12/31/02-02303

EQB Comments on the Interim Data Summary Report Phase I and Phase II Investigations SWMU 4, Former NASD, Vieques, Puerto Rico December 2002

Comments Developed December 31,2002

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1			General Comment: It should be possible to devise a more efficient method of performing this OE site investigation. Performing 100% geophysical surveys should not be necessary to delineate the nature and extent of the contamination.
Response			*The extent of OE contamination has not been defined. Phase III is planned to expand the grids along the outer edges of the site to better define the extent of OE. Grids are also planned to sample the density of OE items away from the source area (OB/OD pits). Geophysical surveys using 100% coverage was used to identify the potentail source areas (the OB/OD pits) During Phase I a trasect survey missed several of the OB/OD pits.*
2	3	2.2.2	Reference is made to the aerial photo analysis reported in the Environmental Baseline Study. Comments were previously made on this subject See comment #2, subcomments #12, 13, and 14 of the 6/11/02 EQB comments on the Draft Final Site Management Plan. EQB reviewers have not been able to 1) determine who performed the aerial photo analysis, 2) acquire the report of the analysis for independent review, and, 3.) get answers to specific questions about the conclusions that were made from the photo analysis.
Response			*The aerial photo analysis was performed by Environmental Research, Inc from Virginia. A copy of their report will be provided to EQB*
3	3	2.2.2	No information on the investigation into the trench that was identified by the aerial

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			photo analysis is provided. Please explain if the suspected trench has been investigated and, if so, what the results of the investigation are.
Response			*The trench identified from the aerial photo investigation was not apparent in the field . However, geophysical data indicate a linear metallic anomaly (about 60 feet long) in the area. Anomaly sampling in the linear feature showed OE scrap metal. The OE investigations to date have not shown any evidence of bur-red UXO This area will be further investigated during the remediation stage of the project.*
4	4	2.3	The referenced figure, Figure 1-4, is not included in the report Please provide the referenced figure.
Response			*Figure 1-4 is a map showing the location of OE items identified during the PA/SIOE and will be provided to EQB.*
5	4	2.3	The OE discovered during the previous investigation were 37 20-mm projectiles, 16 MK-230 fuzes and 1 60-mm mortar. This equals 54 total items, not the 61 items reported to be found. Please identify the 7 additional OE.
Response			*The additional 7 items are 1- electrical blasting cap, 1- auxiliary booster, and 5- small arms rounds.*
6	4 and 11	2.4 and 5.0	The explanation of the development of the Conceptual Site Model and the update to the CSM are useful additions to this interim report. In light of the fact that a possible trench was identified during the photo analysis, it is recommended to include burial of OE as another Primary Release Mechanism until it can be established that no burial took place within SWMU 4.
Response			*Burial of OE Scrap and other OE items as a potential Primary Release Mechanism will be added to the Conceptual Site Model.*
7	5	3.0	The primary objective for the investigation stated in the first paragraph is different from the objective stated in Master Work Plan. It is recommended that this be resolved by restating the investigation objective in the Phase III Work Plan Addendum.
Response			*The objective will be included in the SOP for the Geophysical Survey.*

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3	7	4.0	1. The paragraph after the bullets claims that the geophysical prove out served to confirm that the data collected met the DQOs stated in the Master Work Plan. EQB comments #2 and 3 on the Master Work Plan stated that the DQOs were not clearly defined and requested additional information on the DQOs. EQB cannot concur with the conclusion that DQOs were met because of the lack of specific information on the DQOs. 2. EQB also cannot agree that the geophysical prove out *was* adequate to determine that DQOs were achieved. Previous EQB comments #10 and 11 to the Site-Specific Work Plan presented detailed questions concerning the geophysical prove out and specific recommendations for improvement. No responses or additional information has been received to these previous comments.
Response			*1. DQOs will be revised in the SOP for the Geophysical Prove-Out* *2. The details of the geophysical prove out will be provided in the SOP of the Geophysical Prove-Out. The prove out consisted of 48 OE items found at SWMU 4 buried to depths ranging from 2 inches to 38 inches The geophysical contractor was able to identify all 48 items.*
3	7	4.0	The last paragraph on this page presents the analysis that areas with a high density of anomalies correlate well with five of the photo-identified sites However, the reviewer cannot verify this correlation from the information presented on Figure 3. The locations of the photo-identified sites are not superimposed on the anomaly data. Also, what is the correlation of anomaly density to the other photo-identified sites including the suspected burial trench?
Response			*A figure overlaying the photo-identified sites and pits found in the field will he provided in the OE report after phase III.*
10	8	4.0	In addition to the investigation data presented in this report, EQB requests the following data: 1. The depth of the OE found 2. The number and location of "no finds" (selected anomalies that did not yield an identifiable source object)

