnel" enter the exclusion zone. OP-5 allows for "authorize visitors to enter the exclusion zone (EZ). This statement should be modified to specifically say that authorized visitors are allowed to enter the EZ under the restrictions imposed by OP-5.

Response to PREQB Evaluation: The following has been added as the last sentence of the first paragraph of Section 17.2.2, "**Authorized visitors are allowed to enter the EZ under the restrictions imposed by OP-5.**"

2. PREQB Comment 3, SOP 8:

- b. Comment:** Section 4.3 in SOP 8 says the Daily Equipment Checklist is MRP FF.4. However, review of the forms at the end of the document shows that MRP FF.4 is the visitor's log. Please correct this reference.

Navy Response: Section 4.3 of SOP 8 has been revised to indicate that MRP FF.4 is the Daily Equipment Checklist.

PREQB Evaluation of Response: Please revise SOP 8 to indicate that MRP FF.4 is the Visitor's Log and MRP FF.3 is the daily Equipment Checklist.

Response to PREQB Evaluation: The table at the end of MRP SOP 08 has been revised to state that MRP FF.4 is the Visitor's Log and MRP.FF.3 is the Daily Equipment Checklist.

Response to USEPA Comments Provided via e-mail May 30, 2012

RESPONSE TO EPA COMMENTS PROVIDED VIA E-MAIL MAY 30, 2012
Evaluation of the Navy's Responses to EPA's Comments on the Draft Full RCRA Facility Investigation Sampling and Analysis Plan for SWMU 77, Naval Activity Puerto Rico, Ceiba, Puerto Rico (e-mail May 24, 2012)

Note that where the comment response provides revised text, text additions are shown in bold italics and deleted text is shown as strikethrough. Revision made to previous SAP text revisions in response to the May 30, 2012, comments are highlighted yellow.

Comment: Because the EPA Task Order contract with Booz Alan is still not fully in-place, I have reviewed your proposed responses myself. They are acceptable, except for your response to Volume I Specific Comment #4 and #5. Unfortunately, EPA appears to have missed the fact that in the Phase I RFI report, it was recommended that even though a full RFI was recommended, nitroglycerin (NG) was recommended to be dropped as a constituent of concern (COC) for the Detention Area Near Concrete Pad even though only two samples were collected as part of the Phase I RFI. Because NG was detected in both Phase I RFI samples at the Detention Area Near Concrete Pad at levels exceeding its screening PAL, EPA requests that the your response to Volume I Specific Comment #4 and #5 and the Full RFI work plan be revised to include NG as a COC at some or all of the Full RFI samples proposed for the Detention Area Near Concrete Pad. Therefore, please submit draft revised Responses to Volume I Specific Comment #4 and #5, to reflect the above requested changes.

Response: At the Detonation Area Near Concrete Pad Subarea, NG analysis has been added for each of the nine proposed Full RFI surface soil samples and two subsurface soil samples for collection at the locations of the two surface soil samples collected during the Phase I RFI. The text of the MC SAP and Figure 17-3 have been revised to include this additional analysis and additional subsurface soil samples.

As requested, revised response to Volume I Specific Comment #4 and #5 are provided below.

4. **Comment:** **Worksheet #10, Conceptual Site Model, Page 46:** The Detonation Area Near Concrete Pad Subarea subsection of Section 10.4, Previous Investigations, makes no mention of prior sampling for explosives. Also, in the recommendation for conduct of a full Resource Conservation and Recovery Act Facility Investigation (RFI) for munitions constituents (MC), no mention is made of investigating potential explosives contamination, nor is a statement provided as to why this is not necessary. Revise the cited subsection to include this information.

Response: Soil samples collected at the Detonation Area Near Concrete Pad Subarea were analyzed for explosives, NG, and select metals (antimony, arsenic, copper, lead, and zinc). Explosives were not detected in samples collected at this subarea. NG, arsenic, copper, lead, and zinc were positively detected in samples collected at this subarea. A human health and ecological screening level hazard/risk assessment of chemical concentrations detected in surface soil was conducted in the Phase I RFI, only lead was found to be of concern. Therefore, in the Phase I RFI, sampling was recommended during the Full RFI to further characterize and delineate select metals. Moreover, because NG was detected at concentrations greater than

screening levels, NG analysis will also be conducted at the Detonation Area Near Concrete Pad Subarea during the Full RFI.

The first paragraph of the Detonation Area Near Concrete Pad Subarea subsection of Section 10.4, Previous Environmental Investigations, has been revised. "During the Phase I RFI, surface soil was investigated at two biased locations, the remaining depression area where the one-time detonation occurred and the low-lying drainage area for the subarea. **Samples were analyzed for select metals, explosives, and NG. A human health and ecological screening level hazard/risk assessment of chemical concentrations detected in surface soil was conducted in the Phase I RFI (Tetra Tech, 2011); only lead was found to be of concern.** Lead concentrations in Phase I data were less than human health screening levels and greater than ecological screening levels. Although lead concentrations were not elevated at the Detonation Area Near Concrete Pad Subarea (40.7 mg/kg maximum), lead may present an ecological risk. A Full RFI was recommended to further characterize and delineate metals considered to be COPCs RFI (antimony, arsenic, copper, lead, and zinc)."

5. **Comment: Worksheet #11, Project Quality Objectives/Systematic Planning Process Statements, Page 57:** The Detonation Area Near Concrete Pad Subarea subsection of Section 11.1, Problem Statement, makes no mention of investigating potential explosives contamination, nor is a statement provided as to why this is not necessary. Revise the cited subsection to include this information.

Also, the Potential OB/OD Subarea and Potential Munitions Trench Subarea subsection states that these areas "...may be contaminated with MC in the form of select metals and explosives." This potential explosives contamination is not recommended for investigation in the related Potential OB/OD Subarea subsection of Worksheet 10. In addition, the Potential OB/OD Subarea and Potential Munitions Trench Subarea subsection lists NG (nitroglycerine) as a "non-MC-related contaminant," which is incorrect. Correct these inconsistencies/errors.

Response: Concerning comment on the Detonation Area Near Concrete Pad Subarea, information has been added to Worksheet #10, see response to Volume 1 Specific Comment #4. Additionally, per response to Comment #4, the text of the MC SAP and Figure 17-3 have been revised to include NG analysis and the additional subsurface soil samples.

Worksheet #11, Section 11.1

- "Detonation Area Near Concrete Pad Subarea:

- Surface soil near the one-time detonation pit/depression area and surrounding impacted surface soil may be contaminated with MC in the form of select metals **and subsurface soil, particularly at the one-time detonation pit area and low lying area, may be contaminated with MC in the form of NG.**"

Concerning other subareas, during the Phase I RFI surface soil samples were collected and only MC metals were identified as COPCs at the Potential OB/OD Subarea while there were no PAL exceedances or COPCs identified at the Potential

Munitions Trench Subarea. Subsurface samples were not collected during the Phase I RFI and it is unknown if MC metals or explosives may be present in subsurface soil at these subareas. As a conservative measure **all** surface and subsurface soil samples collected from these subareas will be analyzed for both explosives and select metals at a minimum. If evidence of landfilling is observed during intrusive investigation, then samples will also be analyzed for NG and non-MC-related contaminants.

Worksheet #11 has been revised:

Section 11.1, 1st paragraph, 6th sentence.

"Potential MC include select metals, explosives, and NG, as applicable per subarea. If evidence of landfilling is noted at the Potential OB/OD Subarea or Potential Munitions Trench Subarea, potential contaminants **at these subareas** may also include **NG and** non-MC-related contaminants including volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, herbicides, polychlorinated biphenyls (PCBs), **and** all metals, ~~and NG.~~"

Section 11.1, last item under the Potential OB/OD Subarea and Potential Munitions Trench Subarea bullet.

"- If evidence of landfilling [e.g., suspect soils where visual, olfactory, or photoionization detector (PID) observations suggest that soil may be impacted by chemical releases in the past] is determined during intrusive investigations that will be conducted during the MEC phase of the investigation at these subareas (see Appendix A, Volume 2), then surface and subsurface soil in these subareas may also be contaminated with **NG and** non-MC-related contaminants including VOCs, SVOCs, pesticides, herbicides, PCBs, **and** metals, ~~and NG.~~

Response to USEPA Comments Dated February 28, 2012

**RESPONSE TO USEPA PROVIDED COMMENTS DATED FEBRUARY 28, 2012
ENCLOSURE 3 (TechLaw, Inc. Comments Dated February 21, 2012)
DRAFT FULL RCRA FACILITY INVESTIGATION SAMPLING AND ANALYSIS PLAN,
VOLUMES I AND II, DATED DECEMBER 2011
SWMU 77 – SMALL ARMS RANGE
NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO**

Note that where the comment response provides revised text, text additions are shown in bold italics and deleted text is shown as strikethrough.

VOLUMES I AND II GENERAL COMMENTS

1. **Comment:** The Explosives Safety Submission (ESS) is mentioned numerous times in this document with the caveat “provided to field personnel under a separate cover.” It is unclear whether the ESS has been approved or is still in submission. The ESS is not attached to this plan, and if changes were made to the ESS before approval, this plan would possibly require changes to comply with an approved ESS. Revise the SAP to discuss the current status of the ESS.

Response: The draft ESS is currently under NOSSA review. Typically, the ESS and SAP are developed in parallel such that the final versions of each are consistent; any changes to the ESS that affect the SAP will be provided to USEPA and PREQB; similarly, any USEPA and PREQB comments that affect the ESS will be provided to NOSSA. The ESS will be approved by both NOSSA and DDESB before fieldwork begins. The following clarification has been added to both Volumes I and II:

Volume I, Section 17.2, 3rd paragraph, 2nd sentence

“Any encounters with metallic objects or other objects that indicate a potential contaminant source or hazard will be documented in the field notes and reported to the FOL/SSO and/or UXO Technician, and appropriate actions will be taken as specified in ***the final versions of*** this UFP-SAP and associated HASP and ESS (***provided to the field team under separate cover***), along with additional guidance provided in the ***final*** MEC UFP-SAP.”

Volume II, Section 17.2.1, 1st paragraph, 6th sentence

“The training will include, but is not limited to, a review of ***the final versions of*** this MEC SAP, ***and*** HASP/APP and the ESS (***provided under*** separate cover).”

**VOLUME I:
VOLUME I GENERAL COMMENTS**

1. **Comment:** Throughout the SAP there are references to the Phase I Resource Conservation and Recovery Act (RCRA) Facility Investigation (Phase I RFI), but relevant excerpts from this document (i.e., previous sampling results and conclusions) are not included in the SAP to support the rationale for the proposed sampling. In addition, according to the *Uniform Federal Policy of Quality Assurance Project Plans Manual*, dated March 2005 (UFP QAPP), each reference to a previous document should be a full reference that cites the year, location of the referenced document (appendix/attachment), page number of the reference, etc. Revise all references in the SAP to the previous Phase I RFI

to include this information and consider providing data and conclusions to support the sampling rationale.

Response: Phase I RFI positive detection figures and table of items detected during the detector-aided surveys at the Rifle Range Subarea are already presented in Appendix B-3 of Volume I. The Phase I RFI frequency of detection (FOD), summary of detected concentration tables, and Executive Summary have been added to the newly revised Appendix B-3 of Volume I. Additionally, PAL exceedance figures have been added to Appendix B-3, these figures show each analyte that exceeded a PAL. Due to the large number of samples collected during the Phase I RFI and the large amount of data to present, separate figures were generated to show exceedances rather than adding this information to the Worksheet #17 figures. The title of Appendix B-3 has been revised, "Phase I RFI Results **Tables**, Figures, and MEC Finds Table, **and Executive Summary**". The Phase I RFI detector-aided survey and geophysical survey results figures will be added Attachment 1 of Volume II as Attachment 1-4, "**Phase I RFI Detector-Aided and Geophysical Survey Results Figures.**"

The reference (Tetra Tech, 2011) has been added throughout Volumes I and II where the Phase I RFI is referred to, with either the direction that results are presented in Appendix B-3 of Volume I or Attachment 1-4 of Volume II, as appropriate. Additionally, this reference has been added at the beginning of a section or end of a paragraph if the entire section or paragraph presents information from the Phase I RFI Report.

- 2. Comment:** The text in Worksheet #10 states that a Phase I RFI was completed in 2010 and based on the results, a Full Resource Conservation and Recovery Act Facility Investigation (Full Phase I RFI) was recommended to determine the vertical and lateral extent of metals in soil within SWMU 77. However, the SAP does not provide Phase I RFI results to demonstrate where exceedances of metals constituents occurred at SWMU 77. The Phase I RFI identified several areas within the site where munitions constituent (MC) surface and subsurface soil sampling was conducted, but there are no references or data tables in the SAP to identify which samples (numbers and locations) contained elevated levels of MC that would justify the sampling locations proposed in the SAP. Figures 17-1 through 17-7 in the SAP identify previous sampling locations; however, without knowing the Phase I RFI sampling locations where exceedances occurred, it is not possible to determine whether sufficient samples are proposed in Worksheets #17 and #18 to establish the vertical and lateral extent of contamination. Update the text in the SAP to include data tables and summaries from the previous Phase I RFI and revise Figures 17-1 through 17-7 to indicate which sample numbers from the previous Phase I RFI contained elevated levels of MCs.

Response: Please refer to response to Volume I General Comment #1.

- 3. Comment:** Worksheet #11 of the SAP states that if evidence that a landfill is present at the Potential Open Burn/Open Detonation (OB/OD) Subarea or Potential Munitions Trench Subarea, potential contaminants may also include non-MC-related contaminants including volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, herbicides, polychlorinated biphenyls (PCBs), all metals, and nitroglycerin. However, none of the tasks appear to include delineating the extent of potential landfill debris. For example, a detailed methodology for this task has not been provided in Worksheet #14, Summary of Project Tasks, Worksheet #17, Sampling Design and Rationale, or in a Standard Operating

Procedure (SOP). Revise the SAP to include an SOP or a methodology for delineating the extent of landfill debris, including how any potential landfill debris encountered during the course of the Full Phase I RFI will be described.

Response: Geophysical surveys conducted during the Phase I RFI and supplemented by the Full RFI, as part of the MEC scope, will serve as the basis for delineating the extent of whatever the Full RFI intrusive investigation determines is the source of the anomalies at the Potential OB/OD Subarea and Potential Munitions Trench Subarea. Should the source of any of the anomalies proposed for intrusive investigation (see Volume II for details of the intrusive investigation) be determined to be landfill debris, then soil samples will be collected for non-MC related contaminants to determine if a release has occurred.

The following text has been added to Section 17.3.5, 2nd paragraph, 6th and 7th sentence and Section 17.3.6, 4th paragraph, 3rd and 4th sentence:

"If encountered, the FOL will document the extent of landfill debris and the locations of any drums or other potentially hazardous waste source containing items using a GPS unit. In addition, photographs of the various types of debris found onsite will be taken and item descriptions and photograph numbers will be documented in the field log book. This information, in conjunction with associated analytical results (MC scope) and extent of geophysical survey anomalies (MEC scope) determined during the Phase I RFI and Full RFI, will be used to determine nature and extent of contamination."

- 4. Comment:** X-Ray Fluorescence (XRF) was used for some of the Phase I RFI sampling (Figures 17-1, 17-2, 17-4, and 17-5), but it is not clear in the SAP which metals were included in the XRF sampling (i.e., whether metals other than lead were included). Update Worksheets #10 and #11 to specify the metals that were analyzed using the XRF during the Phase I RFI.

Response: XRF sampling was for lead only during the Phase I RFI.

Section 10.4, "***XRF sampling for lead was also conducted at this subarea.***" has been added to the Pistol Range Subarea, Former Pistol Range Subarea, and Rifle Range Subarea sections.

Section 10.5 table, Munitions/Release Profile, Associated MC, Former Pistol Range Subarea findings, 4th sentence has been revised, "For the berm, concentrations of metals, particularly lead, were elevated [maximum fixed-base laboratory (FBL) lead concentration of 2,430 and maximum calculated FBL concentration from correlated x-ray fluorescence (XRF) ***lead*** data of 12,295 mg/kg], which present both a human health and ecological risk issue."

The legends of Figures 17-1, 17-2, 17-4, and 17-5 have been revised to indicate that the XRF sample locations are "XRF ***Lead*** Soil Sample Location – Phase I RFI" and "XRF ***Lead*** and Fixed Base Laboratory Soil Sample Location – Phase I RFI".

- 5. Comment:** Worksheets #10 and #11 do not answer the questions posed on pages 14 and 15 of the UFP-QAPP Workbook (Vol 2A of the UFP-QAPP Manual). For example,

Worksheet #10 is missing the project decision conditions (if..then... statements). For Worksheet #10, the following should be included:

The problem to be addressed by the project:

- The environmental questions being asked:
- Observations from any site reconnaissance reports:
- A synopsis of secondary data or information from site reports:
- Project decision conditions (“If..., then...” statements):

For Worksheet #11, the following should be included:

- Who will use the data?
- What will the data be used for?
- What type of data is needed? (Target analytes, analytical groups, field screening, on-site analytical or off-site laboratory techniques, sampling techniques):
- How “good” do the data need to be in order to support the environmental decision?
- How much data are needed? (Number of samples for each analytical group, matrix, and concentration):
- Where, when, and how should the data be collected/generated? Section 11.7,
- Who will collect and generate the data?
- How will the data be reported?
- How will the data be archived?

Response: The information requested in the comment is provided in the SAP as described below.

The problem to be addressed by the project:

- The environmental questions being asked:
 - Response: The Problem Statement is included in Section 11.1.
- Observations from any site reconnaissance reports:
 - Response: Observations from any site visits and/or the Phase I RFI area are presented in Sections 10.4 and 10.5 and site photos presented in Appendix B-4.
- A synopsis of secondary data or information from site reports:
 - Response: A Phase I RFI (Tetra Tech, 2011) was conducted at all subareas; no other previous investigations have been conducted. A summary of the Phase I RFI results is presented in Worksheet #10 and Phase I RFI data tables and figures are newly included in Appendix B-3.
- Project decision conditions (“If..., then...” statements):
 - Response: Figures 11-1 and 11-1A present decision matrices for the project; if then statements are presented in graphical form.

For Worksheet #11, the following should be included:

- Who will use the data?
 - Response: Section 11.1 states “Data results collected from each of the following subareas will be used by the Project Team to determine the next steps for SWMU 77.”
- What will the data be used for?
 - Response: See the response above.
- What type of data is needed? (Target analytes, analytical groups, field screening, on-site analytical or off-site laboratory techniques, sampling techniques):

- Response: Information inputs are provided in Section 11.2.
- How “good” do the data need to be in order to support the environmental decision?
 - Response: Section 11.5, Specify Performance or Acceptance Criteria, presents this information.
- How much data are needed? (Number of samples for each analytical group, matrix, and concentration):
 - Response: The number of samples, analytical group, matrix, per subarea is presented in Worksheets #17 and #18.
- Where, when, and how should the data be collected/generated?
 - Response: Section 11.7, Developing the Plan for Obtaining Data, refers the reader to Worksheet #17 for information on the sampling plan.
- Who will collect and generate the data?
 - Response: This information is presented in Worksheet #14, Summary of Project Tasks.
- How will the data be reported?
 - Response: This information is presented in Worksheet #29, Project Documents and Records Table.
- How will the data be archived?
 - Response: This information is presented in Worksheet #29, Project Documents and Records Table.

