

**RESPONSES TO TECHNICAL REVIEW COMMENTS
FROM USEPA, REGION II APRIL 11, 2000 (REVISED APRIL 26, 2000)
FOR THE
BASELINE INVESTIGATION WORK PLAN
ATLANTIC FLEET WEAPONS TRAINING FACILITY
VIEQUES, PUERTO RICO
FEBRUARY 18, 2000**

GENERAL EPA COMMENTS
BASELINE INVESTIGATION WORK PLAN

Comment 1:

The subject open burning (OB) and open detonation (OD) facilities are located within an active military range (Section 1.2, Page 1-8). As described in the text, the OD facility is obliterated between each use by training activities at the range. If this is the case, it is unclear how the units can be precisely and consistently located or how contaminants resulting from the waste disposal activities will be differentiated from those resulting from bombing activities.

The February 18, 2000, Baseline Investigation Work Plan (Work Plan) should be revised to describe how the location of the facilities will be determined if they have been obliterated by bombing. The Work Plan should clearly specify the zone within the Live Impact Area (LIA) where the OB and OD facilities are confined. This "designated" treatment area should be sufficiently described so that the contamination resulting from disposal activities may be properly monitored and managed if the location is shifting.

Also, in order to fully evaluate contamination resulting from waste disposal activities, it is recommended that an additional set of soil and groundwater reference data be collected from the LIA. The purpose of this data would be to define baseline concentrations of munitions-related chemicals (e.g., explosives, explosive by-products, and metals) that were deposited via their intended use (i.e., weapons training) rather than disposal activities. This additional set of reference data would also provide useful information regarding the geology and hydrology of the area surrounding the OB and OD facilities, which will affect contaminant transport from the sites. Furthermore, 40 CFR 264.601(a)(3) requires that existing groundwater quality, including other sources of contamination and their cumulative impact on groundwater, be considered.

Response:

With respect to the issue of how the Navy determines the location of OB and OD disposal areas, these relatively small 100' x 100' areas are accurately and reproducibly reestablished by using a Global Positioning System for each utilization. Thus, the locations of these areas are not shifting. Although the location of any particular OD disposal pit can be obliterated by explosions of live training ordnance, the disposal detonation pits are always excavated within the same relatively small OD area, the location of which is known and reproducible. The

sample locations in the OD and OB areas are believed to be adequate to characterize the OB and OD areas.

With respect to the comment made here, and also in EPA Additional Comment #1, regarding differentiation of contaminants from the LIA and OB/OD and EPA's recommendation that samples be collected from the LIA outside the OB/OD, the Navy offers the following discussion. The OB and OD units are located within the LIA. Historically, the OB unit has never been operated and therefore has not generated any contaminants. Although the Navy desires to retain a usable OB unit as a contingency, there are no plans for future operation of the OB. Disposal of live retrograde ordnance by detonation has and conceivably will occur at the OD unit. Contaminants generated during OD disposal activities are identical to those produced by detonation of live ordnance in the LIA. Although probably impossible to substantiate without extensive further study, the density of detonations per unit of land surface area of the OB/OD over time is probably not significantly different from that of the overall LIA. Therefore, it is not possible for a sampling scheme to differentiate contaminant origin between the LIA and the OB/OD units. The purpose of the Navy's Baseline Investigation is to address the environmental effects of activities at the OB/OD disposal locations. The sampling plan proposed by the Navy will adequately characterize the cumulative effect of LIA and OB/OD activities at the OB/OD, and will further determine reference conditions in similar environmental media at locations outside the LIA, on Navy-owned property. Further characterization of locations in the LIA outside the OB/OD would not contribute significant additional information to the proposed investigation. The peizometer investigation and subsequent placement of up- and down-gradient groundwater monitoring wells at the OB and OD units will adequately characterize groundwater existence, flow and contamination (if any), which would satisfy the requirements of 40CFR264.601(a)(3). There is no basis for believing that soil within the OB/OD has or will receive amounts of explosives-related contaminants which are significantly different from the LIA. Furthermore, since the Navy believes that its proposed sampling plan will adequately assess environmental issues associated with the OB/OD without needing sampling locations in the LIA, it is opposed to collecting sampling data from the LIA in light of the existence of large amounts of litigation related to the Navy's Vieques operations.