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			3. The number and location of anomalies remaining deeper than excavation depth (anomalies that were investigated, but the source object is believed to still remain in the ground below the depth of excavation) 4. The total number of anomalies in each sector 5. The number of anomalies in each sector that were selected for intrusive investigation. 6. Excavation results by sector.
Response			*1. Greater than 95% of the OE items found were at a depth of 2 to 6 inches (as would be expected from an OB/OD operation).* *2. Only six nofinds were identified from 4,000 digs Locations will he provided in the OE report.* *3. No items were left in place. All anomalies investigated were removed.* *4. The total number of anomalies in each grid will be provided in the OE report after the Phase III Investigation.* *5. A total of I00 anomalies per acre were selected forre-acquisition* *6. Detailed results will be provided in the OE report*
11	8	4.0	What is meant by the statement "As a result, several OE items were left in place"? Does this mean that OE were identified and not disposed of? Or, does it mean that the investigation method used (intrusive investigation of only some of the identified anomalies) is likely to result in some OE remaining at the unexcavated anomalies?
Response			*The latter; only 100 items were investigated per acre, so some OE items remain at the site.*
12	8 and 10	4.0 and 5.0	Please provide the records of accountability (dig sheets, disposal logs) for the 705 OE that were discovered during Phases I and II.
Response			*Dig sheets and disposal logs will be included in the OE report.*
13	12	*6.0*	The second and third paragraphs mention compliance with a probability of detection of 85% and a confidence level of 90%. This requirement cannot be

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			found in either the Master or Site-Specif; plans (although it is known that the Navy uses ,these requirements on other projects). It is likely that none of the versions of the geophysical prove out used are adequate to denionstrate compliance with this standard. It is recommended that, if this standard is a requirement, that it be stated as a detection DQO and that the geophysical prove out be designed to demonstrate achievement of this standard.
Response			*The geophysical prove out met the objective of 85% detection,at a 90%confidence level since 100% of the seeded items (48/48) were detected*
14	12	5.0	It is stated in the final paragraph that having only six false positive anomaly selections is an indication of a high (99%) probability of detection. This appears to be a misunderstanding of probability of detection. False positives have nothing to do with probability of detection. As a mater of fact, achieving a high probability of detection has, in the past, required raising the number of false positives. This is because selecting anomalies very conservatively to ensure that no OE are missed usually results in selecting some anomalies that turn out to be no finds or insignificant pieces of metal. This raises both the number of false positives and the probability of detection. Please explain how achieving a low number of false positives is an indicator of a high probability of detection.
Response			The detection % asssumes that 4000 items were present and only six items were not detected, this will be differentiated from probabil;ity of detection which can only be calculated from the prove-out. This will be clarified in the OE Report.
15	12	6.0	Is the QC documentation available for review by EQB, including: 1. Preparatory, initial and follow-up QC checklists 2. Final inspection checklists 3. Corrective action requests and forms 4. Results of the geophysical prove outs?
Response			*All items will be provided in the OE report after phase III*
16	13	7.0	Please explain why is it necessary to investigate up to 300 additional anomalies per acre from the 35 acres already investigated. It appears that this may not be

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			necessary if the data already available can be used to delineate the nature and extent of the contamination.
Response			*Only 20 acres are planned for an additional 300 items tobe identified to better charaterize the types of ordance that is present.* .
17	13	7.0	The paragraph below the bullets describes an addendum that will be developed to the Site-Specific Work Plan that will identify the areas of investigation and describe proposed changes. However, the addendum already received only describes changes to OE scrap processing and explosives storage. Is an additional Phase III addendum going to be issued to identify the areas of investigation?
Response			*The proposed Phase 111 area of investigation was provided in the Inerim Report and therefore was not included in the Addenedum. An additional copy of the proposed Phase 111 area of investigation will be provided in the Geophysical Survey SOP.*
18		Figure 3	1. What are the data gaps in the geophysical data in sectors G30, H31, B23, 122, H21, and E14, and H10? 2. What is the basis for evaluating the two small areas to the north (F03, F04, G03, G04 and G09, G10, H09, H10)? 3. The northern-most investigation area (F03, F04, G03, G04) is not shown on Figures 4 or 6. What are the results of the investigation in this area?
Response			*1. These areas are steep-sided quebrndas and are inaccessible.* *2. The purpose is to sample the outer areas of the site to determine the density of OE items at varying distances from the source areas..* *3. Figures 4 and 6 will be modifiedfor the OE Report to show grids F03, F04, G03 and G04. Approximately eight OE items (20 mm HE) were found in this one acre area.*

EQB Comments on the Final Site-Specific OE Work Plan for SWMU 4, Former NASD, Vieques, Puerto Rico Dated November 9,2001