6. **Comment:** Neither Worksheets #17 nor #18 include a sampling rationale for each sample location. It is not sufficient to include only a general rationale for each sampling area; according to pages 21 and 22 of the UFP-QAPP Workbook (Vol 2A of the UFP-QAPP Manual), the text of the SAP should provide a detailed rationale for all sampling locations. Revise Worksheets #17 and #18 to include a detailed rationale for each sampling location.

Response: A column has been added to Worksheets #18.1 through #18.7, “**Sampling Rationale.**” Rationale for each sample locations, as listed on these worksheets, has been added to these worksheets. Rationale added to Worksheets #18.1 through #18.7 is per the sample rationale presented in the September 30, 2011 Scoping Meeting Seed Package. Text has been added to the last sentence of Section 17.1 referring the reading to Worksheets #18.1 through #18.7 for details regarding each sample location, “**The General sampling rationale and programs for each of the six subareas are discussed in detail in Sections 17.3.1 through 17.3.6, and details are presented in Worksheets #18.1 through #18.7.**”

7. **Comment:** It is unclear who will perform the data validation activities for this investigation and if the validator is an independent third party. Section 11.5 of Worksheet #11 (page 62) states that a Puerto Rico certified chemist provided by the laboratory will validate all analytical packages for each laboratory. However, Worksheets #33 through #36 identify a TetraTech Data Validator who will perform full data validation. Revise the SAP to clarify who will perform data validation for each analytical data package and if the validator is an independent third party.

Response: The FBL has retained the services of a Puerto Rico certified chemist to certify their data. Section 11.5 is in error; this chemist will not validate the data but certify it and this Chemist is a third party. The SAP is revised as follows:

The third sentence of Section 11.5 has been revised, "All analytical data will be **analyzed by Katahdin Analytical Services or TestAmerica and certified** validated by a **third party** Puerto Rico certified chemist ~~provided by the FBLs (Empirical and TestAmerica).~~ **Validation of the certified data will be performed by Tetra Tech data validation chemists."**

8. **Comment:** The data management, reduction and reporting discussion is insufficiently detailed. For example, it is unclear where hardcopy project documents will be stored and where the project database will be maintained. It is also unclear how long these documents and the database will be stored before archival/disposal. Lastly, it is unclear how analytical data will be entered into the database, if the entry will be reviewed, and how data qualifiers will be added to the final reports. Revise the SAP to provide greater detail regarding the data management, reduction and reporting tasks as per Section 3.5, Data Management Tasks, of the UFP QAPP Manual.

Response: The following has been added to the second section of the Worksheet #29 table, "Laboratory data deliverables will be maintained in the Tetra Tech Pittsburgh project file and in long-term data package storage at a third-party professional document storage firm, **Business Records Management, located at 651 Mansfield Ave., Pittsburgh, PA 15220.**"

The following paragraph has been added to the end of Worksheet #29 as the last bullet under Data Tracking and Control.

- ***"Electronic Data. All electronic data is validated and qualifiers added and then will be compiled into a NIRIS Electronic Data Deliverable (NEED) and loaded into NIRIS in accordance with proprietary Tetra Tech processes. This process includes a QA review of the data to ensure that the content and format of the data satisfy the requirements of NIRIS uploads. The NEDD is submitted through a datachecker into NIRIS which also ensures the format is acceptable."***
9. **Comment:** The SAP does not include data validation checklists. Since the SAP references multiple sources for data validation procedures in Worksheet #36, a checklist describing the criteria that will be used to evaluate the quality control (QC) measures, how samples will be qualified (e.g., the qualifiers that will be used, when samples will be qualified estimated/rejected, and if individual or all samples in a batch will be qualified) should be provided. Revise the SAP to provide data validation checklists.

Response: Data provided by the laboratory will be presented as standard CLP and COP-like forms. Additionally data will be validated following USEPA Region 2 Quality Assurance Guidance and Standard Operating Procedures. Forms will be obtained from the website <http://www.epa.gov/Region2/qa/documents.htm>. The following sentence will be added to Worksheet #36.

"Validation forms will be obtained from the website <http://www.epa.gov/Region2/qa/documents.htm>."

10. Comment: The SAP indicates in Section 11.4 and Worksheet #15 that nondetect-reported results for analytes where the limit of detection (LOD) is greater than the PAL will not be considered contaminants of potential concern (COPC). This approach is not advised because analytes may be present above action levels but were unable to be detected by the analytical method. This potential risk should be considered in the risk assessment. If reanalysis with appropriately sensitive quantitation limits is not possible, an assessment of the associated uncertainty and impact to the overall estimates of risk and hazard and projected impact to site and risk management decision-making should be provided. Such assessment should address the historic land use and the pragmatic assessment of the potential for the constituent at issue to be present. This will allow EPA to review this datagap assessment and make recommendations for risk management that may include resampling in the face of significant uncertainty.

Response: Existing text in Section 11.2 has been clarified to reflect evaluation of chemicals with LODs greater than the PALs in the risk assessment as a component of the Uncertainty Analysis. The SAP text in Sections 11.2 and applicable Worksheet #15 footnotes have been updated, as follows:

Section 11.2 Item 6, last paragraph:

"Nondetected results reported for analytes where the LOD is greater than the PAL will not be considered COPCs and will not be retained for *the quantitative* risk assessment. However, the impact of *such "non-detected results" will be further evaluated (qualitatively)* these instances will be documented in the Uncertainty Analysis section of the Full RFI Report *to determine if risk management decisions would be impacted by the fact that the LOD exceeds the PAL.*"

Worksheet #15, footnote on each table

"Bolded rows indicate that the PAL is between the laboratory LOQ and LOD. The Project Team has agreed to accept this data for decision making as long as results below the LOQ are "J" qualified. Nondetected results reported for analytes where the LOD is greater than the PAL will not be considered COPCs and will not be retained for *the quantitative* risk assessment. However the impact of *such "non-detected results" will be further evaluated (qualitatively)* these instances will be documented in the *uncertainties analysis* section of the Full RFI Report *to determine if risk management decisions would be impacted by the fact that the LOD exceeds the PAL.*

~~Shaded and Bold row indicate the PAL is less than the LOD.~~ The Project Team has agreed to accept this data for decision making as long as results below the LOQ are "J" qualified. Nondetected results reported for analytes where the LOD is greater than the PAL will not be considered COPCs and will not be retained for *the quantitative* risk assessment. *such "non-detected results" will be further evaluated (qualitatively)* these instances will be documented in the *uncertainties analysis* section of the Full RFI Report *to determine if risk management decisions would be impacted by the fact that the LOD exceeds the PAL.* DL values are presented to aid in the decision making process."

11. Comment: The SAP indicates that investigation derived waste (IDW) will be composited. However, the SAP does not provide the specifics on the methods that will be used to composite and analyze IDW. Revise the SAP to include information on the methods to be used and what laboratory will perform the analysis of IDW for waste characterization. Additionally, revise the SAP to include the criteria used to characterize IDW.

Response: The IDW analysis (TCLP Full Regulatory List Organics and Inorganics, ignitability, pH, reactive sulfide and cyanide) information and associated method have been added to Worksheet 15, 19, 20, and 30.

VOLUME I SPECIFIC COMMENTS

1. **Comment: Worksheet #6, Communication Pathways, Pages 26 to 29:** This worksheet does not include EPA in any of the communication pathways. Revise the table to specify that the EPA will be notified when significant corrective actions or changes occur and include the form of communication and timeframe for this notification.

Response: Worksheet #6 in both Volumes I and II has been revised. USEPA (and PREQB) has been added to the Communication Drivers field issue that require changes in field tasks and scope of field work and recommendations to stop work and initiate work upon corrective action.

2. **Comment: Worksheet #7, Personnel Responsibilities and Qualifications Table, Pages 30 to 31:** This worksheet does not include the responsibilities for several personnel identified in Worksheet #3, Distribution List. For example, the responsibilities have not been provided for the NAVFAC Chemist/Quality Assurance Officer, the NAPR facility contact Pedro Ruiz, or the personnel from both analytical laboratories that will be used. Revise this worksheet to include the responsibilities for these personnel.

Response: Key personnel identified in Worksheet #3 have been added to Worksheet #7; personnel identified in Worksheet #3 that receive cover letters only or that are noted to only receive a copy of the UFP-SAP if directed by PREQB have not been added to Worksheet #7.

3. **Comment: Worksheet #10 - Conceptual Site Model; Section 10.4: Previous Environmental Investigations; Page 45:** The first paragraph discusses various geophysical and MEC surveys that were completed at four of six sites; and based on the analog detector-aided surveys, a digital geophysical mapping (DGM) survey was performed at two subareas where subsurface operations/disposal was a concern, but the text in Worksheet #10 does not specify the sites where the surveys were done. For example, it is not clear if a geophysical survey was conducted at the Potential Munitions Trench Subarea to locate the burial trenches or if these trenches were sampled during the Phase I RFI (this information is presented on a Worksheet #17 figure, but it needs to be included in Worksheet #10). Also, if samples were not collected from and beneath the trenches, the Phase I results may not be representative of site contamination. Revise Worksheet #10 to specify the sites where geophysical and MEC surveys were done, include a full discussion of sub areas within the site where DGM was performed, and summarize the results of each survey. Additionally, verify whether sampling occurred within or beneath trenches with debris in the Potential Munitions Trench Subarea during the Phase I RFI.

Response: Detector-aided surface surveys were conducted at the Rifle Range Subarea, Detonation Area Near Concrete Pad Subarea, Potential OB/OD Subarea, and the Potential Munitions Trench Subarea during the Phase I RFI. Subsurface geophysical surveys were

conducted at the Potential OB/OD Subarea and Potential Munitions Trench Subarea during the Phase I RFI. Trenches were not intrusively investigated during the Phase I RFI; therefore, samples were not collected from within or beneath trenches. Intrusive subsurface investigation of the trenches and sampling of the excavations is planned during the Full RFI at the Potential Munitions Trench Subarea. Detail on the detector-aided surveys, geophysical surveys, and intrusive investigation can be found in Volume II of the UFP-SAP.

Worksheet #10 has been revised.

Section 10.4, 1st paragraph, sentences 3 through 6

*"Initially, visual and UXO detector-aided surface surveys were performed at four of the six subareas (Rifle Range Subarea, Detonation Area Near Concrete Pad Subarea, Potential OB/OD Subarea, and the Potential Munitions Trench Subarea) to investigate the presence of surface items. Following these analog detector-aided surveys, a digital geophysical mapping (DGM) survey was completed at two of the subareas (Potential OB/OD Subarea and the Potential Munitions Trench Subarea) where subsurface operations/disposal was of concern to identify potential subsurface anomalies. **Intrusive subsurface investigations were not conducted during the Phase I RFI.** Analysis of surface and subsurface survey results guided the positioning of MC soil sampling locations, **anomaly avoidance was practiced during sampling.**"*

Section 10.4, Detonation Area Near Concrete Pad Subarea subsection, the following paragraph was added to the end of this subsection.

"Prior to the MC investigation, visual and UXO detector-aided surface surveys were performed at the Detonation Area Near Concrete Pad Subarea to investigate the presence of surface items. No MEC/MPPEH was discovered during the Phase I RFI of the Detonation Area Near Concrete Pad Subarea. No evidence of subsurface detonation activities was present other than the one-time event of concern. No subsurface anomalies were present within the depression area where the one-time event occurred, which indicates the one-time detonation was complete and no MEC/MPPEH remained from the detonation."

Section 10.4, Rifle Range Subarea subsection, the following paragraph was added to the end of this subsection

"Prior to the MC investigation, visual and UXO detector-aided surface surveys were performed at the Rifle Range Subarea to investigate the presence of surface items. MPPEH items previously observed on the constructed earthen berm and the grassy strip at the toe of the wooded embankment during site walks in support of Phase I RFI SAP planning were apparently removed when SWMU 77 was closed in January 2010; no MPPEH items remain on the ground surface in this area. For the wooded embankment, eight munitions items were encountered during the meandering path analog detector aided survey of the Phase I RFI; one of the items, a CS M651 grenade, was classified as MEC. Those MEC/MPPEH items warranting detonation were addressed by Mayport EOD on August 19, 2010 (EOD Report presented in Volume II, Attachment 1). The detector-aided survey of the wooded embankment entailed meandering pathways through thickly vegetated areas did not provide 100 percent coverage; therefore, MEC/MPPEH items may still be present in this area. The Phase I RFI information was determined to be adequate to recommend a path forward for surface MEC/MPPEH at the wooded embankment without additional investigation during the Full RFI. More than 50 random subsurface anomalies were identified during the detector-aided survey of the earthen constructed berm area and wooded

embankment. Although MEC/MPPEH is not expected in the subsurface, there is a possibility that the subsurface anomalies could be MEC/MPPEH considering the history of MEC/MPPEH in and around the area. A Full RFI was recommended to include intrusive investigation to determine the source of the subsurface anomalies."

Section 10.4, Potential OB/OD Subarea subsection, the following paragraph was added to the end of this subsection

"Prior to the MC investigation, visual and UXO detector-aided surface surveys were performed at the Potential OB/OD Subarea to investigate the presence of surface items. No MEC/MPPEH was discovered on the ground surface during the Phase I RFI of the OB/OD Subarea. Subsurface anomalies were indicated during the analog detector-aided survey; the locations generally matched that of the electromagnetic (EM) geophysical surveys subsequently conducted. For the OB/OD Subarea, EM geophysical data was collected (EM-61 inphase response, EM-31 quadrature response, and EM-31 inphase response). The EM-61 results were most instructive of shallow anomalies; 58 anomalies were identified and most were indicative of individual items, although four clusters of anomalies were identified. The EM-31 data was more instructive of potential deeper anomalies. The source of the anomalies is unknown and may be munitions related, non-munitions debris, or simply outcrops of volcanic bedrock present at SWMU 77. Weathered bedrock was exposed at the land surface, particularly at steep embankments and, moreover, refusal due to bedrock during soil boring occurred at shallow depths. Although a limited subsurface investigation was conducted, bedrock was encountered consistently at shallow locations throughout the subarea; therefore, it is believed that if subsurface disposal occurred, it would have taken place at shallow rather than deep subsurface. There is also a possibility that landfilling activities may have occurred at the subarea. Surface OB/OD operations may have also occurred at this site, although not supported by the findings of the Phase I RFI. A Full RFI was recommended to include intrusive investigation of the subsurface anomalies encountered during the Phase I RFI to determine the source of the anomalies. The Intrusive investigation should focus on, but not be limited to, the four clusters of anomalies encountered."

Section 10.4, Potential Munitions Trench Subarea subsection, the following paragraph was added to the end of this subsection

"Prior to the MC investigation, visual and UXO detector-aided surface surveys were performed at the Potential Munitions Trench Subarea to investigate the presence of surface items. No surface MEC/MPPEH was discovered during the Phase I RFI of the Potential Munitions Trench Subarea. More than 70 subsurface anomalies were encountered during the detector-aided survey. The general locations matched that of the EM geophysical surveys subsequently conducted over the main suspect trench area in the eastern portion of the subarea. Geophysical survey data were collected for the EM-61 inphase response, EM-31 quadrature response, and EM-31 inphase response. For the northeastern side of the subarea, lines of anomalies were identified trending northwest to southeast, aligned in the same direction as the orientation of the suspect trenches shown on the historical aerial photographs. For the western portion of the subarea, no subsurface anomalies were encountered during the detector-aided survey and the area was too thickly wooded to conduct a geophysical survey. The source of the anomalies detected cannot be determined from the geophysical survey alone. Moreover, anomalies are not necessarily indicative of buried metal but instead could be reflective of outcrops of naturally

occurring volcanic bedrock present at SWMU 77. Weathered bedrock was exposed at the Potential Munitions Trench Subarea land surface, particularly at steep embankments and, moreover, refusal due to bedrock during soil boring occurred at shallow depths. A limited subsurface investigation was conducted; however, it is unlikely that subsurface disposal would have been conducted if bedrock is encountered consistently at shallow locations throughout the subarea. A Full RFI was recommended to include intrusive investigation to determine the source of the anomalies. The intrusive investigation should focus on, but not be limited to, the six linear anomaly lines identified, recognizing the anomalies may be wider than they appear considering the geophysical survey did not extend out into the wooded areas.

- 4. Comment: Worksheet #10, Conceptual Site Model, Page 46:** The Detonation Area Near Concrete Pad Subarea subsection of Section 10.4, Previous Investigations, makes no mention of prior sampling for explosives. Also, in the recommendation for conduct of a full Resource Conservation and Recovery Act Facility Investigation (RFI) for munitions constituents (MC), no mention is made of investigating potential explosives contamination, nor is a statement provided as to why this is not necessary. Revise the cited subsection to include this information.

Response: Soil samples collected at the Detonation Area Near Concrete Pad Subarea were analyzed for explosives, NG, and select metals (antimony, arsenic, copper, lead, and zinc). Explosives were not detected in samples collected at this subarea. NG, arsenic, copper, lead, and zinc were positively detected in samples collected at this subarea. A human health and ecological screening level hazard/risk assessment of chemical concentrations detected in surface soil was conducted in the Phase I RFI, only lead was found to be of concern. Therefore sampling was recommended during the Full RFI to further characterize and delineate select metals.

The first paragraph of the Detonation Area Near Concrete Pad Subarea subsection of Section 10.4 has been revised. "During the Phase I RFI, surface soil was investigated at two biased locations, the remaining depression area where the one-time detonation occurred and the low-lying drainage area for the subarea. ***Samples were analyzed for select metals, explosives, and NG. A human health and ecological screening level hazard/risk assessment of chemical concentrations detected in surface soil was conducted in the Phase I RFI (Tetra Tech, 2011); only lead was found to be of concern.*** Lead concentrations in Phase I data were less than human health screening levels and greater than ecological screening levels. Although lead concentrations were not elevated at the Detonation Area Near Concrete Pad Subarea (40.7 mg/kg maximum), lead may present an ecological risk. A Full RFI was recommended to further characterize and delineate metals considered to be COPCs RFI (antimony, arsenic, copper, lead, and zinc)."

- 5. Comment: Worksheet #11, Project Quality Objectives/Systematic Planning Process Statements, Page 57:** The Detonation Area Near Concrete Pad Subarea subsection of Section 11.1, Problem Statement, makes no mention of investigating potential explosives contamination, nor is a statement provided as to why this is not necessary. Revise the cited subsection to include this information.