Comment 2:

Section 4 of the Work Plan provides stepwise instructions for collection of samples, but the information that must be recorded during sampling is not always specified. For each sampling procedure the Work Plan should specify the information that must be recorded. Examples of any forms that will be used to document the sampling event (e.g., sample collection forms, boring logs, chain-of-custody forms) should be included in the Work Plan.

Response:

Concur. The work plan has been modified to include the requested information and forms.

Comment 3:

Section 4 of the Work Plan fails to provide adequate QA/QC procedures to ensure that data generated in the field and at the laboratory are adequate to support project decisions. For example, the Work Plan should be revised to discuss instrument calibration and frequency. Specifically, the standards that will be used and the methods by which calibration records are maintained and traceable should be included. Data quality objectives (DQOs) should be specified for field and laboratory analyses. The DQOs should be the bases for establishing acceptable detection limits, calibration requirements and frequency, QC procedures and frequency, control limits, acceptance criteria, and corrective actions for field and laboratory analyses, none of which are adequately addressed.

Response:

Concur. The work plan has been modified to include a full Quality Assurance Project Plan (QAPP), found in Appendix A. The issues raised in this comment are addressed and resolved in the QAPP.

Comment 4:

The Work Plan should be revised to ensure that all requirements of EPA guidance document QA/R-5, *EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations*, as well as the most current edition of *EPA Region 2's "CERCLA Quality Assurance Manual"*, are addressed. In addition to those items identified in General Comment 3, examples of items that have not been addressed are project organization/key personnel, instrument maintenance requirements, acceptance requirements for supplies and consumables, and assessments/audits. For example, the Work Plan should describe how and by whom supplies and consumables are inspected and accepted for use on the project. Acceptance criteria for the supplies and consumables should be specified. In cases where a subject is deemed not necessary or pertinent to the objectives of this project, specific rationale should be provided.

Response:

Concur. The work plan has been modified to include a full Quality Assurance Project Plan (QAPP), found in Appendix A. The issues raised in this comment are addressed and resolved in the QAPP.

Comment 5:

The Work Plan identifies the number and type of samples and field QC samples in general terms in the text and associated figures. However, a summary table should be added to clearly identify the number and type of samples to be collected at each facility, including the reference samples.

Response:

Concur. The work plan has been modified to include a full Quality Assurance Project Plan (QAPP), found in Appendix A. The requested information has been included in the QAPP.

SPECIFIC EPA COMMENTS
BASELINE INVESTIGATION WORK PLAN

Comment 1:

Section 1.3, Page 1-9

The discussion regarding environmental setting is too broad, particularly regarding geology and topography. Much of the discussion involves regions of the island significantly removed for the study sites, whereas only one sentence is devoted to the geology near the OB/OD facilities. The discussion should focus more specifically on the vicinity of the OB/OD facilities and factors that are likely to influence local contaminant migration. For example: What is the estimated thickness of the descalabrado clay loam, and what are its hydraulic characteristics? What is the estimated depth of bedrock in the vicinity of the study area, and what are its hydraulic characteristics? Is the bedrock surface anticipated to be consistent with surface topography? Does the lagoon receive water from the study site as surface water runoff, groundwater recharge, or both? Most of these items are discussed in general terms for the island, but not specifically in relation to the study area, which may or may not be representative of the island as a whole.

Response:

The following text will be added to Section 1 of the Work plan:

Existing information which would aid in describing the environmental setting at the OB/OD is limited. Most geologic and hydrologic attention has been focused on the central and western portions of Vieques, probably because these are the areas where the civilian towns (central) and the only aquifers of significance (central and western) are located. The LIA portion of the AFWTF has received minimal attention from past assessments. The investigations conducted under this work plan will improve the database of environmental information for the site.

Topography of the OB and OD locations is generally similar. At the OB, the ground surface slopes at a 2 percent grade westward toward Laguna Anones, a distance of approximately 600 feet. Surface rainfall runoff and subsurface rainfall percolation (if any) at the OB would flow to the lagoon. The OD, located approximately 800 feet north north east of the OB, is situated on a relatively flat terrace which also drains gently and then transitions to a 2 percent slope to the west toward Laguna Anones and to the northwest toward Bahia Salinas, the distance to both being approximately 1200 feet. Surface rainfall runoff and subsurface rainfall percolation (if any) at the OD would flow to the lagoon and bay.