Comments Developed June 19,2002

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1	1-8	1.2.3	This section describes previous investigations including cutting transects through the area with a bulldozer. Has this work been documented in a report? If so, please provide this report for review. If not, recommend producing an updated document that captures all of tlic investigation work and data that has been generated on this site.
Response			*The transect work was reported in the Phase I Expanded PA/SI, CH2M HILL, October 2000. This report was provided to EQB.*
2	2-1	2.1	This section states that subcontractor SOPs for the UXO and geophysical work will be provided at a later date. It is not possible to completely review the plan for the investigation of SWMU 4 without these important documents. These important SOPs should be included in this site-specific plan. Please provide them as soon as possible.
Response			*SOPs have been developed for the geophysical prove out and will he provided.*
3	2.7	2.2.1	There is no justification provided for this recommended approach. Recommend that project objectives be developed first, followed by Data Quality Objectives. Then a recommended approach can be developed to meet these objectives. This procedure would be in accordance with the EPA UXO Handbook and would enable the project to gain stakeholder acceptance. Recommend reconstructing this project dcvelopmcnt process now, after the fact, to determine if the investigation approach was appropriate to achieve the investigation goals.

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Response			*The objectives of the project are to identify the OB/OD pits and to determine the nature and extent of OE contamination. These objectives and the DQOs will be presented in the SOP for the Geophysical Survey*
4	2-7 and 2-8	2.2.1	Two of the bullets don't agree. The fifth bullet describes a 100-ft. square grid for vegetation clearance while the eighth bullet describes performing geophysics over a radial distance of 100-ft. from the point of interest. These are significantly different search areas. Recommend modifying these bullets to agree.
Response			*The ~~correct bullet is~~ vegetation clearance and geophysical surveys were completed in 100-ft. square grids. ~~The eighth bullet will be modified to deserihe 100-ft square grids.~~ This will be clarified in the OE Report*
5	2-11	2.3, 2.4	The geophysical subcontractor's SOPs should be included in this plan. Recommend providing them for review as soon as possible.
Response			*The geophysical subcontractor submitted a geophysical work plan and it will be provided to EQB.*
6	2-11	2.4.1	Although this information seems to be misplaced in this section on "Selection of Equipment and Personnel", this section states "verification of the removal of a target from an excavation will be performed using equipment designed to detect primarily ferrous materials". This indicates that a hand-held analog magnetometer will be used for this verification. However, this is in conflict with Section 5.11 of the Master OE Plan and Section 5.8 of the Site-Specific Plan which indicate that target signatures will be collected over each excavation in an "X" pattern and that the geophysical data will be submitted to the project geophysicist for review. Recommend modifying this section to agree with the other cited sections.

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8	7	4.0	1. The paragraph after the bullets claims that the geophysical prove out served to confirm that the data collected met the DQOs stated in the Master Work Plan. EQB comments #2 and 3 on the Master Work Plan stated that the DQOs were not clearly defined and requested additional information on the DQOs. EQB cannot concur with the conclusion that DQOs were met because of the lack of specific information on the DQOs. 2. EQB also cannot agree that the geophysical prove out was adequate to determine that DQOs were achieved. Previous EQB comments #10 and 11 to the Site-Specific Work Plan presented detailed questions concerning the geophysical prove out and specific recommendations for improvement. No responses or additional information has been received to these previous comments.
Response			*1. DQOs will be revised in the SOP for the Geophysical Prove-Out.* *2. The details of the geophysical prove out will be provided in the SOP of the Geophysical Prove-Out. The prove out consisted of 48 OE items found at SWMU 4 buried to depths ranging from 2 inches to 48 inches. The geophysical contractor was able to identify all 48 items.*
9	7	4.0	The last paragraph on this page presents the analysis that areas with a high density of anomalies correlate well with five of the photo-identified sites. However, the reviewer cannot verify this correlation from the information presented on Figure 3. The locations of the photo-identified sites are not superimposed on the anomaly data. Also, what is the correlation of anomaly density to the other photo-identified sites including the suspected burial trench?
Response			*A figure overlaying the photo-identified sites and pits found in the field will be provided in the OE report after phase III.*
10	8	4.0	In addition to the investigation data presented in this report, EQB requests the following data: 1. The depth of the OE found 2. The number and location of "no finds" (selected anomalies that did not yield an identifiable source object)

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Response			*Verification of the removal of a target from an excavation was performed with a hand held analog magnetometer. The text will be modified to in the Geophysics Work Plan to reflect this ~~this in both the Master Work Plan and Site Specific Work Plan.~~*
7	3-2	Table 3-1	This is the incorrect table for this section. The current table describes fragmentation and overpressure distances for various ordnance. The table in this section should describe Quantity-Distance tables for the storage of explosives. Recommend replacing the existing table with a QD table that is applicable for the maximum amount of explosives planned for storage.
Pesponse			*The maximum quantity of explosives planned for storage is estimated at 100 lbs. The quantity-distance for 100 lbs stored in an above ground magazine is 670 feet for the inhabited building distance (IBD) and 402 feet (60%) for the public traffic voute (PTR). Table 3-1 will he revised in the Geophysical Work Plan.*
3	4-3	4.2.2	This discussion of the MPM disagrees with the discussion of this subject in the Master OE Plan. The MPM in the Master OE Plan is a 60-mm mortar while in the Site-Specific Plan is it an Mk 230 fuze. Recommend revising these so they agree. Also, neither of these MPM discussions acknowledge that much larger munitions are expected to have been disposed of at SWMU 4 including 8-in., 105-mm, 106-mm, and 175-mm projectiles as documented in Section 1.2.2.1 of this plan. Recommend reevaluating the MPM and the location of the designated collection points for OE.
Response			*The MPM is the round with the greatest hazardous fragment range that can be **reasonably** expected to exist at the site. The MPM ran be modified after more knowledge of the site is obtained. To date, the largest round found at SWMU 4 is a 5-inch rocket.*
?	5		This Geophysical Investigation Plan lacks critical information and is mostly a reprint of the general plan already presented in the Master OE Plan. As one