Also, the Potential OB/OD Subarea and Potential Munitions Trench Subarea subsection states that these areas "...may be contaminated with MC in the form of select metals and explosives." This potential explosives contamination is not recommended for investigation in the related Potential OB/OD Subarea subsection of Worksheet 10. In addition, the Potential OB/OD Subarea and Potential Munitions Trench Subarea subsection lists NG (nitroglycerine) as a "non-MC-related contaminant," which is incorrect. Correct these inconsistencies/errors.

Response: Concerning comment on the Detonation Area Near Concrete Pad Subarea, information has been added to Worksheet #10, see response to Volume 1 Specific Comment #4.

During the Phase I RFI, surface soil samples were collected and only MC metals were identified as COPCs at the Potential OB/OD Subarea while there were no PAL exceedances or COPCs identified at the Potential Munitions Trench Subarea. Subsurface samples were not collected during the Phase I RFI and it is unknown if MC metals or explosives may be present in subsurface soil at these subareas. As a conservative measure surface and subsurface soil samples collected from these subareas will be analyzed for both explosives and select metals at a minimum. If evidence of landfilling is observed during intrusive investigation, then samples will also be analyzed for NG and non-MC-related contaminants.

Worksheet #11 has been revised:

Section 11.1, 1st paragraph, 6th sentence.

"Potential MC include select metals, explosives, and NG, as applicable per subarea. If evidence of landfilling is noted at the Potential OB/OD Subarea or Potential Munitions Trench Subarea, potential contaminants may also include non-MC-related contaminants including volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, herbicides, polychlorinated biphenyls (PCBs), **and** all metals, ~~and NG.~~"

Section 11.1, last item under the Potential OB/OD Subarea and Potential Munitions Trench Subarea bullet.

"If evidence of landfilling [e.g., suspect soils where visual, olfactory, or photoionization detector (PID) observations suggest that soil may be impacted by chemical releases in the past] is determined during intrusive investigations that will be conducted during the MEC phase of the investigation at these subareas (see Appendix A, Volume 2), then surface and subsurface soil in these subareas may also be contaminated with **NG and** non-MC-related contaminants including VOCs, SVOCs, pesticides, herbicides, PCBs, **and** metals, ~~and NG.~~

- 6. Comment: Worksheet #11 Project Quality Objectives/Systematic Planning Process Statement, Page 57: Former Pistol Range Subarea:** This section states that surface soil in the northwestern portion of the site may be contaminated with MC in the form of select metals, but it is not clear why surface soil in the northwestern portion of the former pistol range subarea would be contaminated with MC. It is also unclear why other areas of the former pistol range subarea are not considered for sampling in the SAP. Explain why sample locations are concentrated in the northwestern portion of the former pistol range subarea and other areas are not considered in the SAP.

Response: Refer to Section 10.4, Former Pistol Range Subarea subsection, "The most highly contaminated soil was encountered in the northwestern portion of the subarea."

"Based on Phase I results, a Full RFI was recommended to determine the lateral and vertical extent of metals chemicals of potential concern (COPCs) (antimony, arsenic, copper, lead, and zinc) located in and around the northwestern portion of the subarea."

7. **Comment: Figure 11-1A:** The SAP does not clearly demonstrate how anomaly locations will be selected for MC sampling. It is likely that more anomalies will be investigated than the proposed number of samples, so criteria for prioritization are needed. For example, it is unclear if sampling will be biased toward breached items, subsurface explosive remnants, items with high explosives still present, or items that are rusting. Provide clear criteria that will be utilized to determine how anomalies will be selected for sampling.

Response: Refer to Volume II of the UFP-SAP which details the intrusive anomaly investigation, including a description of how anomalies are chosen for intrusive investigation and figures which show the intrusive anomaly locations. Numerous excavations are planned focused on suspect anomalies identified during the Phase I RFI providing comprehensive coverage; moreover, a minimum of one sample per test pit will be collected even if there is no evidence of contamination and additional contingency samples are also reserved. Intrusive investigations as described in Volume II will be conducted prior to MC sampling, per Item 2 of Section 11.2, Worksheet #11: .

"Intrusive investigations will be conducted at the Rifle Range Subarea, Potential OB/OD Subarea, and Potential Munitions Trench Subarea. The locations of the intrusive investigations will guide locations of the soil sample at the Potential OB/OD Area and Potential Munitions Trench Subarea. At a minimum, at least one soil sample must be collected from each test pit at each subarea, where MEC/MPPEH is encountered or evidence of chemical contamination from landfilling is encountered; and depending on the results of the intrusive investigations, additional soil samples may be collected. The locations of the intrusive investigations may also guide the locations of the discretionary soil sample at the Rifle Range."

Intrusive investigation locations (as presented in Volume II) will be added to Worksheet #17 figures of Volume I, Figure 17-5, Rifle Range Subarea Enlargement of Wooded Embankment Target Area, Figure 17-6, Potential OB/OD Subarea, and Figure 17-7, Potential Munitions Trench Subarea.

8. **Comment: Worksheet #11: Project Quality Objectives/Systematic Planning Process Statement, Page 5:** Item 2 requires sampling when "evidence of chemical contamination from landfilling is encountered," but it is unclear how this will be determined, since metal contamination may not be visible and cannot be found using typical field equipment. Revise the SAP to specify the evidence that will be used to evaluate whether chemical contamination from landfilling is present.

Response: Exact sample locations will be determined in the field based on the professional judgment of the FOL and SUXOS. A determination will be made based on the results of the intrusive investigation (e.g., was the source of the anomaly volcanic rock? MEC/MPPEH? construction debris? visual observation of debris or soil staining?). Also, please refer to the response to Specific Comment #7; samples will be collected regardless of whether contamination is evident.

The following will be added as the fourth sentence of Item 2, ***“Sample locations will be chosen in the field based on the results of the intrusive investigation and at the discretion of the FOL; if no evidence of contamination is present, a minimum of one sample will be collected from the center of the excavation.”***

9. **Comment:** **Worksheet #11 - Project Quality Objectives/Systematic Planning Process Statement, Page 58: Worksheet #11, Page 59:** Item four calls for analyses for explosives, but these are not included in the Worksheet #18 tables. Revise the tables in Worksheet #18 to be consistent with Worksheet #11.

Response: Item 4 of Section 11.2, Information Inputs, lists all of the analysis that may be performed during the Full RFI, with the phrase “as applicable for a given subarea” at the end of the list. This list is not specific for each subarea, but only a general list. Explosives analysis will be conducted on samples as shown on Worksheet #18 from:

- Rifle Range Subarea, 1) area between the earthen berm and wooded embankment, 2) short yardage range target stands, and 3) discretionary samples, as necessary, as shown on Worksheet #18.
- Potential OB/OD Subarea
- Potential Munitions Trench Subarea

10. **Comment:** **Worksheet #11 - Project Quality Objectives/Systematic Planning Process Statement, page 60, Section 11.3:** For the Potential OB/OD and Potential Munitions Trench Subarea, there are no rationale for the depths of subsurface soils to be investigated. Typically backhoes are used to excavate trenches, so most disposal trenches extend to more than 4 feet below ground surface (ft bgs). Revise the SAP to explain why four ft bgs is a sufficient depth in the OB/OD and Potential Munitions Trench subareas.

Response: During the Phase I RFI, weathered bedrock was exposed at the land surface, particularly at steep embankments and, moreover, refusal due to bedrock during soil boring occurred at shallow depths at these subareas. Although a limited subsurface investigation was conducted, bedrock was encountered consistently at shallow locations throughout the subareas; therefore, it is believed that if subsurface disposal occurred, it would have taken place at shallow rather than deep subsurface. See Response to Volume I Specific Comment #3, this information has been added to Worksheet #10.

Details of the intrusive investigation are included in Volume II of the UFP-SAP. As explained in Volume II, at the Potential OB/OD Subarea, because munitions are not fired from a weapon during detonation, the maximum probable depth from kick-out was estimated to be approximately 1 foot bgs. MEC/MPPEH may also be present in the subsurface because munitions are commonly buried prior to detonation via OB/OD to suppress the explosion and minimize noise. Duds, misfires, or partial destructions could result in MEC/MPPEH hazards at 4 feet bgs or deeper in the subsurface soil of the detonation areas; however, because of shallow bedrock at the subarea, depths are expected to be less than 4 feet.

At the Potential Munitions Trench Subarea, MEC/MPPEH may be present in the surface and/or subsurface from approximately 1 foot bgs (assuming 1 foot of cover material at the top of the trench) extending up to 10 feet bgs (assuming typical backhoe reach). However, based on site-specific conditions as identified during the Phase I RFI (auger refusal was

encountered at all of the soil boring locations at 0.5 foot bgs), actual burial depths are expected to be much less and are not anticipated to be greater than 4 feet bgs.

- 11. Comment: Worksheet #12, Measurement Performance Criteria Table – Field Quality Control Samples, Page 63:** The footnotes for this table indicate that duplicate sample analyses for metal analytes should be within four times the limit of quantitation (LOQ) if results are less than five times the LOQ. It is also stated that duplicate samples for non-metal analytes should be within two times the LOQ if results are less than five times the LOQ. It is unclear why the low-level criteria for metal and non-metal analytes is different. Revise the SAP to discuss the difference in duplicate sample acceptance criteria for low concentrations.

Response: The metals criteria is based on the USEPA Region II SOP, "Evaluation of Metals Data for the Contract Laboratory Program (CLP) based on SOW ILM05.3", SOP HW-2 Rev. 13 (September 2006). There is no corollary guidance for Organics. The guidance listed in the footnote for non-metals is based on criteria used by USEPA Region I for lack of other regional guidance. No SAP revision is necessary.

- 12. Comment: Worksheet #14 - Summary of Project Tasks, Page 67:** The section on global position system (GPS) locating does not include the required accuracy for the GPS survey. Revise Worksheet #14 to include this information.

Response: A hand-held GPS unit capable of sub-meter accuracy will be used during MC sampling as per Worksheet #14.

- 13. Comment: Worksheet #14 - Summary of Project Tasks, Page 67: GPS Locating:** An SOP for alternative positioning (last sentence) is needed, since SOP-09 does not include this activity. Revise Worksheet #14 to include this information.

Response: If conditions prohibit the use of GPS for a sample location, alternate positioning techniques will be used. As described in Worksheet #14, these techniques may include tape measured grids or fiducial. As necessary, if used, the field team will document the alternative method used. The following revision has been made to the last sentence of the GPS Locating section of Worksheet #14, "If poor satellite reception in an area prohibits GPS use, then data will not be collected until more satellites are available and the accuracy criteria are met, or an alternative positioning technique will be **employed and documented in the field logbook** (e.g., tape-measured grid or fiducial; **a fiducial is a fixed reference point(s) to which other points can be related**)."

- 14. Comment: Worksheet #17 - Data Collection Plan for SWMU 77, Section 17.3.1, Pistol Range Subarea Page 95:** The sampling locations within the text are not shown in the figures as presented in the RFI. The text states that 22 discrete samples will be collected within the Pistol Range Subarea, six samples will be collected from above the natural embankment (locations 77PRSB037 through 77PRSB042), six samples will be collected from the toe of the natural embankment (locations 77PRSB043 through 77PRSB048), and up to ten samples will be collected from locations scattered throughout the range and firing lines (locations 77PRSB049 through 77PRSB058). However, these sampling locations are not shown on Figure 17-1 within the Pistol Range Subarea. Further, Worksheet #18.1

includes six samples to be collected from above the natural embankment (locations 77PRSB037 through 77PRSB042), six samples to be collected from toe of the natural embankment (locations 77PRSB043 through 77PRSB048), and up to ten samples to be collected from locations scattered throughout the range and firing lines (locations 77PRSB049 through 77PRSB058); 12 additional Natural Embankment samples, and up to 16 discretionary samples. Review Worksheets #17 and 18 and Figure 17-1 and revise them to be consistent.

Response: The paragraph cited above lists the 22 discrete surface soil samples to be collected at the Pistol Range Subarea. The remainder of the paragraph which describes the remainder of the samples to be collected at the Pistol Range Subarea is presented at the top of Page 96, "Twelve discrete subsurface (1 0.5 to 2 feet bgs) soil samples (locations 77PRSB059 through 77PRSB070) will be collected from **samples distributed throughout** the natural embankment to determine the vertical extent into the berm of contamination found during the Phase I RFI. In addition, up to four discretionary samples (77PRSB071 through 77PRSB074) may be collected at locations to be determined in the field to better characterize surface and/or subsurface soil." Worksheet #18.1, page 104, lists 4 discretionary samples, 77PRSB071 through 77PRSB074, to be collected at the Pistol Range Subarea.

On Figure 17-1, the light blue symbols indicate locations where surface soil samples will be collected (22 symbols) while the dark blue symbols indicate locations where subsurface soil samples will be collected (12 locations), discretionary sample locations are not shown on Figure 17-1 as those locations will be determined in the field.

15. **Comment: Worksheet #17 - Data Collection Plan for SWMU 77, Section 17.3.5, Page 98 through 99:** This section of the SAP discusses sampling within the potential OB/OD subarea. However, if MEC and/or landfill debris are not encountered, it is unclear how the sample locations will be selected or how the suite of analytes will be determined. Revise the section to provide this information.

Response: Volume II of the UFP-SAP describes which anomalies will be intrusively investigated at the Potential OB/OD Subarea, subsurface soil samples will be collected from these locations. Surface soil sample locations are shown on Figure 17-6. The second and third paragraphs of Section 17.3.5 have been revised to clarify the sampling plan at the Potential OB/OD Subarea.

"Intrusive activities (excavations) will be conducted during the MEC phase of investigation (**detailed in Volume II of the UFP-SAP**). A minimum of **9 samples including** one sample per test pit and up to a maximum of 12 discrete soil samples (depths and locations to be determined based on MEC excavation results) (locations 77OBSB011 through 77OBSB022) will be collected at the areas of test pit and hand dig excavations (**see Volume II for locations of test pits and hand dig excavations**). Regardless of whether MEC and/or landfill debris are encountered, soil samples will be collected to provide adequate analytical data to conduct a risk assessment for this subarea, although the suite of analytes will vary depending on the source of the anomalies. **If no evidence of contamination is present, a minimum of one sample will be collected from the center of the given excavation.** All of the soil samples collected will be submitted to the laboratory, **at a minimum**, for explosives and select metals (antimony, arsenic, copper, lead, and zinc) analysis. However, if during the intrusive MEC activities, evidence of landfilling is found (see Figure 11-1A), the

sample(s) ~~may be~~ **will also be** submitted to the laboratory **for NG and** Appendix IX VOC, SVOC, pesticide, herbicide, PCB, and metals, ~~explosives, and NG~~ analysis, as applicable. If contamination is identifiable, e.g., drum of solvent, the Project Team will be consulted to determine if a reduced analyte set is appropriate. If unidentifiable, then samples will be analyzed for all analytes as listed.

The MC sampling **at the Potential OB/OD Subarea** will also include collection of four discrete surface (0 to 6 inches bgs) soil samples (locations 77OBSB007 through 77OBSB010) located across the site as shown on Figure 17-6 **to better characterize the surface soil and to have an adequate number of samples to conduct risk assessment.** In addition, up to four discretionary surface or subsurface soil samples (77OBSB023 through 77OBSB026) may be collected at locations to be determined in the field to fully characterize surface and subsurface soil.”

- 16. Comment: Worksheet #18, Sampling Locations and Methods/SOP Requirements Table, Pages 101 to 121:** This table indicates that the sample identification for field duplicates will contain “FD”. However, it is recommended that field duplicates be submitted to the laboratory blind. Revise this table to utilize a different identification system for field duplicates.

Response: All field duplicates are submitted to the laboratory blind. The use of the nomenclature “FD” does not reveal the parent or associated sample to the laboratory and avoids confusion by clearly distinguishing between the field samples and quality control samples. The FOL maintain a list of all quality control samples and associated parent samples, which is not provided to the laboratory. No changes to the SAP are warranted.

- 17. Comment: Worksheet #18.6 and Figure 17-7:** None of the sampling locations proposed in Worksheet 18.6 are shown on Figure 17-7. It is understood that sampling locations may depend on MEC geophysical surveys, but the potential sampling locations should be depicted on Figure 17-7, or the text should state that a revised figure with proposed locations will be submitted to the Regulatory Agencies for review before any sampling is performed. Revise the SAP to address this issue.

Response: Agree, the 7 discrete surface soil sample locations have been added to Figure 17-7. The location of the subsurface soil samples will be determined after the anomaly intrusive investigations are complete, details of the intrusive investigations are provided in Volume of the UFP-SAP. Text has been added to the second paragraph of Section 17.3.6 directing the reader to Volume II for the locations of the intrusive investigations, “Intrusive activities (excavations) will be conducted during the MEC phase of investigation (**detailed in Volume II of the UFP-SAP**). Ten discrete soil samples (depths and locations to be determined based on MEC excavation results) (locations 77MTSB011 through 77MTSB020) will be collected at the areas of excavation (**see Volume II for locations of the excavations**).”

- 18. Comment: Worksheet #18.5 and #18.6, Pages 98 through 99 and pages 119 through 121:** Worksheets 18.5 and 18.6 only include metals and explosives, but potential analytes include VOCs, SVOCs, pesticides, herbicides, and PCBs. Revise these worksheets to include all potential analytes.

Response: Footnote #2 of Worksheets #18.5 and #18.6 states that additional analysis may be conducted at the Potential OB/OD Subarea and Potential Munitions Trench Subarea: "2 – If evidence of landfill activities is observed by the MEC investigation, the analyses may be expanded to include NG and Appendix IX VOCs, SVOCs, pesticides, herbicides, PCBs, and metals (see Figure 11-1A)."

19. Comment: **Worksheet #19, Analytical SOP Requirements Table, Pages 123 to 125:** The analytical SOP that will be used for the analysis of herbicides is not included in this table. Revise this table to identify the analytical SOP that will be used to analyze the herbicides and include the sample preservation information.

Response: Herbicide information has been added to Worksheet #19 as shown below.