The thickness and hydraulic characteristics of soils are not known with certainty, but are reported to be shallow in depth and somewhat sandy in the OB/OD areas, with outcroppings of exposed bedrock occurring. The shallow surficial soils are underlain by undivided tertiary marine sedimentary rock and cretaceous volcanic rock. Thus, the bedrock surface is anticipated to be consistent with surface topography.

Comment 2:

Section 3.2, Page 3-3

Due to the inherent difficulty identifying appropriate sampling locations as a result of the OB/OD activity, it is recommended that field screening be used to assist in selecting sampling locations. Field screening methods such as immunoassay test kits can be particularly useful for screening broad areas for explosives and can assist in identifying sample locations for definitive laboratory analyses. Locations shown on Figures 3-3 and 3-4 should be considered general, and should be subject to relocation, based on field screening analyses.

Response:

Please see Responses to General Comment #1 and to Additional Comment #3. As discussed in these responses, the Navy believes that the sampling array planned for the relatively small (100 ft by 100 ft) OB and OD locations will adequately address contamination which may be present. The Navy does not believe field screening offers a significant improvement to the investigation of the OB/OD.

Comment 3:

Section 3.2 of the Work Plan identifies the “target explosives analytes” that will be analyzed for during the sampling event. However, the parameters listed in Section 3.2 do not include all of the wastes that are identified on pages 1-6 and 1-7 of the Work Plan. For example, lead azide and lead styphnate are identified on page 1-7 but are not included in the target explosives list. Clarify and ensure that all munitions that have been or will be treated within the LIA will be included in the sampling and analysis.

Response:

Please see response to Additional Comment #3. The list on pages 1-6 and 1-7 of the work plan contains military munitions which have been treated onsite (this listing constitutes a complete compilation of normally utilized military munitions). It is not described as nor is it intended to be a listing of the investigation’s analytical constituents or analytes. Of the 25 munitions listed, the 17 high explosive types listed consist of, as a single constituent or a blend, 5 high explosive compounds (TNT, HMX, RDX, PETN and Picric Acid/picrates). Nitroglycerin is a constituent of some propellants and smokeless powders. The 16 analytes of environmental concern listed in Section 3.2 include the first five of these constituents and their degradation products. Picric Acid and perchlorate has been added to this list. Metals are the analytes of interest for the initiators lead styphnate, lead azide and mercury fulminate, and for pyrotechnics. The Navy is not aware of environmental concerns or recommended assessment protocols associated with the initiators tetracene and DDNP, nor with the low explosive black powder. Thus, all munitions which have been or will be (to the extent that this can be known) treated in the LIA have been appropriately addressed in the sampling and analysis plan.

Comment 4:

Section 3.2, Page 3-8

The monitoring wells locations proposed in the Work Plan are based on topography. It has been assumed that these locations will be upgradient and downgradient of the OB and OD units. However, to ensure that one well is located downgradient of each unit, final selection of the well locations should be based on water levels observed in the 4 temporary piezometers shown in Figure 3-3 and the additional reference wells recommended in General Comment 1.

Response:

As described in Section 3.2 of the work plan, piezometers will be used to establish groundwater flow gradient at the OB and OD, thereby allowing determination of which proposed groundwater will be upgradient and which is downgradient. Please see General Comment #1 regarding additional reference wells in the LIA. Additional text has been added to the work plan to further clarify this concept.

Comment 5:

Section 3.2, Page 3-9

The Work Plan identifies reference data that will be collected at the site. However, the Work Plan does not provide sufficient information on how the reference data collected will be evaluated. For examples, if statistical analyses will be performed on the data to determine background values, the statistical methods that will be used must be specified. Furthermore, based on the information provided in the Work Plan it does not appear that the number of reference groundwater, surface water, and sediment sample locations are adequate to derive statistically sound background values. Revise the Work Plan to include more detailed information on how the reference data will be evaluated.