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			example, Section 5.1.1 is a general description of some common geophysical sensors. However, a site-specific plan should describe which specific sensor is going to be used on each site and how it is going to be deployed. The specific information needed to evaluate the geophysics program is missing. Recommend developing a complete and specific geophysics plan for this project.
Response			*Detailed geophysical SOPs will be provided to EQB.*
10	5-6	5.1.1.2	This one paragraph on the geophysical prove-out is very inadequate to describe this critically important process. Recommend referring to the discussion of geo prove-out in the EPA UXO Handbook and EM 1110-1-4009 for guidance in developing a statistically relevant and unbiased geo prove-out. It is also recommended that a geo prove-out plan be developed and implemented prior to demobilization of the current work crews to enable the prove-out to be performed by the same personnel and equipment that has been performing the work. This will greatly assist in getting stakeholder acceptance of the work products from the current fieldwork.
Response			*A detailed, ~~unbiased~~ geophysical prove out was conducted during the Phase II field event. A description of the prove-out is included in the SOP that will be provided to EQB. Results of the prove-out will be provided in the OE Report and presented to EQB.*
11	5-11	5.1.4	The last sentence of this section states, "The specific data resolution and data density requirements will be established on a site-specific basis." This is the site-specific plan and these requirements should be established and documented in this plan. Without these requirements it is not possible to perform quality control of the geophysics program and it is not possible to determine that the geophysics program is adequate to meet the requirements of the investigation. Recommend revising this section to include this information which is critical for achieving stakeholder acceptance of the geophysical work products.

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Response			*This plan was written before the geophysical contractor was selected and before a prove out was conducted to determine whether magnetometer or electromagnetic induction techniques would be employed. The data resolution and density requirements can now be described after the prove out showed that the EM-61 in the litter mode was the best instrument configuration for the site conditions. The threshold for detection of a 20 mm HE round was set at 2 millivolts for the EM-61 with a line spacing of 3 feet.*
12	5-22	5.12	This section doesn't provide much detail about what is going to be contained in the final report. Recommend revising this section to describe the contents of the final report on this project.
Response			*An outline of the draft OE report has been developed and will be presented to EQB.*
13	5-28	6.10	Recommend revising this section to add information on the protection of the local population including what security measures are going to be taken to prevent unauthorized personnel from entering the site during non-working hours.
Response			*A portable explosives storage Type 2 magazine was established on the apron of an existing earth covered magazine to store all explosives brought on to the site and any items temporarily consolidated for demolition were stored in this magazine.*
14	3-1	9.2	This section states, "The geophysical plan and associated qualifications for personnel will be provided as an addendum to the final version of this work plan document. This appears to be in error since this is the final version of this document. Please correct this error and include information on the site-specific geophysics QC program.
Response			*The geophysical SOP ~~plan~~ will be provided to EQB.*

EQB Comments on the
Final OE/MEC Site Investigation Work Plan for
Blue Beach and Red Beach
Eastern Maneuver Area
Vieques Island, Puerto Rico
Dated November 2002

Comments Developed December 26,2002

Cmt. No.	Page	Section	Comment/Recommendation
1	1-1	1	It is stated that this work plan supplements the "Final OE Master Work Plan" developed for the Former NASD. It is noted that EQB submitted comments to the OE Master Work Plan to the Navy and responses to these comments from the Navy have not been received.
Response			*Responses to comments on the Final OE Master Work Plan have been prepared and will be provided to EQB.*
2	1-2	1	This section states that a records search is being completed for eastern Vieques and that this records search may provide additional site-specific information related to Blue Beach and Red Beach. Best procedures would allow for the completion of this records search prior to developing the work plan for the Blue Beach and Red Beach site ,investigation and prior to performing the site investigation.
Response			*A record search for the eastern end of Vieques is ongoing as part of the environmental work of this area. All information gathered to date indicates that the beaches were used for amphibious assault training exercises and only blank ammunition was used.*
3		Table 1-1	This table, listing potentially applicable or relevant and appropriate requirements and to be considered, is different from the corresponding table in the OE Master Work Plan. Some specific examples of this are:

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			1. The EPA "Handbook on the Management of Ordnance and Explosives at Closed, Transferring, and Transferred Ranges and Other Sites" (Interim final, February 2002), has been removed from the table 2. EM 1110-1-4009, "Ordnance and Explosive Response" has been removed from the table. Both of these documents have important information pertaining to OE investigations and are listed in the OE Master Work Plan as applicable. Please explain what criteria was used to determine that these documents, and others changed from Table 1 in the Master Work Plan, are no longer applicable to the Blue Beach and Red Beach OE investigation.
Response			*Table 1-1 is utilized in conjunction with with the corresponding table from the Master Work Plan and both set of references are taken into account for the OE Investigation..*
4	2-1	2.1.1	This section contains still another list of OE/MEC guidance, regulations, and policies applicable or potentially applicable during the Blue Beach and Red Beach OE investigation. This makes three lists of such documents (Master Work Plan, Table 1-1, and this section) which is very confusing to the reviewer. Consolidation of these three different lists into one list of potentially applicable guidance documents is highly recommended.
Response			*These reference documents were presented in the same manner in the Master Work Plan. Table 1-1 is a list of potentially applicable regulations and only lists the titles. Section 2-1 is a shorter list of regulations deemed directly applicable to the current investigation and gives an explanation of the contents of each document.*
5	2-12	2.1.4	The bullet items listed do not appear to be Data Quality Objectives (DQOs). Such things as "Control markers will consist of non-metallic stakes" and "Location and mapping performed shall be recorded and plotted in feet" are simple technical specifications and not DQOs. DQOs should describe the amount and quality of data that is required to achieve the site investigation goals. For example, what

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			probability of detection (Pd) and confidence level (Cl) is necessary to be achieved by the geophysical detection system in order to achieve the investigation goal of determining if the beaches and access roads are contaminated by OE/MEC? It is recommended that these and other necessary DQOs be developed to ensure future reviewers of the work that the data is adequate to support subsequent decision making.
iPesponse			*DQOs have been developed and will be provided to EQB. Geophysical DQOs include a probability of detection of 85% with a confidence level of 90%.*
(	2-15	2.2.2	What is the Vieques Island WebGIS"? Can EQB have access to this system?
iPesponse			*NASD environmental sampling data have been populated on the WebGIS. UXO data have not been uploaded yet. When UXO data are available to view, EQB will be notified.*
7	2-18	2.2.7	The purpose of the test plots (usually called prove out areas) is more than the purpose stated here: "calibrate geophysical instruments". They are necessary to demonstrate the effectiveness of the geophysical system (personnel, sensors, data handling, data processing, anomaly selection, navigation) in meeting the established DQOs. Recommend including more information on the test plots and how they will be used to demonstrate compliance with DQOs.
Response			*The geophysical contractor was required to successfully pass the geophysical prove out before performing the geophysical survey at Red Beach. The prove out at Red Beach tested the EM-61 instrument in two different modes; the sled mode with the instrument on the surface, and the wheel mode with the instrument at a height of 40 cm above the ground. The Geophysical Work Plan describes the purpose of the geophysical prove out.*
8	2-18	2.2.8.1	These detection depth goals appear to be the same as those used by the US Army *Corps* of Engineers. Other Navy projects have used the detection requirements from the NURC contract, the Navy's dedicated OE/MEC investigation and remediation contract, which have a stated Pd and Cl requirement. What is the

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			reason for using Army performance goals for detection instead of Navy performance goals? Also, if these formulas are going to be used, what is the detection requirement for the OE/MEC expected to be encountered at Blue Beach and Red Beach?
Response			*Geophysical DQOs are 85% Pd and 90% Cl.*
9	2-20	2.2.10	It is important to specify what radius around the identified anomaly reacquisition point will be searched to attempt to locate the anomaly. This search radius will be dependent on the demonstrated accuracy of the selected navigation method. Recommend specifying the search radius that supports the investigation goals as demonstrated by the navigation accuracy during the geophysical prove out.
Response			*The search radius is the width of the instrument; 1 meter for the EM-61.*
10	2-21	2.2.11, 2.2.11.1	It is stated several times in these sections that the excavation of suspected OE/MEC anomalies will be limited to 1-ft. depth. How was this depth limitation determined? Does it support the specified investigation goals? Is it possible that shifting beach sands have deposited more than 1-ft. of sand over OE/MEC? It is recommended that this issue be analyzed and presented earlier in the document under a section describing the investigation goals and how this investigation is designed to meet them.
Response			*The current legislation specifies that the future land use will be a Wildlife Refuge. The required clean up depth for a Wildlife Refuge is 1 foot. Public access is limited to walking, observing wildlife, etc.*
11	2-22	2.2.11.1	Will there be QC documentation that each hole has been checked by the UXOQCS? It is recommended that this audit trail be established.
Response			*QC data was maintained in the field and will be presented in the report for Blue Beach and Red Beach.*
12	2-24	2.3.12.1	The last bullet states that site restoration will be verified to have been performed to an appropriate level. How will this appropriate level be determined? It is