Matrix	Analytical Group	Analytical and Preparation Method/ SOP Reference ⁽¹⁾	Containers (number, size, and type)	Sample Volume (units)	Preservation Requirements (chemical, temperature, light protected)	Maximum Holding Time (preparation/ analysis)
<i>Aqueous QC samples</i>	<i>Herbicides</i>	<i>SW-846 8151A, Empirical SOP-208/304</i>	<i>Two 1-L glass amber bottles</i>	<i>1,000 ml</i>	<i>Cool to 0 to 6 °C</i>	<i>7 days until extraction, 40 days to analysis</i>
<i>Soil</i>	<i>Herbicides</i>	<i>SW-846 8151A, Empirical SOP-308/310</i>	<i>One 4-oz glass jar with a Teflon-lined lid</i>	<i>15 g</i>	<i>Cool to 0 to 6 °C</i>	<i>14 days until extraction, 40 days to analysis</i>

20. Comment: **Worksheet #20, Field Quality Control Sample Summary Table, Page 126:** The numbers of samples in this table do not appear to be consistent with the number of samples for each method discussed in Worksheet #17 and listed in Worksheet #18. For example, Worksheet #18 identifies 41 samples to be collected if landfill material is encountered (samples 77OBSB007 through 77OBSB026, and 77MTSB004 through 77MTSB024), but this worksheet identifies 38 samples to be analyzed for VOCs, SVOCs, pesticides, herbicides, PCBs, and metals if landfill material is found. The collection of 41 samples would result in an increase in the number of QC samples required. Revise this table to identify the number of samples to be analyzed by each method as discussed in Worksheets #17 and #18, and to update the amount of QC samples required accordingly.

Response: Agree. The table has been updated.

21. Comment: **Worksheet #21, Project Sampling SOP References Table, Pages 127 to 128:** This worksheet notes that several SOPs will be modified for project work, but it is unclear how these SOPs will be altered. Revise this worksheet to identify how the SOPs will be altered for the current investigation.

Response: Worksheet #21 has been revised, SOP-03 and SOP-06 have not been modified; therefore the "Y" in the "Modified for Project Work?" column has been changed to

"N". SOP-04, Sample Identification Nomenclature, was modified to show site-specific sample nomenclature; therefore, "**(modified to show site-specific sample nomenclature)**" has been added to the "Modified for Project Work?" column.

- 22. Comment: Worksheet #28, Laboratory QC Samples Table, Pages 150 to 166:** This worksheet contains several references to Appendix G of the Department of Defense Quality Systems Manual Version 4.2; however, this appendix does not contain some of the referenced information. For example, acceptance criteria for the recovery of cyanide in laboratory control samples (LCS) and matrix spikes (MS) (Method 9010B, 9012A) are not included. Additionally, acceptance criteria for the recovery of surrogates for explosives (Method 8330B) and herbicide analyses (Method 8151A) are not included. Revise this worksheet to provide the acceptance criteria for these methods, or provide a specific reference to where this information can be found.

Response: The QC limits have been added to Appendix D. Reference to these QC has been added to the beginning of Worksheet #28, "**The QC limits for each analyses are provided in Appendix D.**" Worksheet #28 has also been revised to add non-DOD surrogate limits (low-level SVOCs, herbicides, and explosives [including NG]).

- 23. Comment: Worksheet #28, Laboratory QC Samples Table, Page 163:** This table indicates that a post digest spike (PDS) will be performed when a serial dilution fails or all analyte concentrations are less than 50 times the LOD, and the acceptance criteria for the PDS recovery is 75 to 125 percent (%); however, it does not indicate that the PDS will be performed when a MS does not meet acceptance criteria. Method 6010C indicates that a PDS should be performed when MS/MSD recoveries are unacceptable, and the acceptance criteria for the PDS should be 80 to 120%. Revise this table to indicate that a PDS will also be analyzed whenever MS/MSDs do not meet acceptance limits, and to identify the %R acceptance limits for the PDS as 80 to 120%.

Response: The frequency with which the PDS is run is in accordance with the DOD QSM version 4.2 Appendix F, Table F-7. Trace Metals Analysis by Inductively Coupled Plasma/Mass Spectrometry (ICP/MS) (Method 6020). No SAP revision is necessary.

- 24. Comment: Worksheet # 31, Planned Project Assessments, Page 170:** Field audits have not been identified in this worksheet. It is unclear if field audits will be conducted for the current investigation. Revise this worksheet to discuss whether field audits will be performed.

Response: Worksheets #31 (and #32) list the only the assessments being performed for this project. The UFP SAP Manual Section 4.1.1 indicates that the various assessments listed "may be performed", none are actually required by the UFP SAP Manual. No SAP revision is necessary.

- 25. Comment: Worksheet #37 – Data Usability Assessment, Page 182:** The first section in this worksheet states that there may be reason to use rejected data in a weight of evidence argument, especially when the rejected data supplements data that has not been rejected.

However, rejected data should never be used for decision making. Revise the SAP to remove this statement.

Response: Per the comment, "~~Although rejected data will generally not be used, there may be reason to use them in a weight of evidence argument, especially when they supplement data that have not been rejected. If rejected data are used, their use will be supported by technically defensible rationales.~~", has been deleted and "**Rejected data will not be used for the achievement of project objectives.**" has been added.

Further, the last paragraph of Section 11.4 has been deleted, "~~Although rejected data will generally not be used, there may be reason to use rejected data in a weight of evidence argument, especially when they supplement data that have not been rejected. If rejected data are used, their use will be supported by technically defensible rationales. Therefore, any rejected data will be discussed with the regulatory agencies during the Full RFI to determine which data are appropriate for use.~~" and "**Rejected data will not be used for the achievement of project objectives.**" has been added as the last sentence of Section 11.4.

26. **Comment:** Figure 17-7: The aerial photograph inset suggests the width of the burial trenches, but the red lines representing the potential trenched areas do not. Trenches should not be represented as thin lines on this figure. According to the scale on the aerial photograph inset on Figure 17-7; one inch represents approximately 200 feet, so it appears the trenches were approximately 20 to 25 feet wide. This information should be transferred to Figure 17-7 to clarify the relationship between the trenches and the survey lines. For example, the eastern two survey lines may represent the same trench. Additionally, it is unclear whether all 5 of the apparent trenches in the eastern part of this site are accounted for. It appears a short trench is located in the southeast, according to the aerial photo inset. In addition, it is not clear why the survey lines did not parallel the road, to get an indication of the location and width of each trench. Finally, for these burial trenches, the sampling data should be summarized in the text, including whether any debris was encountered and the depths where samples were collected. Revise Figure 17-7 and the text of the SAP to address these issues.

Response: The red lines and red dashed lines represent the Subsurface Anomaly Trend Line from the Phase I RFI EM31 in Phase Response and the Approximate Transect from the Phase I RFI, respectively, as indicated in the legend. These red lines represent areas surveyed during the Phase I RFI. The approximate locations of the trenches have been traced from the aerial to Figure 17-7. Worksheet #10 in provides a summary of the Phase I RFI results; no debris was noted on the ground surface during the Phase I RFI. Appendix B-3 presents the data summary tables, only surface soil samples (0 – 6 inches bgs) were collected during the Phase I RFI. The trend lines from the Phase I RFI are being reacquired for the Full RFI and excavations will be centered along the trend lines.

27. **Comment:** Appendix C, MC Field Standard Operating Procedures (SOPs): Although this appendix is supposed to present procedures for sampling for MC, it appears to be a somewhat generic series of sampling SOPs. It does not contain or reference the procedures for ensuring the safety of the operation in an area potentially contaminated with munitions and/or explosives in concentrations or particle sizes that present an explosive hazard. Include this information in the appendix, or provide a reference therein as to where it may be found elsewhere in the plan.

Response: Health and safety requirements are addressed in the HASP/APP (separate document). All sampling at MEC/MPPEH subareas will be conducted under the direction of the SUXOS.

28. **Comment:** **Appendix D, Analytical Laboratory Accreditation and Certification Information, Pages 389 to 418 of pdf:** The pages presenting the acceptance limits in this appendix do not include the analyte name. Revise this appendix to clearly present the laboratory acceptance limits for each analyte.

Response: The Appendix D pages presenting laboratory acceptance limits have been re-formatted to show the analyte name with it corresponding acceptance limits.

VOLUME I MINOR COMMENTS

1. **Comment:** **Worksheet #17, Page 97, second and third paragraphs:** The text should cite Figure 17-5, not Figure 17-4 for locations in the embankment and wooded berm area. Revise the SAP to address this issue.

Response: References to Figure 17-4 in the second and third paragraphs of the Target Area Earthen Berm and Wooded Embankment section on Page 97 have been revised to indicate that sample locations on the earthen berm and wooded embankment are shown on "Figure 17-5."

2. **Comment:** **Worksheet #17, Page 98:** Figure 17-4 should be cited for the Firing lines, instead of Figure 17-5. Revise Worksheet #17.

Response: Reference to Figure 17-5 in the first paragraph of the Firing Line section on Page 98 has been revised to indicate that sample locations at the firing line are shown on "Figure 17-4."

**VOLUME II:
VOLUME II GENERAL COMMENTS**

1. **Comment:** The data management discussion does not discuss where hardcopy project documents and the project database will be stored or maintained and for how long these documents will be stored before archival/disposal. Revise the data management discussion to identify the time period and location where project files will be stored in accordance with Section 3.5, Data Management Tasks, of the UFP QAPP Manual.

Response: Worksheet #29, Project Documents and Records Tables, provided information on where documents will be maintained. The following has been added to the last column of the table, "SAP/Project File, Long-Term Third-Party Professional Document Storage Firm (*Business Records Management, located at 651 Mansfield Ave., Pittsburgh, PA 15220*)."

VOLUME II SPECIFIC COMMENTS

1. **Comment: Acronyms, Page 4:** The acronyms "ATFE" and "BATFE" are not the ones currently used by the Bureau of Alcohol, Tobacco, Firearms and Explosives in their documents. They currently use the acronym "ATF" in their documents and on their website. Unless it is the intent of this document to establish acronyms that are site or document-specific, use the official ATF acronym. Also, the acronym "ESQD" should be defined as "Explosives Safety Quantity-Distance," and the acronym "MFD" should be defined as "Maximum Fragment Distance." Revise the SAP to make these corrections.

Response: Revisions to the acronyms and acronym definitions have been made per the comment.

2. **Comment: Worksheet #6, Communication Pathways, Pages 25 to 28:** This worksheet does not include EPA in any of the communication pathways. Revise the table to specify that the EPA will be notified when significant corrective actions or changes occur and include the form of communication and timeframe for this notification.

Response: Worksheet #6 in both Volumes I and II has been revised. USEPA (and PREQB) has been added to the Communication Drivers field issue that require changes in field tasks and scope of field work and recommendations to stop work and initiate work upon corrective action.

3. **Comment: Worksheet #7, Personnel Responsibilities and Qualifications Table, Pages 29 to 33:** This worksheet does not include the responsibilities for several personnel identified in Worksheet #3, Distribution List. For example, the responsibilities of the NAVFAC MRP Senior Technical Advisor Mike Green and the NAPR facility contact Pedro Ruiz have not been included. Revise this worksheet to include the responsibilities for these personnel.

Response: Key personnel identified in Worksheet #3 have been added to Worksheet #7; personnel identified in Worksheet #3 that receive cover letters only or that are noted to only

receive a copy of the UFP-SAP if directed by PREQB have not been added to Worksheet #7.

- 4. Comment: Worksheet #11, Project Quality Objectives/Systematic Process Statements for SWMU 77 Full RFI, Page 60:** This worksheet states that Figure 11-1 provides the decision tree for each subarea, but this figure has not been included. Revise the SAP to include this figure.

Response: Figure 11-1, Study Goal and Decision Rule Flow Chart has been added to Volume II of the SAP.

- 5. Comment: Worksheet #14, Summary of Project Tasks, Manual Anomaly Intrusive Investigation (Hand Digs), Page 71:** This table states "Locate, flag, and record random number of each subsurface hand-dig locations in accordance with Worksheet #17." However, Worksheet #17, Section 17.8.1, Scope, Page 84, states that, "All anomalies will be intrusively investigated in real time using manual techniques (hand digs)." Correct one of the cited statements to make them consistent.

Response: Worksheet 14 has been revised. The second bullet of the Manual Anomaly Intrusive Investigation (Hand Digs) definable feature of work has been revised, "**All anomalies will be investigated in real time using manual techniques** Locate, flag, and record random number of each subsurface hand-dig locations in accordance with worksheet #17".

- 6. Comment: Worksheet #17, Section 17.2.2, Site Accessibility and Traffic Control, Page 77:** The first paragraph of this section states that, "If non-site personnel or non-essential non-UXO personnel enter the EZ, all MEC operations will cease until the EZ is re-established." This statement is confusing and conflicts with Section 17.2.3, Site Security. As this currently reads, it appears to allow non-essential personnel that are "UXO personnel" unrestricted access to the site at all times. In addition, the term "UXO personnel" includes UXO-Sweep Personnel that may not be UXO Technicians. Review the cited statement and revise it as necessary.

Also, the second paragraph of the section states that, "The EZ is based on the blast over pressure distance (K328) for a M651 40mm CS grenade, the primary Munition with the Greatest Fragmentation Distance (MGFD). No explanation as to what "K328" is (other than the "blast over pressure distance") is provided, and "K328" is not identifiable as a specific distance in feet or meters. Expand this paragraph to better explain what the term "K328" is and how it is used, or reference where this information is provided elsewhere in the document.

The second paragraph also notes that, "If an item with a larger EZ than the M651 CS grenade is found, then the hazardous fragmentation distance (HFD) for the M383 40mm grenade as the contingency MGFD will be observed." This is somewhat confusing and does not explain what action is required if the newly discovered munition has a greater EZ requirement than the M383 40mm grenade. As the correct process is explained in the third paragraph of this section, delete the cited sentence from the second paragraph.

Response: Agree. The following text revisions have been made:

Section 17.2.2, third sentence has been revised in response to the comment, "If ~~non-site personnel~~ or non-essential ~~non-UXO~~ personnel enter the EZ, all MEC operations will cease until the EZ is re-established."

Section 17.2.2, second paragraph, fourth sentence has been revised in response to the comment, the intentional minimum separation distance is the K328 and for this project, it is 63 feet. "The EZ is based on the ***Intentional Minimum Separation Distance (MSD)*** ~~blast over pressure distance~~ (K328) ***of 63 feet*** for a M651 40mm CS grenade, the primary Munition with the Greatest Fragmentation Distance (MGFD)."

Per the comment, the following text has been deleted from the second paragraph of Section 17.2.2, "If an item with a larger EZ than the M651 CS grenade is found, then the hazardous fragmentation distance (HFD) for the M383 40mm grenade as the contingency MGFD will be observed."

7. **Comment:** **Worksheet #17, Section 17.13, Manual Anomaly Intrusive Investigation – Hand Digs, Page 95:** The first paragraph on this page refers to MEC collection points and thermal treatment. Expand on "thermal treatment," i.e., is the intention to ship a thermal treatment oven to the site for small arms, or is it to use an explosive detonation treatment.

Response: The intention is to thermally treat by detonation, the fifth sentence of the third paragraph of Section 17.13 (revised Section 17.12) has been revised, "~~These points~~ ***This collection point*** will be under the control of the SUXOS until the item has been thermally treated ***by detonation.***"

8. **Comment:** **Worksheet #17, Section 17.14.2, Methods and Procedures, Page 96:** Approximately one cubic yard of soil at a time is a significant amount of soil to be swept for 20mm projectiles. Provide the details of the process the Quality Control personnel will employ to inspect the soil.

Response: The soil will be spread to a depth of no more than 8 inches deep before surveying, the sixth sentence of the second paragraph of Section 17.14.2 has been revised, "During investigation and removal operations, ~~approximately~~ ***no more than*** 1 cubic yard (CY) of soil will be spread on the ground at a time, ***no more than 8 inches deep.***" Quality control procedures are explained in Worksheet #20, under Mechanized Anomaly Intrusive Investigation.

9. **Comment:** **Worksheet #17, MEC Management – Treatment, Page 101:** The second paragraph describes the use of collection points for MEC that is safe to move but also makes the statement that "no consolidated shots will be allowed." This appears to be inconsistent. Provide the reasoning for not allowing consolidated demolition shots when the MEC items are to be consolidated at collection points.

Response: The seventh sentence of the third paragraph of Section 17.14.2 (revised Section 17.13.2) has been revised, "Unfuzed safe-to-move items ~~will be consolidated~~ ***may***

be moved to a central location determined by the SUXOS for later explosive treatment.” Further, the third sentence of the second paragraph of Section 17.16 (revised Section 17.15) has been deleted, “~~No consolidated shots will be allowed.~~”

10. **Comment:** **Worksheet #21, Project SOP References Table, Page 113:** This worksheet notes that several SOPs will be modified for project work, but it is unclear how these SOPs will be altered. Revise this worksheet to identify how the SOPs will be altered for the current investigation.

Response: MRP SOP 01, MRP SOP 02, and MRP SOP 07 have not been modified for the project, Worksheet #21 has revised and the “Y” has been changed to “N” in the “Modified for Project Work?” column.

11. **Comment:** **Worksheet #33, QA Management Reports Table, Pages 143 to 144:** This table does not include the final report for the MEC investigation as recommended in the UFP QAPP Manual. Revise this worksheet to include the final report.

Response: The Full RFI Report has been added as the last line of Worksheet #33.

12. **Comment:** **Worksheet #35, Validation (Steps IIa and IIb) Process Table, Pages 152:** The top row on this page does not identify the definable feature of work. Revise Worksheet #35 to identify this missing definable feature of work.

Response: This row is continued from page 151, Geophysical Data Processing and Interpretation is the definable feature of work and will be added to the first column on page 152.

13. **Comment:** **Worksheet #36, Analytical Data Validation (Steps IIa and IIb) Summary Table, Page 154:** This table indicates that validation Step IIb is not applicable for this MEC investigation; however, measurement performance criteria are established in Worksheet #12 of this SAP. This table should identify who will perform validation of the measurement performance criteria and reference where the criteria can be found in the SAP. Revise Worksheet #36 to provide this information.