Response:

Surface and subsurface soil samples (a total of ten each) will be collected from ten sampling points, five at each of the two reference locations. The 95% UTL will be calculated for these concentrations. Two reference groundwater, surface water and sediment samples will be collected, one set at each of the two reference locations. Because of the smaller sample set size for these matrices, the UTL will not be calculated. Rather, the lower of the two concentrations will be used for each.

Comment 6:

Section 3.2, Page 3-9

The discussion regarding reference sampling indicates that data will be compared to human and ecological screening values. The Work Plan should be revised to include the specific screening values that will be used, or likely sources for such screening values should be identified.

Response:

Concur. The work plan has been revised to include the requested information in the Risk Assessment section.

Comment 7:

Section 3.2, Page 3-9

The Work Plan indicates that U.S. Geological Survey wells may be evaluated for their suitability as reference wells. However, section 1 of the Work Plan indicates that pumping in the vicinity of the U.S. Geological Survey wells has induced salt water intrusion, and that the area is not hydraulically connected to the study area. Therefore, the use of these wells for reference sampling may be inappropriate. Reference samples should be selected from wells placed in the same unit, or very similar geologic unit that are not likely to be affected by anthropogenic sources.

Response:

It was originally hoped that existing relevant U.S.G.S. wells could be identified which would be helpful in establishing reference data for the OB/OD locations. Thus far, none have been located and it is unlikely, for a variety of reasons, including those in the comment, that useful well data will be identified. Therefore, although the Navy would use any appropriate and relevant information it may find to aid this investigation, it does not now believe this item should be pursued further.

Comment 8:

Figures 3-2, 3-5, and 3-6

Further rationale should be provided for the reference sampling locations. One soil boring is shown partially within the road bed, and one of the monitoring wells is located relatively close to Puerto Negro. These locations may be influenced by automobile exhaust and salt water intrusion, respectively. Additional justification should be provided for the selection of the soil boring and monitoring well locations and/or alternative locations selected.

Response:

The work plan will be modified to reflect the following:

The concept of the use of reference sample locations was to attempt to establish reference assessments of environmental media from uncontaminated settings similar to that found at the OB/OD, noting that the Navy would not be collecting reference samples from the LIA outside the OB and OD areas. Therefore, each of the two reference location was selected to have features similar to the OB/OD area, i.e. a lagoon, which received surface rainfall runoff as well as subsurface rainfall percolation, with proximity to a marine bay which also received surface rainfall and subsurface groundwater flow. Similarity of soil and subsurface conditions was also a goal in the selection of the two reference sampling locations; however, the available soils and hydrogeologic information is not adequate to assure, at this stage, that conditions are

sufficiently similar. Field observations will be used to adjust sampling locations; any modifications will be documented in the investigation's records and report.

At the Laguna Monte Largo reference sampling location, a soil sampling point was inadvertently shown located in a road. This sampling point has been moved away from the road. It should be noted that vehicular traffic in this area and in the Laguna Yanuel location is and has been very sparse and is not a concern regarding sample point contamination.

Available information does not allow, at this stage, for definitive assessment of likelihood of saltwater intrusion into groundwater at the groundwater sampling locations. Initial groundwater collections will be assessed for saltwater intrusion during sample collection. Should high salinity and/or high conductivity readings be obtained during field testing, the situation will be evaluated and alternate locations may be selected, depending on the specific conditions encountered.

Comment 9:

Section 4.1.3, Page 4-3

To ensure that volatile organic compounds (VOCs) do not volatilize between sample collection and analysis, VOC samples should be collected prior to geological logging. Following VOCs, the order of collection should be specified as semivolatile organic compounds (SVOCs), other organics, and metals. In addition, field preservation of VOC soil samples should be performed as described in Method SW-846 Method 5035. Studies have demonstrated that standard soil sample collection and preservation procedures can result in substantial losses of VOCs between the time of sample collection and analysis. Field preservation of samples in methanol or sodium bisulfate as described in Method 5035 can prevent such losses, resulting in more representative analytical results.

Response:

This response also applies to General Comment #12 and #18.
Concur. These provisions have been included in the QAPP.

Comment 10:

Section 4.1.3, Page 4-4

The Work Plan should be revised to specify the circumstances under which hollow-stem auger and rotosonic drilling techniques will be employed.