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			recommendedthat this be established prior to starting intrusive activities.
Response			*Site restoration includes filling in holes, removing flags, markers, stakes, etc. from the site.*
13	2-28	2.2.13.5	This project is taking place on Navy controlled property. However, if this were being done on non-Navy controlled property, additional information on the safe holding area and the live ordnance holding area (referenced in section 2.1.3) would be expected to be provided to EQB to enable EQB to ensure the safety of the local population.
Response	2-	2.2.13.6.	*Comment noted.*
14	28	2.2.13.6.	Are there populated areas associated with this project? If so, since this is a site-specific work plan, they should be documented and the specific protective measures to be taken should be detailed.
Response			*There are no populated areas associated with this project.*
15	3-2	3.3.3	The last sentence states that all anomalies will be reacquired and excavated. This statement doesn't agree with the statements in section 2.2.9 (pg. 2-20) where a "cut line" is described below which detected anomalies will generally not be excavated. Please resolve this discrepancy.
Response			*The last sentence states : "For the beach and road area, all anomalies will be re-acquired for excavation to 1 ft by qualified UXO personnel." This agrees with a cut line of 1 foot.*
16		3.4	Most of this section on geophysics is boilerplate and not specific to this project. 1. Pg. 3-6 describes three modes of operation for the EM-61 but doesn't say which one or ones will be used for this project. 2. Pg. 3-6 also describes four ways to achieve spatial positioning, but doesn't say which one or ones will be used. 3. Pg. 3-6 also discusses the EM-61HH sensor, however, the reviewer doesn't know if this sensor is going to be used. 4. Section 3.4.1.3 describes GPS, acoustic/ultrasonic, and fiducial

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			methodsltick wheels as possible navigation methods. 5. Section 3.4.1.4 describes full surveys, grid surveys, transects, meandering paths and hybrid surveys as possible geophysical survey methods to be used. Highly recommend inserting only site-specific information that will inform the reviewer how the work is going to be done on these two small sites instead of generalized boilemlate text.
Response			*The exact methodologies are determined in thefield and the geophysical work plan is modified.. After the prove out it was determined that the wheel mode would be used. After testing the GPS performance in thefield, GPS was selected as the navigation tool. A work plan must beflexible and have the ability to choose the most appropriate methodfor the site conditions.*
17	3-7	3.4.1.2	The information provided on the performance of the geophysical prove out is not sufficient to determine the adequacy of the prove out. Specific suggestions for information to include has been detailed in previous comments to the OE Master Work Plan and the Site-specific Work Plan for SWMU 4.
Response			*Prove out data will be provided in the Blue Beach and Red Beach report.*
18	3-7	3.4.1.2	This section references a Mark 11. What is this instrument? Other references to a Mark II cannot be found in this document.
Response			*The EM-61 Mark II refers to an electronics package that allows the collection of multiple EM time gates. Investigations at Blue and Red Beach utilized the 1m x 0.5m coils developed in conjunction with the Mark 11 but not the new electronics. As such, it would be misleading to refer to the utilization of Mark II instrumentation.*
19	3-7	3.4.1.3	This is the first reference to a specific navigation accuracy requirement (20-cm). Will the contractor demonstrate achieving this requirement during the prove out?

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'iesponse			*This navigation accuracy of 20 cm was presented in the Master Work Plan (page 5-10). This is checked during anomaly reacquisition.*
20	3-12	3.4.4	This section on Data Resolution and Data Density is all boilerplate and not specific to Blue Beach and Red Beach. It gives no valuable information to understanding what data resolution and data density will be achieved and how this will be done. The final sentence says it all: "The specific data resolution and data density requirements will be established on a **site-specific** basis." This site-specific work plan should contain this information, not promises that it will be established later.
1'iesponse			*Data resolution, a probability of detection of 85% was established during the prove out. Data density was 100% digital geophysical mapping of the beaches and roads.*
21	3-12	3.5.1	The third paragraph discusses data from a diurnal base station. It is this reviewer's understanding that this data is only applicable to magnetometer sensors and not EM-61 sensors that are going to be used on this project. Is this diurnal base station going to be recording data during this project as stated in this plan?
Response			*Diurnal data is only required for magnetic data and is not required for this project.*
22	3-20	3.10	The quality control section is boilerplate. The first sentence, "Geophysical mapping QC will be defined on a site-specific basis and will be dictated by the sensors, navigation methods, survey modes utilized to achieve the site-specific objectives", is illustrative of this fact. The Navy should consider requiring its contractor to develop a site-specific QC plan that will assist in demonstrating that DQOs are being achieved and in identifying process improvements that can be incorporated on future projects.