Response: Worksheet #36 has been revised as follows:

Step IIa/IIb ⁽¹⁾	Matrix	Analytical Group	Validation Criteria	Data Validator (Title and organization)
IIa	Surface Soil	<p>Detector-Aided Surface Survey</p> <p><i>Donor Explosive Handling</i></p> <p><i>MEC/MPPEH Management</i></p>	<p>Detection and location of blind seed items for step-out transects.</p> <p><i>Explosives handling performed in compliance with OP 5 and BATFE regulations.</i></p> <p><i>Treatment conducted per MRP SOP 2, SOP 07.</i></p>	<p>TBD - SUXOS Tetra Tech</p> <p>TBD - UXOQCS Tetra Tech</p>
IIa	Subsurface Soil	<p>Geophysics investigation</p> <p>Detector-aided subsurface surface survey with manual MEC/MPPEH and non-munitions-related debris removal</p> <p>Intrusive investigation to depth as specified in Worksheet #17 and within 2 feet of target anomaly's reacquired location</p> <p>Test pits</p>	<p>a) Achievement of goals established for the IVS.</p> <p>b) Detection and location of blind seed items</p> <p>c) All anomalies detected and investigated to depth specified in Worksheet #17 and within radius of 2 feet of reacquired target anomaly location. No MEC 20mm or larger remains in the excavation.</p>	<p>Bill Randall - Project Geophysicist TBD - SUXOS Tetra Tech</p> <p>TBD - UXOQCS Tetra Tech</p>
IIb	<i>Surface Soil</i>	<p><i>Site Surveying</i></p> <p><i>Vegetation Management</i></p> <p><i>IVS</i></p> <p><i>GPS Positional Data Collection</i></p> <p><i>Detector-Aided Surface Survey</i></p>	<p><i>GPS positional error at known location less than 1 meter.</i></p> <p><i>Vegetation cut to between 6 to 12 inches above the ground surface.</i></p> <p><i>100% vertical detection of industry standard objects (ISO) at specified depth.</i></p> <p><i>HDOP less than three, number of satellites at least four. Sub-Meter.</i></p> <p><i>Discover and record all blind seeds placed in transect.</i></p>	<p><i>TBD - SUXOS Tetra Tech</i></p> <p><i>TBD - UXOQCS Tetra Tech</i></p>
IIb	Subsurface Soil	Geophysics Investigation	Minimize data dropouts and unusable data. 90% minimum of usable data per survey line.	<p>Bill Randall - Project Geophysicist TBD - SUXOS Tetra Tech</p> <p>TBD - UXOQCS</p>

		<p><i>Intrusive investigation to depth as specified in Worksheet #17 and within 2 feet of target anomaly's reacquired location</i></p>	<p><i>Type, condition, and fuzing state (of munitions-related items correctly identified).</i></p> <p><i>Type of non-munitions-related items.</i></p> <p><i>Detect all Seed Items, MEC/MPPEH 20 millimeter (mm) or larger.</i></p>	<p>Tetra Tech</p>
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1. Ila = compliance with methods, procedures, and contracts (see Table 10, page 117, UFP-QAPP manual, V.1 March 2005).
 Iib = *comparison with measurement performance criteria (see Table 10, page 117, UFP-QAPP manual, V.1 March 2005)*
 not applicable for MEC investigation.

VOLUME II MINOR COMMENTS

1. **Comment: Acronyms, Pages 5 and 6:** The following acronyms are incorrectly defined. The correct definitions may be found in DoDM 6055.09-M-V8 (Department of Defense Ammunition and Explosives Safety Standards, Volume 8, Glossary):

- The acronym "DDESB" should be defined as "Department of Defense Explosives Safety Board."
- The acronym "ESQD" should be defined as "Explosives Safety Quantity-Distance."
- The acronym "ESS" should be defined as "Explosives Safety Submission."

Make these corrections here and at all occurrences in Volumes I and II.

Response: The acronyms and definitions as listed above have been revised in both Volumes I and II of the SAP.

2. **Comment: Worksheet #9, Project Scoping Session Participants Sheet:** The attendee listed as "Tom Paul" should read "Tom Hall." Revise the SAP to make this correction.

Response: Tom Paul has been revised to read "Tom *Hall*" in Worksheet #9 of both Volumes I and II of the SAP.

Response to PREQB Comments Dated February 17, 2012

RESPONSE TO PREQB COMMENTS DATED FEBRUARY 17, 2012
(Letter addressed to USEPA and provided to Navy via e-mail)
DRAFT FULL RCRA FACILITY INVESTIGATION SAMPLING AND ANALYSIS PLAN,
VOLUMES I AND II, DATED DECEMBER 2011
SWMU 77 – SMALL ARMS RANGE
NAVAL ACTIVITY PUERTO RICO
CEIBA, PUERTO RICO

Note that where the comment response provides revised text, text additions are shown in bold italics and deleted text is shown as strikethrough.

VOLUME 1 MUNITIONS CONSTITUENTS SAP

General Comments

- 1. Comment:** Subsurface soil samples were not collected during the Phase I RFI and mobile MC were detected during the Phase I RFI (such as nitroglycerine [NG]). Therefore, please conduct a subsurface investigation in those areas where MC COPCs exceed EPA's Soil Screening Levels (SSLs). These areas include the Pistol Range firing lines, the Detonation area near the concrete pad, and Rifle Range (all firing lines). Note that where site conditions are similar, a reduced number of samples may be proposed, where the results apply across similar sites with similar NG and other detected explosives (RDX) concentrations. This additional data is needed to evaluate whether mobile MC has migrated to the subsurface sufficient to impact groundwater. Specific areas where these constituents exceed soil screening levels (SSLs) for the migration to groundwater transport pathway are discussed in the Worksheet-specific comments below.

Response: Subsurface soil sampling strategy is discussed below in the subarea-specific comment responses. However, with regard to NG, NG contains a hydrocarbon chain, which renders it susceptible to aerobic biodegradation; it is sufficiently biodegradable that mobility is seldom an issue and so usually will be attenuated before reaching groundwater. When NG is bound with nitrocellulose it is not susceptible to degradation in soil until the nitrocellulose is weathered away. In such circumstances, a low-level of NG will remain in the soil but will have no impact on groundwater (US Army Corps, 2006). Therefore, subsurface samples for NG analysis have not been added.

- 2. Comment:** Similar to concerns associated with mobile explosives and propellant constituents, metals may become mobile under certain conditions (corrosion of lead bullets mobilizes lead, for example). Therefore, subsurface sampling is requested in areas where metals contamination exceeds EPA's SSLs to document whether metals migration to the subsurface is occurring, to provide information needed to determine if groundwater sampling is warranted, and to determine the vertical extent of contamination.

Response: Subsurface soil sampling strategy is discussed below in the subarea-specific comment responses.

- 3. Comment:** During the Phase I RFI, the laboratory failed to analyze samples marked on the chain-of-custody for MS/MSD analyses of metals. As stated in PREQB's comments on the Phase I RFI Report, this was considered a significant deficiency in the QA program and impaired the ability of performing a proper data usability assessment since metals analyses have no means of monitoring matrix effects in the individual samples. Therefore, please ensure MS/MSDs are analyzed at the proper frequency during the full RFI.

Response: MS/MSD samples will be collected at the frequency as shown in Worksheet #20 and will be delivered to the laboratory for analysis.

- 4. Comment:** The Navy's response Tetra Tech's Response to PREQB's General Comment # 1 on the Phase I RFI states that the bucket evaluation to determine the percent weight of bullets would be performed in the full RFI. It was not clear from the SAP submitted if this task will be performed. Please clarify.

Response: Agree to add bucket evaluations.

The following new paragraph has been added to Worksheet #17, as the 4th paragraph: ***"For the Pistol Range Subarea, Former Pistol Range Subarea, and Rifle Range Subarea (both Target Area Earthen Berm and Wooded Embankment), a bucket evaluation will be conducted to quantify lead impacts from bullets (slugs or casings), in order to evaluate potential exposures and consider future actions at these subareas. The bucket evaluation for a given subarea will be conducted after the soil sampling effort such that the location of the bucket evaluation can be determined based on field observation of biased high bullet density. Approximately five pounds of soil will be collected and placed into a clean container (e.g., single-use bucket) for this evaluation. The Tetra Tech field geologist will classify the soils in the bucket and collect a soil sample for pH analysis. The total weight of the soil will be determined and a soil sample collected for pH analyses, then the entire sample screened using a 0.25-inch wire screen, and then the residual items (i.e., bullets) weighed such that the relative percent by weight of bullets vs. soil may be determined."***

The following footnote has been added to Worksheets #18.1 (Pistol Range Subarea), #18.2 (Former Pistol Range Subarea), and #18.3 (Rifle Range Subarea, Constructed Earthen Berm Area and Wooded Embankment): ***"A bucket evaluation will be conducted to quantify lead impacts from bullets (slugs or casings). The bucket evaluation for a given subarea will be conducted after the soil sampling effort such that the location of the bucket evaluation can be determined based on field observation of biased high bullet density. Approximately five pounds of soil will be collected and placed into a clean container (e.g., single-use bucket) for this evaluation. The Tetra Tech field geologist will classify the soil and collect a soil sample for pH analysis. The total weight of the soil will be determined, then the entire sample screened using a 0.25-inch wire screen, and then the residual items (i.e., bullets) weighed such that the relative percent by weight of bullets vs. soil may be determined."***

Page/Worksheet Specific Comments

- 1. Comment:** Page 11, Executive Summary, Paragraph 4: The text states that sample concentrations were less than human health and ecological screening criteria in the

Detonation Area Near Concrete Pad Subarea. However, Worksheet #10 (page 46) states that lead was detected above the ecological screening criterion in this subarea. Please clarify.

Response: The second sentence of the second paragraph of the Detonation Area Near Concrete pad Subarea section of the Executive Summary has been revised, "~~Sample concentrations were less than human health and ecological screening criterion~~ **Lead concentrations in Phase I data were less than human health screening levels and greater than ecological screening levels.**"

2. **Comment:** Table ES-1: In the note included for the rifle range, please specify that the investigation for NG will be at the 200-yard firing line, as stated in the earlier text.

Response: The note for the Rifle Range NG investigation in ES-1 has been revised per the comment, "(surface soil at **200-yard** firing line only)".

3. Page 20, Worksheet #3:

- a. **Comment:** Please replace Karen Vetrano with Katarina Rutkowski, PREQB consultant.

Response: Karen Vetrano's name has been replaced with "**Katarina Rutkowski**" in both Volumes I and II.

- b. **Comment:** Please correct Wilmarie Rivera's extension in this report and all future documents to X6129. This comment applies to Worksheets 5 and 9 in both SAPs also.

Response: Wilmarie Rivera's extension has been changed to "x6129" in both Volumes I and II.

4. Worksheet 9:

- a. **Comment:** Comments/Discussion: Under Puerto Rico's Water Quality Standards Regulation, which is an applicable, relevant and appropriate requirement (ARAR) for this site, all groundwater is considered potable and no criteria are established under this ARAR to evaluate nonpotability. Also, groundwater discharging to a surface water body is required to meet the lower of the applicable surface water quality standard or the SG standards. Please revise the discussion here as well as in Item 6 under Consensus Decisions to clarify this.

Response: The following text changes have been incorporated in both Volume I and II:

Worksheet #9, Comments/Discussions, 1st paragraph:

"Pertinent to all SAPs under discussion at the meeting, groundwater needs to be addressed consistently, and consider non-potability. After a groundwater evaluation paper/memo is developed to address this topic, it can be used to assess SWMU 77 (when groundwater is evaluated for this SWMU). If groundwater samples are collected at SWMU 77, and if the SWMU 77 data meet the criteria, this site may be evaluated as a

non-potable/non-usable groundwater source and for industrial land use. ***Puerto Rico Water Quality Standards are an applicable or relevant and appropriate requirement (ARAR).***"

Worksheet #9, Consensus Decisions, Item 6. Groundwater Potential Use:

"After the groundwater evaluation paper/memo is developed, if groundwater is sampled at SWMU 77 and if the SWMU 77 data meet the criteria, the site may be evaluated as a non-potable/non-usable groundwater source and for industrial land use. The Navy and their contractors will develop criteria and rationale to be used across NAPR to determine whether groundwater is non-potable/non-usable. A report/memo will be developed that will explain how to evaluate the usability of groundwater at NAPR. ***Note that since the meeting the subject report/memo has been developed but the issue has not yet been resolved. Regardless, Puerto Rico Water Quality Standards are an ARAR.***"

Worksheet #9, Action Items, 4.:

"The Navy and the contractors will prepare a paper/memo concerning evaluation of groundwater (non-potable/non-usable) at NAPR; this will be sent to the regulators by October 28, 2011, for review. The paper/memo will develop criteria and rationale to be used across NAPR to determine whether groundwater is non-potable/non-usable. ***Note that since the meeting the subject report/memo has been developed but the issue has not yet been resolved. Regardless, Puerto Rico Water Quality Standards are an ARAR.***"

- b. **Comments:** Consensus Decisions: Please clarify that background is not used for screening to identify chemicals of potential concern evaluated in the risk assessments.

Response: The first sentence of Item #4 under Consensus Decisions in both Volumes I and II has been revised, "The upper limit value of means concentration from the Baker background report will be used for screening and in the risk assessment, as previously agreed (Baker, and CH2MHill, & CDM 2010)."

Further, the Navy and its contractors are required by specific Navy policy (5090 Ser N45C/N4U732212, January 30, 2004) to consider background conditions in the selection of chemical of potential concern (COPC) for purposes of calculating site-specific risks for a site. Per the policy, chemicals present at concentrations reflective of background conditions are not considered COPC for purposes of calculating site-specific risks. Please also see response (below) to Specific Comment 6.d.ii for a discussion on how this will be conducted.

5. **Comment:** Worksheet 10, Section 10.2.3: The 2010 Addendum to the 2004 Reuse Plan for Roosevelt Roads was available for review at the time this document was prepared; therefore, please revise this section to remove text stating that future development plans are unknown. This comment applies to the conceptual site model summary as well.

Response: The last sentence of Section 10.2.3 in both Volumes I and II has been revised, "***According to the Supplemental Environmental Assessment, SWMU 77 is located in Zone 5, designated as an Environmental Retreat (Navy, 2011).*** ~~The future use of SWMU 77 including its subareas is unknown at this time; however, SWMU 77 will most likely be developed as an ecotourism area with a hotel.~~"

The following document has been added to the reference section in both Volumes I and II, ***"Navy (Department of the Navy), 2011. Supplemental Environmental Assessment for the Disposal of Naval Activity Puerto Rico (formerly Naval Station Roosevelt Roads). Prepared by the Base Realignment and Closure Program Management Southeast. May."***

6. Worksheet 11:

a. Section 11.1:

- i. **Comment:** Please note in the text that another objective is to obtain data sufficient to evaluate whether groundwater has been impacted above regulatory standards.

Response: The following has been inserted as the eighth sentence of Section 11.1, ***"An additional objective is to obtain data sufficient to evaluate whether groundwater may have been impacted above regulatory standards."*** Please note that groundwater samples are not planned for the Full RFI. ***However, soil data can and will be evaluated for potential migration pathway to groundwater via comparison with site-specific developed, dilution attenuation factors. Additionally, depth to bedrock will be established. These results will aid the Navy and regulators in determining whether monitoring wells are warranted for installation as part of future investigation and/or whether interim measures for source soils are warranted."***

ii. Pistol Range Area:

1. **Comment:** Nitroglycerin was detected in surface composite samples collected at the firing range at levels that exceeded the screening levels during the Phase I RFI investigation. NG is mobile in soil environments (USACE 2006), and NG was detected in surface soil indicating that natural processes have not eliminated NG as of yet nor have degradation rates been determined for this site. Therefore, further investigation to determine the extent of NG is warranted. As only surface soil was collected, please conduct subsurface soil sampling at the presumed firing lines for nitroglycerin analysis. This comment also applies to the Detonation Area near the concrete pad and Rifle Range.

Response: Refer to response to General Comment #1. Additionally, during the Phase I RFI, analytical results (NG) for the firing lines were evaluated and NG was determined to be neither a human health nor ecological issue at the Pistol Range Subarea.

2. **Comment:** Note that the risk evaluation presented in the Phase I RFI report excluded other COPCs that were automatically carried forward to the full RFI, so cumulative risks were not evaluated. This is a datagap that needs to be addressed in the Full RFI.

Response: Phase I RFI data and Full RFI data will be combined into one data set. COPCs will be selected from this combined data set for formal risk assessment.

- iii. **Comment:** The worksheet states that surface soil will be collected in the Former Pistol Range Subarea. However, Worksheet #10 (page 46) states that the vertical extent of metals also needs to be determined in this subarea during the full RFI. Please clarify why subsurface samples are not proposed in this subarea.

Response: Added subsurface soil samples to the sampling program for select metals analysis at the Former Pistol Range Subarea. One subsurface soil sample will be collected at each of the eight Full RFI sample locations (see Figure 17-2).

Samples planned for collection during the Full RFI are in areas north-northwest of the approximate boundary of the Former Pistol Range, where higher lead concentrations were detected during the Phase I RFI.

During Phase I RFI sampling, remains of a target berm were not evident for the Former Pistol Range Subarea; therefore, the exact location of the berm (if any) is unknown. The soil at this subarea consisted primarily of fine sand and silty loam with some gravel. Although auger refusal was not encountered during Phase I RFI sampling, weathered bedrock was exposed at the land surface in some areas in the northern portion of the site. While it is possible that bullets can penetrate a foot more in sandier soil, it is unlikely. The majority of bullets would be expected to be found in the top one foot.

b. Section 11.2:

- i. **Comment:** Please use the most current version (November 2011) of the USEPA Regional Screening Levels.

Response: The November 2011 USEPA Regional Screening Levels were used as presented in Worksheet #15 and Appendix B-6. The RSLs were available just before SAP submittal and so the SAP was reworked to include the updated values prior to SAP submittal to the regulator; however, not all references were updated during this expedited effort. The reference in Worksheet #11, Section 11.2 has now been corrected, "USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites - Residential Soil Values (R-RSLs) and risk-based SSLs (RBSSLs) for protection of groundwater (~~June~~ **November**, 2011)." Additionally, the following has been added as the last sentence of the 1st paragraph of Item #6 of Section 11.2, ***"The current version of all references used to generate the PALS will be used for comparison of reported data at the time the risk assessments are completed."***

- ii. **Comment:** Item 5: Please clarify the following parenthetical statement "(note that all analytes detected during the Phase I RFI were carried forward for evaluation in the Full RFI) ..." as it appears that detected COPCs were eliminated from further consideration at the conclusion of the Phase I RFI for various areas and Section 11.1 excludes munitions-related chemicals that were detected (such as NG at firing lines) in surface soil. This comment also applies to Section 11.4, where this statement is also made.

Response: All metals detected during the Phase I RFI were carried forward into the Full RFI. Item 5 in Section 11.2 has been revised, "Previously collected Phase I RFI

data will be used along with newly collected Full RFI chemical data, to assess risk to human and ecological receptors and to determine the nature and extent of contamination at the SWMU 77 subareas (note that all **metals** analytes detected during the Phase I RFI were carried forward for evaluation in the Full RFI) (Tetra Tech, 2011, Phase I results are presented in Appendix B-3 of Volume I)." Similarly, Section 11.4, third paragraph, fourth sentence has been revised, "All **metals** analytes that were detected during the Phase I RFI were carried forward for evaluation in the Full RFI."

- iii. **Comment:** Item 6, last paragraph: Please conduct further evaluation before determining chemicals with elevated detection limits are not COPCs for risk assessment. Consider whether the chemical is likely to be present, whether it is detected in other media, if it is part of a class of more toxic compounds (such as PAHs), etc. before excluding chemicals with elevated detection limits from the risk assessments. Please revise this section and the footnote to Worksheet 15 accordingly.