Response:

Concur. The work plan has been revised to include this discussion.

Comment 11:

Section 4.1.3, Page 4-5

A standard penetration test (ASTM D-1586) should be performed each time a split spoon sample is collected. The results should be recorded on the boring log. The standard penetration test will provide useful information regarding soil characteristics during drilling operations.

Response:

Concur. The work plan has been revised to include this discussion.

Comment 12:

Section 4.1.3, Page 4-5

Field preservation of VOC soil samples should be performed as described in SW-846 Method 5035. See Specific Comment 9 regarding order of sample collection and losses of VOCs associated with standard soil sample collection procedures.

Response:

This response also applies to General Comment #9 and #18.

Concur. These provisions have been included in the QAPP

Comment 13:

Section 4.2.1, Page 4-7

All drilling fluids should be demonstrated to be free of contamination prior to use. The Work Plan should be revised to indicate that the drilling fluids will be free of contamination, and the type and quantity of fluid used and the amount recovered should be specified on the boring log.

Response:

Concur. The work plan has been revised as requested.

Comment 14:

Section 4.2.1, Page 4-8

The text indicates that a bentonite slurry will be used to grout the annular space, and specifies a mixture of 6 gallons of water to 94 pounds of cement. The amount of bentonite is not specified. The text on page 4-6 indicates that abandoned boreholes will be grouted with neat cement. The text should clarify the amount of bentonite that will be added to the grout for borehole abandonment and monitor well construction. Improper mixture of the grout could result in a poor seal between the well casing and boring wall. If bentonite is not deemed necessary to produce a tight seal, justification should be provided in the Work Plan.

Response:

Concur. The requested clarification has been added to the work plan text.

Comment 15

Section 4.2.3, Page 4-14

The text lists three types of pumps that may be used for well purging. The circumstances under which each type will be used and their limitations should be specified.

Response:

Concur. The requested information has been added to the work plan.

Comment 16:

Section 4.2.3, Page 4-16

The Work Plan should be revised to specify that the total depth of the well will be measured prior to purging. This measurement is required to calculate the depth of water for use in calculating the purge volume.

Response:

Concur. The requested information has been added to the work plan.

Comment 17:

Section 4.2.3, Page 4-16

The stabilization requirements identified for purging are different from and slightly broader than those for development. Justification for the broader stabilization criteria for purging should be provided in the Work Plan or the stabilization requirements indicated for development should be applied in both cases.

Response:

Concur. The stabilization requirements for development will be used for both.

Comment 18:

Section 4.2.3, Pages 4-18 and 4-21

The Work Plan should specify that VOC samples will be collected first, allowing the water to flow gently down the inside wall of the sample vial to avoid volatilization, and capped without headspace. Following VOCs, the order of collection should be specified as semivolatiles organic compounds (SVOCs), other organics, and metals.

Response:

This response also applies to General Comment #9 and #12.
Concur. These provisions have been included in the QAPP.

Comment 19:

Section 4.2.3, Page 4-21

The Work Plan should be revised to state that the accuracy of the water level instrument will be = 0.01 foot, and the barometric pressure, date, and time will be recorded in the field logbook at the time of measurement.

Response:

Concur. The work plan has been revised as requested.

Comment 20:

Section 4.3.2, Page 4-23

The discussion of sediment and surface water sampling refers to upstream and downstream sample locations. Since the samples will be collected from lagoons and tidally influenced bays, there is no upstream or downstream. The discussion should be revised to account for wind or tidal currents.

Response:

Concur. The work plan has been revised as requested.

Comment 21:

Page 4-27, Table 4-1

Table 4-27 indicates that the matrix spike/matrix spike duplicate (MS/MSD) samples will be collected "one per 20 soil samples." The table should be revised to clearly indicate that the MS/MSD samples will be collected and analyzed for all matrices.

Response:

Concur. The work plan has been revised as requested.

Comment 22:

Section 4.5, Page 4-29

The Work Plan should be revised to specify that equipment blanks for submersible sampling pumps will be prepared by pumping water through the pump, and not by pouring water over the outside of the pump.