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Response			*See response to comment 16. Navigation techniques and instrument mode were not determined until field checks were made. Field studies must have the flexibility to adapt and choose the best methodologies for the specific site. If no data has been collected on a specific site, preconceived notions can be wrong.*
23		3.10	What QC documentation will be prepared? How will nonconformance with the plan be identified, documented and resolved? Who will review the QC documentation?
Response			*Daily QC reports will be prepared for the three phase of work. The QC manager, Gary Webb, will document nonconformance and resolve issues. The senior QC manager will review QC documentation.*
24	4-3	Figure 4-1	Important figure (showing support and exclusion zones, first aid station, evacuation routes, etc.) not included.
Response			*This figure is in the electronic version and will be provided to EQB.*
25	5-1	5.1	The discussion of surveying is not adequate to describe what will take place.
Response			*A site map will be prepared using GPS showing geophysical survey areas. Horizontal accuracy will be within 20 cm.*
26	5-1	5.2	The discussion of mapping is not adequate to describe what will take place. The statement, "GPs technology may be used to locate OE/MEC components if this technology is readily available for use on the project and protocols are in place...", is obviously boilerplate and not appropriate for a site-specific work plan. Also, important information, such as what accuracy is required for mapping, is not covered.
Response			*Accuracy requirements are +/- 20 cm as presented in the Master Work Plan. See responses to comments 16 and 19 as to why the GPS mapping option cannot be confirmed prior to field testing the system and checking satellite coverage, etc.*
27		7	There is no information on site restoration in the Environmental Protection Plan. Recommend adding this information to future plans.

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EQB Comments and Responses on the Final OE Master Work Plan, Former NASD, Vieques, Puerto Rico Dated October 26,2001

Comments Developed June 18,2002

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1	1-1	1.0	Last sentence of the second paragraph states, "Only surface OE and UXO and items found from the statistical sampling … will be removed during this investigation." Recommend that this statement be corrected to reflect that both surface and subsurface OE that are found during the investigation are going to be removed.
Response			*Both surface and subsurface OE and UXO items were removed during the investigation.*
2	2-11	2.1.5	This section states that DQOs are developed to clarify the study objectives. However, the study objectives are not clearly identified. Recommend developing the objectives of the study in accordance with the *EPA Handbook on Management of UXO at Closed, Transferring, and Transferred Ranges.* Stakeholder concurrence should also be obtained on the objectives of the study.
Response			*The objectives of the study are to delineate the nature and extent of OE contamination at NASD and to restore the site to it's intended land use.*
3	2-11	2.1.5	The listed DQOs are not sufficient guidance for data quality. Recommend developing DQOs in accordance with the guidance in with the *EPA Handbook on Management of UXO at Closed, Transferring, and Transferred Ranges.*
Response			*DQOs will be revised and presented to EQB.*
4	2-13	2.2	This section states that the technical scope is designed to determine the presence or absence of OE and UXO. Recommend adding that the scope [objective) is to also determine the nature and extent (boundaries) of contaminated areas.

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Response			*Determining the nature and extent of contaminated areas will be added to the technical scope.*
5	2-14	2.2.2	This section lists activities that shall be conducted to complete the archive search. EQB agrees with this. When is this going to be done and how will it be documented? Has the letter report been developed and submitted?
Response			*An archive search was conducted for the Western Training Area and Green Beach Area which is adjacent to SWMU 4. The results are included in the Green Beach Report.*
6	2-20	2.2.11.2	SiteStats/GridStats has been demonstrated to be an ineffective sampling model and its use has been discontinued by a number of organizations. Numerous states and the EPA are on record as opposing use of this model for determining the amount of OE hazard of a site. Recommend removing this methodology from the plan.
Response			*References to SiteStats/GridStats will be removed from the work plan.*
7	2-21	2.2.12.1	This section describes performance goals as being determined by equations. In accordance with the EPA handbook, recommend determining the detection performance goal by analyzing the detection requirements needed to acquire the data necessary to make decisions concerning the site. Then a geophysical prove-out can be performed to establish that the selected geophysical systems are capable of achieving the performance goals that were established. The two equations provided in place of performance goals are taken from the U.S. Army Huntsville Engineering and Support Center contract requirements for detection performance by their contractors. They are Army contract requirements, not performance goals. Detection performance goals should include values for probability of detection (Pd), confidence level (Cl), and depth of detection for various sizes of the suspected OE. Recommend developing detection performance goals for this project in accordance with the guidance in the EPA UXO Handbook.