Response: Existing text in Section 11.2 has been clarified to reflect evaluation of chemicals with LODs greater than the PALs in the risk assessment as a component of the Uncertainty Analysis. The SAP text in Sections 11.2 and applicable Worksheet #15 footnotes have been updated as follows:

Section 11.2 Item 6, last paragraph:

"Nondetected results reported for analytes where the LOD is greater than the PAL will not be considered COPCs and will not be retained for **the quantitative** risk assessment. However, the impact of **such "non-detected results" will be further evaluated (qualitatively)** ~~these instances will be documented~~ in the ~~u~~Uncertainty **Analysis** section of the Full RFI Report **to determine if risk management decisions would be impacted by the fact that the LOD exceeds the PAL.**"

Worksheet #15, footnote on each table

"Bolded rows indicate that the PAL is between the laboratory LOQ and LOD. The Project Team has agreed to accept this data for decision making as long as results below the LOQ are "J" qualified. Nondetected results reported for analytes where the LOD is greater than the PAL will not be considered COPCs and will not be retained for **the quantitative** risk assessment. However the impact of **such "non-detected results" will be further evaluated (qualitatively)** ~~these instances will be documented~~ in the uncertainties **analysis** section of the Full RFI Report **to determine if risk management decisions would be impacted by the fact that the LOD exceeds the PAL.**

~~Shaded and Bold row indicate the PAL is less than the LOD.~~ The Project Team has agreed to accept this data for decision making as long as results below the LOQ are "J" qualified. Nondetected results reported for analytes where the LOD is greater than the PAL will not be considered COPCs and will not be retained for **the quantitative** risk assessment. **such "non-detected results" will be further evaluated (qualitatively)** ~~these instances will be documented~~ in the uncertainties

analysis section of the Full RFI Report **to determine if risk management decisions would be impacted by the fact that the LOD exceeds the PAL.** DL values are presented to aid in the decision making process.”

c. Section 11.3:

- i. **Comment:** This section refers to a PREQB definition of surface soil. Please note that a PREQB does not have a specific definition of surface soil; rather, agreement was reached on surface soil sample depth during the August 2009 Planning meeting. Please revise the text accordingly.

Response: Section 11.3, second paragraph, first sentence has been revised, “For surface soil, the surficial vertical study boundary for the MC investigation at the subareas described above will be limited to the top 6 inches of surface soil because this is the interval that is expected to contain the maximum concentrations of MC; **furthermore, agreement was reached on this site-specific identification of surface soil sample depth at the August 2009 planning meeting and is consistent with PREQB definition of surface soil.**”

- ii. **Comment:** Please clarify why subsurface soil is established at 4 feet bgs when the deepest subsurface soil sample collected from this area (due to the presence of shallow bedrock) was 1.5 feet.

Response: Details of the intrusive investigation are included in Volume II of the UFP-SAP, the depth of the intrusive investigation is also the maximum depth that subsurface soil samples will be collected at the Potential OB/OD Subarea and the Potential Munitions Trench Subarea. As explained in Volume II, at the Potential OB/OD Subarea, because munitions are not fired from a weapon during detonation, the maximum probable depth from kick-out was estimated to be approximately 1 foot bgs. MEC/MPPEH may also be present in the subsurface because munitions are commonly buried prior to detonation via OB/OD to suppress the explosion and minimize noise. Duds, misfires, or partial destructions could result in MEC/MPPEH hazards at 4 feet bgs or deeper in the subsurface soil of the detonation areas; however, because of shallow bedrock at the subarea, depths are expected to be less than 4 feet.

At the Potential Munitions Trench Subarea, MEC/MPPEH may be present in the surface and/or subsurface from approximately 1 foot bgs (assuming 1 foot of cover material at the top of the trench) extending up to 10 feet bgs (assuming typical backhoe reach). However, based on site-specific conditions as identified during the Phase I RFI (auger refusal was encountered at all of the soil boring locations at 0.5 foot bgs), actual burial depths are expected to be much less and are not anticipated to be greater than 4 feet bgs.

Only limited subsurface investigation has been conducted to date and so although the Phase I RFI indicates bedrock occurrence at very shallow depth, results may have been localized and need to be further investigated during the Full RFI.

- iii. **Comment:** Please provide the rationale for selecting 2 feet bgs as the maximum depth of subsurface soil samples for areas other than the Potential OB/OD area.

Response: Two feet bgs is the depth of subsurface samples to be collected at the Pistol Range and Rifle Range. For the Phase I RFI and the Full RFI, it is assumed that any contamination that may be present at these subareas would be present in the top 6 inches based on the activities that took place at these subareas. Subsurface soil samples (0.5 to 2 feet bgs) will be collected at these subareas to determine the vertical extent of potential MC contamination at these subareas. Supporting this comment response, see Comment #12 requesting subsurface interval sampling change from 1 to 2 feet bgs to 0.5 to 2 feet bgs.

d. Section 11.4:

- i. **Comment:** Data that are rejected are defined as not usable for project objectives. Please remove the text on rejected data or include a note that rejected data will not be used for the achievement of project objectives.

Response: Per the comment, the last paragraph of Section 11.4 has been deleted, "~~Although rejected data will generally not be used, there may be reason to use rejected data in a weight of evidence argument, especially when they supplement data that have not been rejected. If rejected data are used, their use will be supported by technically defensible rationales. Therefore, any rejected data will be discussed with the regulatory agencies during the Full RFI to determine which data are appropriate for use.~~" The following sentence has been added as the last sentence of Section 11.4, "**Rejected data will not be used for the achievement of project objectives.**"

Further, similar deletion has been made in Worksheet #37, "~~Although rejected data will generally not be used, there may be reason to use them in a weight of evidence argument, especially when they supplement data that have not been rejected. If rejected data are used, their use will be supported by technically defensible rationales.~~" and "**Rejected data will not be used for the achievement of project objectives.**" has been added.

- ii. **Comment:** Please clarify why the Navy is preparing two complete risk assessments in order to address background when the Navy conducts one risk assessment on chemicals that exceed risk-based screening criteria (including metals) at other former Navy sites, then during risk characterization presents cumulative site risks for all COPCs for each receptor, then subtracts out the site risk attributable to background for each receptor. This approach is consistent with EPA's Role of Background in the CERCLA Cleanup Program. PREQB prefers this approach as it results in one set of recommendations and conclusions pertinent to site risks and is consistent with EPA guidance.

Response: Agree that the approach of providing two versions of the risk assessment is extra work for the risk assessment personnel. However, the approach has the advantage of providing the risk management team with an unambiguous understanding of the site-related risks versus total risks and those risks that may be attributable to chemicals that, while present at concentrations exceeding chemical of potential concern (COPC) screening level, actually are reflective of background conditions. The Navy believes this approach is not at variance with the NAPR recommendation to differentiate site- from background risks in the risk

characterization component of the risk. The Navy also believes that such information will be useful to the risk management team for SWMU 77.

Agree to select COPCs based on a toxicity screen only (i.e., chemicals will not be eliminated as COPCs on the basis of background) and agree to present an evaluation of site-risk versus background-risk versus total-risk in the risk characterization component of the risk assessment.

Section 11.2, Item 6 PALs, 3rd bullet, Background Data (Baker and CH2MHill, 2010), has been rewritten as follows:

"An evaluation of site-risk versus background-risk versus total-risk will be presented in the risk characterization component of the risk assessment to assess the potential of contamination being anthropogenic versus site related. Analytical data (metals in soil) from these sites will be compared to facility background data during the COPC screening process to determine if potential contaminant concentration ranges are within or greater than background concentrations. It is Navy policy to consider chemicals detected at concentrations within the background concentration range as not representing contamination and further specifies that risk assessments should not be conducted for chemicals that are present at levels less than corresponding background concentration. The background comparison results will also be discussed in the uncertainty section of the risk assessment. If a contaminant concentration exceeds the associated toxicity screening but is less than facility background (metals), then that contaminant will be evaluated as background risk in the risk characterization component of the site-specific risk assessment. Facility-wide background data will be based on the soil type for the site determined during the Full RFI. Background concentration tables are included in Appendix B. Also refer to Figure 11-1."

Also related to conducting multiple risk assessment evaluation, risks associated with surface soils and subsurface soils will be calculated separately, as well as the *combined* surface/subsurface (i.e., total) soil dataset, providing for a more robust evaluation of the contamination. Such an evaluation often allows a risk assessment to more specifically identify those soil depth intervals that may be useful when making risk management decisions for the site, particularly if the site were to be further evaluated in a Corrective Measures Study (CMS). In some cases, combining the surface and subsurface soils datasets into one "total soil" dataset may result in a "dilution", so to speak, of either the data for surface or subsurface soil interval(s) and, thus, mask the need for further evaluation in the CMS. In addition to the separate surface and subsurface soil risk evaluations, the total soil dataset allows for evaluation of receptors (construction workers, future residents, future workers, etc.)

that may contact contaminants in subsurface soils should those soils be excavated and distributed across the surface. While one may *qualitatively* differentiate and discuss total site risk versus site-related risk versus background-related risk without performing multiple runs of the risk assessment calculations, logistically the only way to *quantitatively* differentiate these risks is to indeed run the risk estimates twice (e.g., run the risk spreadsheets once with all COPCs and then a second time without those COPCs that are present at background concentrations). Most of this detailed information is presented in appendices of the report only and is not intended to complicate the risk assessment presentation unduly. Ultimately, the results of these evaluations are presented in one concise summary table in the risk characterization of the report.

Section 11.3, end of second paragraph will be clarified by adding: ***"In addition to evaluating risks separately for surface soil and subsurface soil, risks associated with the combined data set will be presented."***

- iii. **Comment:** Section 11.5: Please revise the text to state that the data should be validated. Also it should be certified by a Puerto Rico-licensed chemist.

Response: The FBL has retained the services of a Puerto Rico certified chemist to certify their data. Section 11.5 is in error; this chemist will not validate the data but certify it and this Chemist is a third party. The SAP is revised as follows:

The third sentence of Section 11.5 has been revised, "All analytical data will be ***analyzed by Katahdin Analytical Services or TestAmerica and certified validated by a third party*** Puerto Rico certified chemist ~~provided by the FBLs (Empirical and TestAmerica).~~ ***Validation of the certified data will be performed by Tetra Tech data validation chemists.***"

7. Worksheet 12, Page 63:

- a. **Comment:** Please include the goals for field and laboratory completeness, as required in Section 2.6.2.6 of the UFP QAPP Manual.

Response: The following text has been added to the end of Worksheet #12.

"Note: Completeness will be calculated in two ways, on a per sample basis and a per analyte basis in order to determine how many samples were actually collected and how many total results were received from the laboratory per analyte based on validation (rejected or blank contamination) results, respectively.

Completeness will be determined using the following equation:

$$\%C = (V/T) \times 100$$

where %C = percent completeness

$V = \text{number of samples taken or results determined to be valid}$
 $T = \text{total number of planned samples or results}$

The project completeness goal for samples collected and valid, usable analytical results (i.e., not rejected) is 95%."

8. **Comment:** Worksheet 13, Page 64: Currently, the worksheet states that there are no limitations on the data use from the Phase 1 RFI. Please revise the worksheet to refer the reader to Appendix H of the Phase I RFI Report for a summary of rejected data in the Phase I RFI.

Response: The Limitations on Data Use column has been revised, "~~There are no limitations~~ **Refer to Appendix H of the Phase I RFI Report for a summary of rejected data.**"

9. **Comment:** Worksheet 14, Page 66, Quality Control Tasks: The text refers the reader to Worksheet #12 for the required frequency of MS/MSDs and laboratory duplicates. However, these quality control samples are included on Worksheet #28 (not Worksheet #12). Please revise the text accordingly.

Response: The first sentence in the Quality Control Tasks section of Worksheet #14 has been revised, "Equipment rinsate blanks, **and** field duplicates **will be collected at the frequencies listed in Worksheet #12**, matrix spike and matrix spike duplicate (MS/MSD) samples, and laboratory duplicates will be collected at the frequencies listed in Worksheet **#1228.**"

10. Worksheet 15:

- a. **Comment:** Please provide supporting rationale/calculations for the use of a dilution attenuation factor of 20 for this SWMU. Please discuss the depth to groundwater, shallow depth of bedrock and other factors influencing dilution/attenuation processes.

Response: A site-specific DAF was not calculated for purposes of identifying potential PALs. The USEPA's Soil Screening Guidance (USEPA, 1996) states, "The EPA has selected a default DAF of 20 to account for contaminant dilution and attenuation during transport through the saturated zone to a compliance point (i.e., receptor well). At most sites, this adjustment will more accurately reflect a contaminant's threat to groundwater resources than assuming a DAF of 1 (i.e., no dilution and attenuation). The Guidance further states, "A DAF of 20 is protective for sources up to 0.5 acres in size and "can be protective of larger sources as well". Thus, while a site-specific DAF may or may not eventually be needed during the preparation of the risk assessment, the EPA default DAF of 20 was considered conservative and appropriate for the initial selection of COPCs.

However, in order to advance the project, the Navy agrees to use SSLs at a DAF of 1 in evaluating PALs and Worksheet #15 will be updated accordingly. Also, the Navy agrees to calculate site-specific DAFs in the report, as part of the evaluation of the fate and transport of COPCs.

In addition to revising Worksheet #15 (and associated Appendix B-6 supporting documentation), Section 11.2, Item 6, PALs, 1st bullet, has been clarified as follows:

- "USEPA Regional Screening Levels for Chemical Contaminants at Superfund Sites – Residential Soil Values (R-RSLs) and risk-based SSLs (RBSSLs) for protection of groundwater (~~November~~ June, 2011). **Note a dilution attenuation factor of 1 was applied to USEPA soil screening levels, and migration to groundwater values for the purposes of developing PALs. Site-specific DAFs will be calculated in the report, as part of the evaluation of the fate and transport of COPCs.**"

- b. **Comment:** Please provide the inputs to the RSL table used to calculate the lead RBSSL.

Response: The lead RBSSL shown on Worksheet #15 was not calculated from the USEPA website as indicated in footnote (4). The footnote (4) shown on Worksheet #15 is in error and has been deleted, ~~4 Calculated from the USEPA website (http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search)~~. A value of 280 mg/kg is presented as the RBSSL for lead on Worksheet #15, the value is 14 mg/kg (the value from the November 2011 RSL Table) times 20, the DAF.

- c. **Comment:** Ecological PALs were presented in this worksheet for volatile, semi-volatile, low-level scan semi-volatile, polychlorinated biphenyls, metals, pesticides and explosives for the soil medium. The ecological PALs were based on screening criteria presented in the USEPA eco-SSL documents (first preference) and the lower of USEPA Region 5 soil ecological screening levels (August 2003) or Los Alamos National Laboratory (LANL) ecological screening levels from the Ecorisk Database (Release 2.4, December 2009). This preference hierarchy for selection of ecological screening levels for soil is acceptable. However, Please use the more recent LANL EcoRisk Database (Release 3.0, October 2011) as this database presents additional screening values and revised screening values for many SWMU 77 contaminants.

Response: The LANL ecological screening levels have been updated using the LANL EcoRisk Database (Release 3.0, October 2011) in Worksheet #15 and Appendix B-6.

- d. **Comment:** Based on the recent LANL database, ecological screening values are now available for additional explosives including HMX, RDX, 2,4,6-trinitrotoluene, 2,4- and 2,6-dinitrotoluene, 2-, 3-, and 4-nitrotoluene, and nitroglycerin. In addition, lower ecological screening values need to be presented for the 1,3-dinitrobenzene (0.073 mg/kg), 1,2,4trichlorobenzene (0.27 mg/kg), 1,2-dichlorobenzene (0.92 mg/kg), 1,3-dichlorobenzene (0.73 mg/kg), methyl iodide (0.038 mg/kg), tetrachloroethene (0.18 mg/kg), vinyl chloride (0.12 mg/kg), total xylenes (1.4 mg/kg), 2-methylphenol (0.67

mg/kg), 2-nitroaniline (5.4 mg/kg), di-n-octylphthalate (0.91 mg/kg), thallium (0.032 mg/kg), 4,4-DDD (0.0063 mg/kg), 4,4-DDT (0.044 mg/kg), and dieldrin (0.0045 mg/kg). Please incorporate these values into Worksheet #15 and re-evaluate PALs and laboratory LOQs and LODs.

Response: The LANL ecological screening levels have updated using the LANL EcoRisk Database (Release 3.0, October 2011) per response to Comment #10.c. Mammalian ground insectivores and mammalian carnivores are not potential receptors at these subareas; therefore, these receptors were excluded from the selected ecological screening levels. The ecological screening values referenced in the comment for 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, tetrachloroethene, vinyl chloride, total xylenes, di-n-octylphthalate, thallium, 4,4-DDT, and dieldrin are based on the shrew; therefore, these values were not selected and the minimum values available for the plant, earthworm, avian, and mammalian herbivores (Desert Cottontail and Deer Mouse) were selected as the screening levels.

11. Worksheet 17:

- a. **Comment:** Page 96, Section 17.3.4, Rifle Range Subarea: Please provide the rationale for the investigation proposed behind the target berm and at the short yardage target stand areas. It is unclear why a subsurface investigation is occurring here but not at other areas where mobile MC may be present.

Response: Subsurface soil sampling is planned for the constructed earthen berm, the wooded embankment, the area behind the concrete wall just before reaching the wooded embankment, and the area behind the target berm at the short yardage target stand areas. There were PAL exceedances in surface soil samples collected during the Phase I RFI which warranted the collection of subsurface soil samples in these areas to define the extent of horizontal contamination. Samples were not collected in the area behind the target berm at the short yardage target stand areas during the Phase I RFI; therefore, surface and subsurface soil samples are planned for collection in this area during the Full RFI.

Up to 14 surface soil samples are proposed for collection outside of the study area to define the lateral extent of the contamination, to see if wind may have spread dust and contaminants in this area; otherwise, it would not be expected that contaminants would be in the surface in this area, if present at all. Similarly, surface soil samples are planned for collected at the 200-yard firing line and, if present, contaminants would be expected to be present on the ground surface at the firing line.

- b. **Comment:** Subsurface samples are requested for the step out area outside the study area (not shown on figure, but discussed in text) to document whether metals migration to the subsurface is occurring.

Response: There are four discretionary samples planned for collection at the Rifle Range Subarea. As requested, surface (0 – 0.5 feet bgs) and subsurface (0.5 – 2 feet bgs) soil samples have been added for collection at discretionary sample locations. Supporting this comment response, see Comment #12 requesting subsurface interval sampling change from 1 to 2 feet bgs to 0.5 to 2 feet bgs.

- c. **Comment:** Target Area Earthen Berm and Wooded Embankment: The text refers to Figure 17-4; however, this figure presents the samples proposed for the 200-foot firing line. Please revise as appropriate.

Response: References to Figure 17-4 in the second and third paragraphs of the Target Area Earthen Berm and Wooded Embankment section on Page 97 has been revised to indicate that sample locations on the earthen berm and wooded embankment are shown on "Figure 17-5."