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Response			*Navy guidance of a 85% probability of detection and 90% confidence level will be used as performance goals.*
8	2-25	2.2.15	This section describes limiting the detection and removal of OE/UXO to 1-ft. Please explain how this depth limit was determined. Were stakeholders consulted on this decision? If not, recommend reevaluating this determination in accordance with the EPA UXO Handbook.
Response			*The EPA Handbook shows in Table 6-1 that for a Wildlife Preserve (Refuge), the standard clearance depth is I foot. The current land owner (DOI) has approved of this clearance depth for SWMU 4. If observation decks are constructed, the Navy will clear to 4 feet in the construction areas.*
9	2-34	2.2.17.8	This section states that the MPM for the entire NASD is a 60-mm mortar. However, the Site Specific OE Work Plan documents (Pg. 1-7, Section 1.2.2.1) that the site was used for disposal of 8-in., 105-mm, 106-mm, and 175-mm projectiles as well as other sources of OE. For public safety recommend updating the MPM to reflect these larger OE.
Response			*The MPM for the site has been changed to a 5-inch HVAR rocket, the largest item found to date on the site.*
10		Section 5	There is no information in the Geophysical Plan on performing a geophysical prove-out. A geo prove-out is critical to demonstrating the ability of the geophysics program to achieve the detection goals and DQOs. Recommend developing a geo prove-out plan and implementing it prior to demobilizing from the current work to demonstrate that the detection goals are being met with the same equipment, staff and procedures that were used to perform the work. This is critical for stakeholder acceptance of the work.
Response			*A detailed geophysical prove out was performed at SWMU 4. A standard operating procedure for the geophysical prove out will be provided.*
11	5-1	5.3.2	States the UXO is expected to be found less than 1-ft. deep. However, the reasoning for this determination is not explained here or in Section 5.3.10. Recommend revising this determination in light of the fact that OE may have

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			been buried on NASD to deeper depths.
Response			*The only historically documented UXO area on NASD is the SWMU 4 OB/OD where UXO is expected to befound at the surface, due to the nature of OB/OD operations, where UXO items may be kicked out during demolition operations. During the PA/SI, afew UXO items werefound at SWMU 6 and AOC J disposal sites on the surface. Currently, there is no evidence of burial of UXO at NASD.*
12	5-2	5.3.4	States that a proposed use of the site is public beach access. In light of this statement consideration should be given to detection to depths greater than 1-ft. and this depth determination should be discussed with the stakeholders.
Response			*Proposedpublic beach access areas are not within known UXO areas (SWMU 4, SWMU 6, AOC J). The onlyproposedpublic beach area is Green Beach, which has been investigated and no UXO wasfound (see Green Beach Report).*
13	5-2	5.3.6	States that UXO in the NASD could be found down to its maximum detectable depth. This statement contradicts Section 5.3.2 which states UXO is expected to be found within 1-ft. of the surface. Recommend revising these statements to be consistent.
Response			*Will revise asper response to comment 11, describing the OB/OD operation and suspected depths of UXO. Resultsfrom Phase I and Phase II indicate that 98% of the UXO items werefound less than I footfrom the surface.*
14	5-4	5.3.10	This section states that a geophysical prove-out is only recommended for areas with beach and dune conditions. EQB disagrees with this statement and recommends that geo prove-outs be performed for all investigation and remediation sites in accordance with the EPA Handbook. This step is critically important to achieving stakeholder acceptance of the geophysics results.

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Response			*This section does not state that geophysical prove outs are* ***only*** *recommended for beach and dune areas. This section describes soil conditions and is showing that magnetite sands may cause interference for magnetometer surveys. A geophysical prove out was conducted for the investigation at SWMU 4.*
15	*5-28*	5.15	This section doesn't give much information on the contents of the final reports and maps. Please include information on what the final report of the project will contain.
Response			*A final veport outline will be provided to EQB. The final report will include an introduction, site description and history, summary of existing archive data, remedial investigation approach, hazard assessment methodology, feasibility study, and references.*
16	6-30	6.10	The site control plan doesn't address steps to keep out unauthorized intruders into the site. This is an important safety consideration in light of the fact that OE/UXO may be left in place where found overnight. Recommend addressing this public safety concern.
Response			*A povtable Type II explosives storage magazine was sited outside of the SWMU 4 boundary, as per NOSSA and ATF regulations. All UXO items are either blown in place or stored securely in the magazine until demolition and demilitarization.*
17	6-34	6.11.7	Recommend adding an additional bullet, "LANTDIV will notify EQB and other stakeholders."
Response			*It is not necessary to notify EQB and other stakeholders of health and safety incidents such as injuries. The only other stakeholder who should be notified is the land owner, DOI.*
18	9-12	9.7	This section references "performance standards for this project." What are these performance standards? Recommend clearly stating the performance standards in the QC Plan.

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Response			*Performance standards for geophysics are an 85% probability of detection with a 90% confidence level. This will be added to section 9.*
19	9-18	9.12.4	This section references "the performance standards of the SOW." Since the SOW isn't included as an attachment to this plan recommend listing those performance standards in the QC Plan.
Response			*Performance standards will be added to section 9.*
20	General		There is no Conceptual Site Model presented in the plan for the expected OE contamination at NASD. Developing a CSM is a critical part of gaining stakeholder acceptance of the investigation results because it documents the thinking and reasoning of the Project Managers about the type and delivery mechanism and exposure pathways for the expected OE contamination based on the information known about the site. Then, as new information is acquired, the CSM can be updated to include the new information which may cause additional site investigation to be performed. It is highly recommended that a CSM be developed for NASD in accordance with the guidance in the EPA UXO Handbook.
Response			*A CSM has been developed for SWMU 4 and is presented in the interim summary report.*