- d. Figure 17-1:

- i. **Comment:** It appears from this figure that surface and subsurface soil samples will be collected from different locations. Please provide the rationale for this sample design, along with more detail on the rationale for the various sample locations selected:

Response: Sample locations were distributed throughout the site and at locations surrounding Phase I RFI sample locations in order to gain better spatial coverage of the site. PAL exceedances were evident throughout surface soil samples collected at the surface of the natural embankment during the Phase I RFI. Therefore, additional surface soil samples are not planned for this area during the Full RFI, subsurface soil samples only are planned for collection into the natural embankment. Surface soil samples are planned for collection from the area above the berm and outside areas surrounding the site. It would not be expected that bullets would have been fired at or penetrated the ground surface in these areas; however, wind may have dispersed dust into these area and so, if present, contamination would not be expected to be present in the subsurface. Additionally, four surface soil samples are planned for collection on the floor of the range for select metals analysis and, if present, contamination would be expected to be present at the ground surface.

A high density of bullets was observed on the berm directly behind the targets, in the Draft SAP only surface soil samples were proposed for these locations. Revisions have been made to add co-located subsurface soil samples at these six locations for select metals analysis.

1. **Comment:** For example, additional surface and subsurface soil samples appear to be warranted to the northeast and southeast of samples SB-001, SB-008, SB-15 and SB-031A to determine the extent of contamination.

Response: See response to Comment #11.d.i above, surface and subsurface soil samples will now be collected in this area, the easternmost sample shown on Draft SAP Figure 17-1 has been moved to the east side of samples 77PRSB001,77PRSB008, and 77PRSB0031A rather than the west side of these samples.

2. **Comment:** It is unclear why samples are located behind and immediately in front of the viewing area.

Response: Sample locations were distributed throughout the site and at locations surrounding Phase I RFI sample locations in order to gain better spatial coverage of the site.

3. **Comment:** A storage building is located within the sample design area, but is not proposed for sampling. Sampling at this building may be warranted, depending on what was stored.

Response: It is believed that targets were stored at this building; therefore, sample collected is not proposed. However, to address the comment, the surface soil sample located slightly south west of the storage building on Draft SAP Figure 17-1 has been moved closer to the building.

4. **Comment:** NG was detected in surface soil samples; therefore, please add two subsurface soil samples at the locations of highest NG detections to document whether NG is migrating to subsurface soil.

Response: Refer to response to General Comment #1. Additionally, during the Phase I RFI, analytical results (NG) for the firing lines were evaluated and NG was determined to be neither a human health nor ecological issue.

e. Figure 17-2:

- i. **Comment:** It appears that additional sampling is warranted to the west of the Phase I RFI sample locations to determine the extent of contamination above background and risk-based criteria.

Response: The locations of the planned Full RFI samples as shown on Draft SAP Figure 17-2 have been adjusted and some samples moved to off of the northwest corner of the approximate boundary of the Former Pistol Range.

- ii. **Comment:** Please provide the rationale for only collecting surface soil samples from this range, as it appears that the lack of subsurface soil sample data may be a datagap and Worksheet # 10 (page 46) states that the vertical extent of metals also needs to be determined in this subarea during the full RFI. Please discuss soil type at the target area and bullet penetration depths. It has been reported that bullets can penetrate a foot or more in sandier soils (ITRC 2003) and trenching into berms is recommended in order to sample subsurface soils and to aid in the inspection for bullet fragments as an aid in ascertaining the appropriate sample depth.

Response: Please refer to the response to Comment #6.a.iii addressing the addition of subsurface soil samples.

f. Figure 17-3:

- i. **Comment:** Please clarify whether the kick-out zone surrounding the depression can be determined, based on what is known about the open detonation that occurred.

Response: A one-time detonation event occurred at this subarea under the direction of Mayport EOD. It is assumed that the detonation was successful. The kickout zone is undefined.

- ii. **Comment:** NG was detected above SSLs in surface soil; therefore, this investigation needs to determine if NG has migrated to the subsurface.

Response: Refer to response to General Comment #1. Additionally, during the Phase I RFI, analytical results (NG) the Detonation Area Near Concrete Pad Subarea were evaluated and NG was determined to be neither a human health nor ecological issue.

- iii. **Comment:** Please remove the reference to "Phase 1 RF1" from the legend for the proposed surface soil sample location. This comment applies to Figure 17-4 also.

Response: "Phase 1 RFI" has been removed from the legend for the proposed surface soil sample locations on Figures 17-3 and 17-4.

g. Figure 17-4:

- i. **Comment:** NG was detected at the firing lines during the Phase I RFI above RSLs and SSLs; therefore, please include a subsurface investigation to determine the extent of NG impacts in subsurface soil at each firing line.

Response: Refer to response to General Comment #1. Additionally, during the Phase I RFI, analytical results (NG) were evaluated and NG was determined to be only a potential human health risk concern and only at the 200 yard firing line for the Rifle Range.

- ii. **Comment:** RDX was detected above the SSL in all three samples from the Phase I RFI; therefore, please include RDX in the analysis of subsurface soil samples to evaluate the potential for impacts to groundwater.

Response: During the Phase I RFI, samples 77RRSB036, 77RRSB037, 77RRSB038, and 77RRSB039, shown on Figure 17-4 were analyzed for NG, samples were not analyzed for RDX.

- h. **Comment:** Figure 17-5: It appears that the samples proposed in Worksheet 17 were inadvertently left off this figure. Please revise the figure to include the proposed samples at the wooden embankment and elsewhere, as appropriate. Note that although the worksheet references sample IDs, proposed samples on figures are not labeled.

Response: Agree, samples were inadvertently left off the figure at the Wooded Embankment, 10 sample locations have been added to Figure 17-5.

- i. **Comment:** Figure 17-7: Please include the proposed sampling locations on the figure (even if they are subject to change based on the MEC survey) or alternatively, please include a note on the figure indicating that the sampling locations will be chosen in the field.

Response: Agree, a note has been added to the figure.

12. **Comment:** Worksheet 18: Please revise the subsurface soil depth to 0.5 to 2 feet interval to eliminate the datagap from 0.5 to 1.0 feet (currently, subsurface soil samples are proposed from 1-2 feet).

Response: Agree, the depth of subsurface soil samples has been changed to 0.5 to 2 feet bgs throughout the SAP.

13. Worksheet 19:

a. **Comment:** Soil/VOCs: Please remove the requirement to freeze methanol-preserved samples. The methanol-preserved samples must be cooled to <6° C, not frozen.

Response: The revision has been made per the comment, "**cool to < 6 °C, not frozen freeze to < 10 °C**".

b. **Comment:** Aqueous QC Samples/SVOCs, Pesticides: Please add the extraction SOP SA-EX-030 to the SOP references.

Response: The TestAmerica Savannah SOP "**SOP SA-EX-040**" has been added to Aqueous QC matrix for SVOCs and Pesticides.

c. **Comment:** Soil/SVOCs, Pesticides: Please add the extraction SOP SA-EX-040 to the SOP references.

Response: The TestAmerica Savannah SOP "**SOP SA-EX-040**" has been added to Soil matrix for SVOCs and Pesticides.

d. **Comment:** Please add rows for herbicides in soil and aqueous QC samples, as this analysis may be performed in the Potential OB/OD Subarea and the Potential Munitions Trench Subarea, as per Worksheet #11.

Response: Herbicide information has been added to Worksheet #19 as shown below:

Matrix	Analytical Group	Analytical and Preparation Method/ SOP Reference ⁽¹⁾	Containers (number, size, and type)	Sample Volume (units)	Preservation Requirements (chemical, temperature, light protected)	Maximum Holding Time (preparation/ analysis)
Aqueous QC samples	Herbicides	SW-846 8151A, Empirical SOP-208/304	Two 1-L glass amber bottles	1,000 ml	Cool to 0 to 6 °C	7 days until extraction, 40 days to analysis
Soil	Herbicides	SW-846 8151A, Empirical SOP-308/310	One 4-oz glass jar with a Teflon-lined lid	15 g	Cool to 0 to 6 °C	14 days until extraction, 40 days to analysis

- e. **Comment:** Please clarify with the laboratory that SW-846 method 6010C will be used for the metals analyses, as shown on this worksheet. The LOQs provided on Worksheet #15 (page 85) for metals are low and may be associated with SW-846 method 6020A (ICP/mass spectrometry) instead.

Response: It has been confirmed with the laboratory (Empirical) that the LOQ, LOD, and DLs provided are for SW-846 Method 6010C.

14. **Comment:** Worksheet 37: Data that are rejected are defined as not usable for project objectives. Please remove the text on rejected data or include a note that rejected data will not be used for the achievement of project objectives.

Response: See response to Comment #6.d.i.

Appendix C: MC Field Standard Operating Procedures

1. **Comment:** SOP-07: Please expand the SOP to include a more robust 8-step decontamination procedure to be used in the event that gross contamination is encountered (in particular, in the areas where former landfilling may have occurred). At the least, as elevated levels of metals have been encountered during previous sampling efforts, please use a 10% nitric acid solution as part of the decontamination effort to minimize the potential of cross-contamination.

Response: Alconox®/deionized water wash/rinse is sufficient to prevent cross contamination during sampling and the aggressive use of 10% nitric acid during decontamination is not warranted. In addition the use of nitric acid poses potential safety concerns and regulatory requirements with the shipment, storage, disposal, and handling of a hazardous material.

2. **Comment:** SOP-08: In the event that grossly-contaminated soils are encountered (in particular, in the areas where former landfilling may have occurred), please add a provision into the SOP for drumming these soils.

Response: The following has been added to Section 3.2 of SOP-08, ***"In the event that grossly-contaminated soils are encountered, soils will be drummed. If soils are containerized, at the completion of the field activities the containers will be marshaled at a central location determined by NAPR personnel."***

Each drum will be labeled with the following information.

- ***The quantity of soil from each source***
- ***The date the soil collection started***
- ***The NAPR POC name and phone number"***

References

ITRC 2003. Characterization and Remediation of Closed Small Arms Firing Ranges. <http://www.itrcweb.org/Oocuments/SMART-1.pdf>

USACE 2006. Environmental Transport and Fate Process Descriptors for Propellant Compounds. Environmental Quality and Technology Program. ERDC/EL TR-06-7. June

VOLUME 2 MUNITIONS AND EXPLOSIVES OF CONCERN SAP

Worksheet Specific Comments

1. **Comment:** Worksheet 6: Please include PREQB on this worksheet (for both SAPs) to ensure that PREQB is notified of changes to schedule, scope of work changes, or any other modifications that change the approved field work.

Response: Worksheet #6 in both Volumes I and II has been revised. PREQB (and USEAP) has been added to the Communication Drivers field issue that require changes in field tasks and scope of field work and recommendations to stop work and initiate work upon corrective action

2. **Comment:** Worksheet 11: Please ensure that Worksheet 11 defines the amount of trenching that is needed to characterize the potential MEC contamination in the trenches and describe why this recommended amount of trenching will provide adequate data quantity and quality to characterize the contents of the trenches. Please add some technical justification and support for the recommended amount of test trenching excavation at this site.

Response: The investigation is guided by the Phase I geophysical survey and additional geophysical surveying for the Full RFI. Adequate coverage is provided to characterize trench contents. At the Potential Munitions Trench Subarea, the Phase I RFI results will serve as a guide as to where anomalies are located in the eastern trench areas; however, rather than formally reacquiring previous anomalies, the Full RFI geophysical survey will be conducted within the footprint of the Phase I RFI survey and anomaly identification will be "redone" in real time, during the Full RFI. During the geophysical survey, in real-time, the Site Geophysicist will identify areas for mechanical excavation (test pits) estimated to be at two to three locations per each of the five suspect trench disposal areas in the eastern portion of the site. These locations will be chosen based on the response received by the instrument during surveying. The locations shown on Figures 17-3 and 17-4 represent areas of higher response identified during the Phase I RFI geophysical survey. Intrusive investigations will be conducted along these linear anomalies, which may represent trenches, to determine the sources of the linear anomalies. Two to three locations per trench will be intrusively investigated, this amount of test pitting will be adequate to determine the nature of debris that may be buried in the trenches, e.g., whether munitions items, construction debris, drums, etc. are the source of the anomalies. A geophysical survey will also be conducted during the Full RFI at potential former trench areas located in the western portion of the subarea to confirm anomalies are not present at the Potential Munitions Trench Subarea; depending on the results of this investigation, intrusive investigations may be conducted in this area.

Item #4 of Section 11.2 for the Potential Munitions Trench Subarea has been revised.

- "Potential Munitions Trench Subarea:
 - Results of MEC intrusive investigation of anomaly areas on the eastern side of the subarea using mechanical excavation equipment to dig test pits. **Two to three**

locations per each of the five suspect trench disposal areas in the eastern portion of the site will be intrusively investigated.

- If anomalies, which appear to be indicative of trenches, are identified at potential former trench areas located on the western side of the subarea, intrusive investigation via hand digs or mechanical investigation will be conducted.”

3. Worksheet 12:

- a. **Comment:** Please verify the measurement performance criteria for the IVS. It says that the daily IVS requires 100% detection of the ISOs. This is correct for the detector-aided survey; however, for DGM, the actual criteria should be to detect the ISO and the detection signal intensities should be required to be within some percentage of the calculated signal intensity to ensure that the DGM sensor is functioning properly. Please revise accordingly.

Response: The measurement performance criteria for the IVS have been revised to differentiate between criteria for the detector-aided survey and the geophysical survey.

“Detector-Aided Survey: 100% vertical detection of industry standard objects (ISO) at specified depth.

Geophysical Survey: Detection and Instrument Response Levels of ISOs within the response curve.”

- b. **Comment:** Please verify the measurement performance criteria for "manual anomaly intrusive investigation." Determining the type, condition and fuzing state of MEC and identifying non-MEC is a task, not a measurement performance criteria. And it appears that this measurement performance criteria is applied to "blind seed items" which don't have a type, condition or fuzing as they are likely to be pieces of pipe.

Response: the following revisions have been made to Worksheet #12 in response to the comment:

Definable Feature of Work/Data Type	Geophysical Anomaly Measurement/ Data Quality Indicator	QC Sample and/or Activity to Assess Measurement Performance	Measurement Performance Criteria
Manual Anomaly Intrusive Investigations (Hand Digs)	Completeness	Blind seed items. QC of intrusive investigation locations.	Type, condition, and fuzing state (of munitions related items- correctly identified) Type of non-munitions-related items. Detect all blind seeds and all MEC/MPPEH 20 millimeter (mm) or larger.
Mechanized Anomaly Intrusive Investigation (Test Pits)	Completeness	Blind seed items. QC of intrusive investigation location.	Type, condition, and fuzing state (of munitions related items- correctly identified) Type of non-munitions-related items. Detect all MEC/MPPEH 20 mm or larger.

- c. **Comment:** The measurement performance criteria for "along line accuracy of geophysical anomalies" of 2-meters does not appear to be appropriate for "anomaly reacquisition." If anomalies reacquisition is only required to be accurate to within 2-meters, please clarify how the excavation process will work when the search radius around anomalies is a maximum radius of 2-ft (see worksheet 14 for "manual anomaly intrusive investigation"). A two-meter accuracy requirement combined with a 2-ft. search radius is not adequate (note that Section 17.7 and worksheet 12 would require "sub-meter accuracy" from the GPS unit). Please clarify how will these different navigation accuracy requirements (2-meters, 2-ft., and sub-meter) be implemented.

Response: The Phase I RFI geophysical surveying results and historical aerial photographs provide a guide for locating Full RFI locations for intrusive investigation. The row has been renamed as "Anomaly **Informal** Reacquisition" in Worksheet #12, all anomaly acquisition will take place in real time. Further, the GPS accuracy is based on the capability of the GPS unit, which is sub-meter; therefore, the intrusive investigation radius versus GPS accuracy do not have a direct correlation in regard to locating anomalies for intrusive investigation.

- d. **Comment:** This worksheet also requires emplacing BSI along trench lines for mechanized anomaly investigation of test pits (this requirement is also described in Section 17.9.3 and worksheet 20 on Page 112). Please clarify the purpose of this requirement. Placing a piece of pipe painted blue on a suspected burial pit location that is going to be excavated and investigated seems to be not relevant to the activity taking place: excavation, removal and identification of the contents of the trench.

Response: The blind seed items would be representative of MEC/MPPEH items and are utilized in the QC process and it is, therefore, the Navy's preference to retain this requirement. To clarify, if a test pit investigation results in a pile of non-MEC/MPPEH debris, it is important to note that if an MEC/MPPEH item or seed item were mixed in with the other debris that the MEC/MPPEH item/seed item is identified and recovered.

- e. **Comment:** Please review this worksheet to ensure that the measurement performance criteria are more relevant to the activities being performed.

Response: The measurement performance criteria have been reviewed and revised as necessary and as described in responses to Comments #3a, b, c, and d.

4. Worksheet 17:

- a. **Comment:** Section 17.10.1 says that "Gaps in the geophysical data due to unusable data or data that could not be positioned will be evaluated to determine whether they are sufficiently large enough to warrant data recollection in those areas." Please develop a DQO to define what is considered data sufficiency that answers the following question: "How will it be determined that there is adequate data quantity to support decision-making?"

Response: The following has been added to the 7th sentence of the 4th paragraph in Section 17.10.1 (revised Section 17.9.1), "***If a data gap of more than 10 feet occurs, then the data in the area will be recollected. If caused by a gap in gps coverage then fiducials will be used.***"

- b. **Comment:** The text in worksheet 17 adds a DFW that is not included on worksheet 14 and the table in Section 17.1 of worksheet 17. This new DFW in the text is Section 17.5: Archeological Discovery. Please either incorporate this task into another DFW or add it to worksheet 17 and the table in Section 17.1 to make the identification and description of DFW consistent throughout the document.

Response: Section 17.5, Archeological Discovery has been deleted and incorporated into Section 17.12, Manual Anomaly Intrusive Investigation – Hand Digs, as Section 17.12.1. All remaining section numbers in Worksheet #17 have been adjusted to account for the deletion of Section 17.5.

- c. **Comment:** Section 17.2.2 requires, "If non-site personnel or non-essential non-UXO personnel enter the EZ, all MEC operations will cease until the EZ is reestablished". Please note that this doesn't account for the presence in the EZ of "authorized visitors" as described in Section 17.1: "Authorized visitors will be allowed to enter the EZ during intrusive operations in accordance with requirements in NOSSA guidance, OP-5, and the DDESB-approved ESS." Please revise Section 17.2.2 accordingly.

Response: Section 17.2.2, third sentence has been revised in response to the comment, "~~If non-site personnel or non-essential non-UXO~~ personnel enter the EZ, all MEC operations will cease until the EZ is re-established."

- d. **Comment:** Sections 17.2.2 and 17.13 require all excavations to be backfilled prior to leaving so no open excavations remain after duty hours. Due to the remote nature of the trenching sites, please consider using caution tape and snow fencing to surround open trenches overnight as backfilling each night may result in the need to re-excavate test pits and may also result in QC issues because QC activities are required to be performed prior to backfilling.

Response: The following has been added as the last sentence of Sections 17.2.2 and 17.13 (revised Section 17.12), ***"If it is not possible to backfill an excavation prior to the end of the day, caution tape and snow fencing may be used to surround the open trench overnight."***

- e. **Comment:** Sections 17.2.5 and 17.15.1 and the "references" section: Please reference the Puerto Rico explosives law as a requirement and include compliance with this law to the work plan. A copy of the Puerto Rico explosives law is attached to these comments as Attachment 1.

Response: The Puerto Rico Explosives Law has been added to the reference section.

The following has been added as the last sentence of the first paragraph of Section 17.2.5, ***"All activities involving donor explosives will be performed in accordance with Puerto Rico Explosives Law. In order to comply with Puerto Rico Explosives Law, all receipt, transport, and storage of donor explosives will be performed by Alpha Aggregate Inc., who is licensed under Puerto Rico Explosives Law. Alpha Aggregate Inc. will also be onsite during operations involving donor explosives."***

The following revision has been made to first sentence of Section 17.15.1 (revised Section 17.14.1), "The explosives used for this project will be managed in accordance with Federal Acquisition Regulation 45.5, local and state laws and regulations, ATF Pamphlet 5400.7, DoD 6055.9-M, Department of Transportation regulations, OP 5, and applicable Puerto Rico guidance documents ***including the Puerto Rico Explosives Law.***"

- f. **Comment:** Section 17.4 prohibits cutting of trees greater than 2-in. in diameter between March 15 and August 30. As the fieldwork is planned to be conducted during this time period cutting of trees greater than 2-in. will not be possible. Please explain if this will allow the planned DGM work at the western portion of the Potential Munitions Burial Trench subarea to be implemented.

Response: The SAP considered the ecological habitat and minimizes disturbance to the extent possible. The EM-61 MK2 HH will be used in this area, it is a portable hand-held unit that will allow the survey to be conducted in the wooded area. The 4th bullet of the Potential Munitions Trench section of Section 17.10.2 has been clarified, "Geophysical surveys will also be conducted at potential former trench areas located in the western portion of the subarea to confirm anomalies are not present at the Potential Munitions Trench Subarea. ***An EM-61 MK2 HH will be used because it is a hand-held portable unit and can be more easily used in a wooded setting, minimizing brush clearance.***"

Further, it is standard procedure not to perform vegetation clearance on trees larger than 2 inches in diameter. **"No trees larger than 2 inches in diameter will be cut"** has been added to Worksheet #12 for the Definable Feature of Work, Vegetation Management".

- g. **Comment:** The document refers to accessibility in numerous places (see 17.10.1 (first paragraph), 17.10.1 (third paragraph), worksheet 18) but doesn't define "accessibility". Please define what is considered to be accessible and inaccessible for the various investigation methods that will be implemented at the three full RFI sites. Consider including this information on a map to show how much of the three areas are expected to be inaccessible. The question that needs to be answered is whether or not accessibility will prevent the project goal of characterizing the MEC contamination from being achieved. Note that on worksheet 18 there are no "exclusion areas" noted yet it is implied that there are inaccessible areas that will be excluded from sampling. Please clarify this apparent discrepancy.

Response: The following sentence has been added as the last sentence of the third paragraph of Section 17.10.1 (revised Section 17.9.1), **"Accessibility is defined as surface conditions that impact the ability to safely and effectively survey a given area. The location and size of any inaccessible areas will be recorded via GPS. These areas, if any, will be determined at the discretion of the field team and will be addressed with Tetra Tech project management during daily conference calls."**

It is unknown at this time what areas and how much of the areas to be surveyed will be inaccessible and; therefore, if project goals will be impacted. The exclusion areas column of worksheet #18 has been revised:

Sampling Location / ID Number	Exclusion Areas
Rifle Range Subarea	None Potentially, small areas inaccessible due to thick vegetation or steep grade
OB/OD Subarea	None Potentially, small areas inaccessible due to thick vegetation
Potential Munitions Trench Subarea	None Potentially, small areas inaccessible due to thick vegetation

- h. **Comment:** Section 17.8.3 says that blind seeds in the "site IVS are identified in the ESS (provided to field personnel under separate cover)." This information is also provided in this document, for example in Sections 17.6 and 17.9.3. Please consider removing the reference to the ESS as it is provided in this document in numerous places.

Response: Agree. The last sentence of the second paragraph in Section 17.8.3 has been revised, "The blind seed items will be ISOs of similar size and material as the defined targets for the site IVS ~~identified in the ESS (provided to field personnel under a separate cover)~~ **as described in Section 17.6.**

- i. **Comment:** Section 17.9.3 says that large ISOs will be used as blind seeds for the DGM survey. However, Section 17.6 says that only small and medium ISOs will be used in

the IVS. To comply with the recommendations of the GSV document please emplace some large ISOs in the IVS or change the BSI ISOs from large to medium and small.

Response: Section 17.9.3 (revised Section 17.8.3) has been revised for consistency, "Blind seeds will be small and/or medium ISOs for the detector-aided survey instruments, and DGM survey seeding will use ~~large~~ **medium** ISOs that will be buried, shallow depths to test their detection and response values with the geophysical instrument in the survey areas."

- j. **Comment:** Section 17.10.1 says that the geophysical survey will address depth requirements in worksheet 11. However, review of worksheet 11 shows that the only depth requirements specified are the excavation limits of 2-ft. (OB/OD area) and 4-ft. (trench area). These are not detection requirements as implied in 17.10.1. In order to establish depth requirements the document should calculate the GSV depth of detection for various MEC and determine if the penetration or burial is potentially greater than the ability of the sensors to detect it. As these two investigation sites are potentially OB/OD and mass burial sites, it is unlikely that detection capability will be a problem. However, this section implies that detection requirements are provided in worksheet 11. Please ensure consistency between the two worksheets.

Response: Section 17.10.1 was referring to the detection depth of excavation as described in Worksheet #11. The first sentence of the paragraph of Section 17.10.1 has been revised for clarification, "Geophysical survey data collected along transects will be from a single operator using both the Geonics EM-61 MK2 with standard coil and EM-61 MK2 HH (hand held) to address **excavation** depth requirements in Worksheet #11 **of 2 feet and 4 feet bgs.**" Further, as already described in Section 17.10.2, the DGM instrument detection depth should be adequate, "The EM-61 MK2 with standard coil is expected to have a maximum depth of penetration of over 10 feet for large objects or clusters of objects; whereas, the hand-held coil is not expected to be effective at depths over 5 feet."

- k. **Comment:** Section 17.10.2 says that the EM61 MK2 "will be used in areas where the potential MEC may be at deeper depths". Please clarify how these areas will be determined. Is it possible to identify these areas now during the planning process? Also, earlier in the document it was stated that the survey would be done with both the HH and MK2 versions of the EM61. This section appears to be in conflict with that as this implies that the MK2 version will not be used unless the site is suspected to contain MEC at deeper depths. Please explain this and define the approximate limit of the "deeper depths" for this application.

Response: The EM-61 MK2 HH is being used as the primary instrument at the Potential OB/OD Subarea and the Potential Munitions Trench Subarea to best match the previous Phase I RFI survey data and because it is portable. Section 17.12 concerning the Potential Munitions Trench Subarea has been clarified as follows, "Because the EM-61 MK2 HH appeared to be ineffective in identifying **several of** the eastern trenches **during the Phase I RFI (based on comparison with the EM31)**, the EM-61 MK2 with standard coil will be used to identify and locate metallic anomalies in the eastern trench areas at the Potential Munitions Trench Subarea."

- i. Comment:** The first bullet and the next-to last bullet in Section 17.10.2 on Page 91, the "geophysical surveying" section on Page 92 and worksheet 18 say either a meandering path or 2-ft. transect spacing will be used. Please explain which method will be used in which situation. These are very different search methods and it is unclear which will be used and where.

Response: The following clarifications have been made:

Section 17.10.2, Potential OB/OD Subarea, second bullet, "Geophysical surveying will be conducted across the planned survey area (shown on Figure 17-2) using a meandering path **where necessary in inaccessible areas** or, **otherwise**, 2-foot transect spacing."

Section 17.10.2, Potential Munitions Trench Subarea, 2nd bullet, "Geophysical surveying is planned across the survey area (shown on Figure 17-3 and Figure 17-4) using a meandering path **where necessary in inaccessible areas** or, **otherwise**, 2-foot transect spacing."

Section 17.10.2, Geophysical Surveying, last sentence, "The geophysical team will conduct the geophysical survey along accessible portions of the planned transects along a meandering path **where necessary in inaccessible areas** or, **otherwise**, at 2-foot spacing.

- m. Comment:** Section 17.10.2, first bullet on Page 92 says geophysical surveys will be performed in the previously unsurveyed western portion of the Potential Munitions Trench. It is unclear if this is a real-time or DGM survey. Please explain.

Response: A geophysical survey (DGM) will be conducted in this area. Per response to Comment #4f, a EM-61 MK2 HH will be used during the survey.

- n. Comment:** It is unclear where Section 17.11 on geophysical data processing will be implemented. Will DGM be used only in the western portion of the Potential Munitions Trench which hasn't been geophysically surveyed to date? If so, how will anomalies be identified as potential ordnance items if the contamination is expected to be present in trenches and it will not be possible to identify individual MEC in the trenches. Is there another criterion, other than suspected individual MEC, that should be used?

Response: Geophysical surveys (DGM) will be conducted at the Potential OB/OD Subarea, and both the eastern and western portions of the Potential Munitions Trench Subarea. The Phase I RFI results will serve as a guide as to where anomalies are located; however, rather than formally reacquiring previous anomalies, geophysical surveys will be conducted during the Full RFI and anomaly identification will be "redone" real time. As described in Section 17.1, during geophysical data processing, contour maps or data profiles with interpreted anomalies displayed will be generated and then anomaly lists or dig sheets will be generated. The geophysical survey will identify anomalies; however, until these anomalies are intrusively investigated, it is unknown whether or not the anomalies represent MEC items.

- o. **Comment:** Section 17.13 on Page 95 contains the sentence, "These points will be under the control of the SUXOS until the item has been thermally treated." Please explain this statement. What are the "points" in this reference and what thermal treatment is taking place?

Response: The fifth sentence of the third paragraph of Section 17.13 (revised Section 17.12) has been revised "these points" has been replaced with "this collection point" in reference to the collection point discussed in the previous sentence, "~~These points~~ **This collection point will be under the control of the SUXOS until the item has been thermally treated by detonation.**"

- p. **Comment:** Section 17.15.2 describes acquiring explosives from a local supplier in an "on demand" basis. It is possible that this may take some time and that MEC found at the end of the day will have to remain overnight. Sections 17.15.4 and 17.16 (Page 102) require the SUXOS to maintain security of the MEC but doesn't provide guidance for how to accomplish this. Will the MEC need to be guarded overnight? Please provide guidance on MEC security.

Response: The following has been added as the last sentence of Section 17.15.2 (revised Section 17.14.2), "**Recovered MEC will be treated the same day discovered, if possible, or secured by Tetra Tech UXO specialists until treatment can be coordinated or until responsibility for its security is transferred per instructions from the NAPR POC (e.g., the SUXOS may be directed to transfer security to NAPR Security).**"

The last sentence of Section 17.15.4 (revised Section 17.14.4) has been revised, "Security of MEC/MPPEH items will be the responsibility of the SUXOS until the items are treated **or secured by Tetra Tech UXO specialists until treatment can be coordinated or until responsibility for its security is transferred per instructions from the NAPR POC (e.g., the SUXOS may be directed to transfer security to NAPR Security).**"

The following has been added as the second sentence of the second paragraph of Section 17.16 (revised 17.15), "**If it is not possible to treat items the day of discovery, item will be secured by Tetra Tech UXO specialists until treatment can be coordinated or until responsibility for its security is transferred per instructions from the NAPR POC (e.g., the SUXOS may be directed to transfer security to NAPR Security).**"

- q. **Comment:** Section 17.17 requires implementation of procedures in Section 17.8.4 in the event that HTRW is found. However, Section 17.8.4 contains the procedures for CWM, not HTRW, and these procedures are likely to be excessive for routine HTRW. The contractor may want to reconsider this requirement.

Response: The referenced sentence has been deleted from Section 17.8.4 (revised Section 17.7.4). Section 17.17 (revised Section 17.16), last sentence has been revised, "~~If any items are suspected to or found to contain HTRW, procedures described in Section 17.8.4 will be followed.~~ **are encountered on site, the field team will proceed in accordance with the HASP/APP; if warranted by the HASP/APP requirements,**

the work site may need to be evacuated until the Project HSM, with concurrence of the Navy RPM, identified and implements appropriate protective measures."

5. Worksheet 20:

- a. **Comment:** Worksheet 20 for the soil matrix (detector-aided surface survey) says that if a blind seed is missed that the entire lot of work will be rejected and reworked. Please consider conducting a root cause analysis prior to establishing required rework.

Response: A root cause analysis will be performed prior to performing a rework. The determination of if the blind seed was "missed" will be established by the QC after performing a root cause analysis.

- b. **Comment:** In worksheet 20 the "N/A" for "sample" under the soil matrix (anomaly intrusive investigation) is confusing. There should be some type of sample specified. If all of the data is supposed to be inspected the sample would be 100%. If none of the data is inspected the sample would be 0%. Please clarify.

Response: NA has been deleted from "sample" for the soil matrix for anomaly intrusive investigation, "***Identification of 100% of all anomaly items; misidentification of an MEC/MPPEH item or classification would result in failure of QC.***" has been added.

6. **Comment:** Worksheet 22: Please provide a reference for the UFP-QAPP Manual referenced here and in Worksheet 29, and clarify whether this document is required to be on-site during the project.

Response: "***UFP-QAPP Manual, V.1 March 2005***" has been added to Worksheet #22 and #29, following the table. This document is not required on-site during the project.

7. **Comment:** Worksheet 25: Please correct the definition of the acronym CVAA to cold vapor atomic absorption.

Response: Worksheet #25 of Volume II is marked as not applicable, CVAA is not an acronym on Worksheet #25 of Volume II. The definition of the acronym CVAA on Worksheet #25 in Volume I has been revised to ***cold vapor atomic absorption***.

8. **Comment:** Worksheet 29, Page 128: This worksheet references "FMTR Forms" (according to the list of acronyms this is "field task modification request"). However, the field forms at the end of the document, after the SOPs, do not include an FMTR form. It has an FCR (field change request). Are these the same? If so, please ensure that they are consistently labeled.

Response: Worksheet #29 has been revised to list "***FTMField Change Request Forms***" in the Document, Report, or Form column, FTMP has also been replaced by "***FCR***" in the acronym list.

9. **Comment:** Worksheet 31: The only assessments required by worksheet 31 on Page 133 for "manual anomaly intrusive investigation" and "mechanized anomaly intrusive investigation" is blind seeding. However, earlier in the QAPP it was stated that it is required for the QCS to inspect all of the excavation holes to ensure complete removal of all anomalies. If this assessment of cleared holes is required, please add to this table.

Response: QC of each intrusive investigation location has been added to Worksheet #31 for manual and mechanized anomaly intrusive investigation as shown below.

Assessment Type	Frequency	Internal or External	Organization Performing Assessment	Person(s) Responsible for Performing Assessment ⁽¹⁾ (title and organizational affiliation)	Person(s) Responsible for Responding to Assessment Findings ⁽¹⁾ (title and organizational affiliation)	Person(s) Responsible for Identifying and Implementing Corrective Actions ⁽¹⁾ (title and organizational affiliation)	Person(s) Responsible for Monitoring Effectiveness of Corrective Actions ⁽¹⁾ (title and organizational affiliation)
Manual Anomaly Intrusive Investigation	<i>QC of each intrusive investigation location</i>	<i>Internal</i>	<i>Tetra Tech</i>	<i>UXOQCS</i>	<i>SUXOS</i>	<i>SUXOS</i>	<i>UXO/MEC Manager PM</i>
Mechanized Anomaly Intrusive Investigation	<i>QC of each intrusive investigation location</i>	<i>Internal</i>	<i>Tetra Tech</i>	<i>UXOQCS</i>	<i>SUXOS</i>	<i>SUXOS</i>	<i>UXO/MEC Manager PM</i>

Attachment 2: MEC Standard Operating Procedures and Field Forms

1. SOP 1:

- a. **Comment:** This SOP only covers performing detector-aided surface surveys. The Rifle Range will be surveyed by performing detector-aided subsurface surveys but the procedures for that (for example, how anomalies will be marked, whether they excavation will take place immediately upon finding an anomaly or later after the hand-held geophysical survey is completed) are not included in this or other SOPs. Please consider modifying SOP 1 to include a section on performing subsurface surveys using hand-held analog sensors.

Response: MRP SOP 10, UXO Intrusive Investigation has been added to the SAP and has been added to Worksheet #21 and included in Attachment 2.

- b. **Comment:** This SOP contains QC requirements that appear to be different than those in the main QAPP. For example, there are requirements to recheck 25% of the first four units of work (a new term not used in the QAPP) and then step up or down the amount of QC based on the results. Please check to see that this is compliant with the requirements of the QAPP and, if not, identify which set of QC requirements will be implemented.

Response: MRP SOP 1 is general guidance and does not contain site-specific information. The QC requirements for this project are presented in the SAP (the SAP will supersede the SOP).

2. **Comment:** SOP 3: Section 5.0 says that EP 75-1 -2 contains instrument checks, tests and their required frequencies and acceptance criteria. However, this reference covers MEC support during construction or HTRW operations and doesn't go into detail on the performance and operation of geophysical sensors. Please correct this reference.

Response: Chapter 4, Geophysical Detection Equipment, describes the instrument checks, test, etc., as described in Section 5.0 of MRP SOP-03.

3. SOP 8:

- a. **Comment:** Section 3.0 of SOP 8 indicates that field forms are available on a Tetra Tech web site. Please include the forms in the work plan as EQB does not have access to this web site.

Response: The information is provided for the field team use. All hard copy field forms are included in Attachment 2 of the MEC UFP-SAP (Volume II).

- b. **Comment:** Section 4.3 in SOP 8 says the Daily Equipment Checklist is MRP FF.4. However, review of the forms at the end of the document shows that MRP FF.4 is the visitor's log. Please correct this reference.

Response: Section 4.3 of SOP 8 has been revised to indicate that MRP FF.4 is the Daily Equipment Checklist.

4. **Comment:** The field forms at the end of the document are just placed there without a cover introducing them or a list of the forms that are included. Please consider adding a cover and an index of the forms.

Response: A cover sheet and index of the field forms have been added to Attachment 2 before the field forms are presented.

5. **Comment:** Some of the field forms appear to be included numerous times. For example, the IVS Installation Checklist appears three times and the Daily IVS Report appears twice. Please consider reviewing the forms to make sure the latest versions are included once.

Response: The duplicate field forms prior to the numbers forms (MRP FF.1 through MRP FF.24) have been deleted from Attachment 2.