Response:

Concur. The work plan has been revised as requested

Comment 23:

Section 4.5, Page 4-29

The Work Plan indicates that accuracy and precision control limits may be published by EPA or based on historical laboratory results. The Work Plan goes on to state that percent recovery must 80 to 120 percent. Specific accuracy and precision limits should be specified for each analyte for this project. The limits should be based on the specific DQOs associated with this project. The Work Plan should be revised to identify the associated QA/QC limits for each parameter to be analyzed and the associated corrective action when these criteria are not met.

Response:

Concur. The work plan has been revised as requested

Comment 24:

Section 4.5, Page 4-30

The Work Plan states that the data completeness “is the percentage of total valid tests conducted and the percentage of these tests required in the scope of work.” The Work Plan should be revised to state that completeness will be calculated as the percentage of valid tests versus the total number of tests required in the project scope. Completeness should be calculated on a per analyte basis to aid in identifying data gaps.

Response:

Completeness can be calculated on a per analyte basis to aid in identifying data deficiencies, but completeness for the project as a whole will be determined based on the total number of tests.

Comment 25:

Section 4.6, Page 4-31

The Work Plan should specify the circumstances under which scrubbing with laboratory grade detergent or high pressure steam cleaning are appropriate decontamination procedures. In addition, this section should specify that each decontamination fluid (i.e., detergent, potable water, ASTM Type III water) will be pumped through submersible sampling pumps.

Response:

Concur. The work plan has been revised as requested

Comment 26:

Section 4.7, Page 4-31

The discussion regarding investigation-derived waste (IDW) should be expanded to specify how wastes will be characterized. The analyses to be performed for waste characterization (e.g., toxicity characteristic leaching procedure) should be identified, and a table specifying the number of samples planned and the proposed analyses should be added.

Response:

Concur. The work plan has been revised as requested

Comment 27:

Section 4.8, Page 4-32

Table 4-2 of the Work Plan identifies all of the analytical methods to be used for each parameter. This table identifies SW-846 Method 8330 for the analysis of nitroglycerin. However, nitroglycerin is not a target parameter that is listed in Method 8330. SW-846 Method 8332 should be used for the analysis of nitroglycerin. Also, revise the table to identify the method to be used for the analysis of PETN as well as any additional parameters that may be included as a result of the revisions from specific comment 3.

Response:

Following consultation with laboratories and the Project Chemist, it has been decided to analyze Nitroglycerin, PETN and Picric Acid using a Modified Method 8330.

Comment 28:

Section 4.10, Page 4-33

Specific procedures for sample numbering should be included in the Work Plan.

Response:

Concur. The work plan has been revised as requested

Comment 29:

Section 4.11, Page 4-34

This section should specify that the chain-of-custody form must be signed as received and relinquished by each person that has custody of the samples, from sample collection through receipt at the laboratory.

Response:

Concur. The work plan has been revised as requested

Comment 30:

Section 4.12, Page 4-37

The Work Plan should include a table listing the individual analytes and their required laboratory-specific detection limits. The table should also include proposed screening levels to which data will be compared (refer to comment #6). All detection limits should be less than the associated screening levels.

Response:

Concur. The requested table has been included for human health screening levels. For benchmark concentrations for ecological receptors, please refer to the response to General Comment #41.

Comment 31:

Section 4.13, Page 4-38

The discussion of data reduction, validation, and reporting is vague. Additional discussion should be included to identify the methods by which the data will be compiled and reported. Individual responsibilities for data review should be identified, specifying the percentage of data that will be reviewed by each individual for both internal laboratory and external reviews. All reduction procedures as well as the information that is to be included in the final data report should be explicitly stated, and the individuals who will receive data reports should be identified.

Response:

Concur. The work plan has been revised as requested

Comment 32:

Section 5.0, Page 5-1

The discussion regarding risk assessments that will be performed is too vague. Specific screening criteria pertinent to this project should be included, and additional detail should be included to describe how the risk assessment will be conducted, if a site-specific risk evaluation is proposed.

Response:

Concur. A full risk assessment section has been added to the work plan, which includes specific information regarding the methodology that will be used to develop a site-specific risk assessment.

Comment 33:

Section 5.1, Page 5-1

Section 5.1 of the Work Plan indicates that detected concentrations will be compared to reference concentration for inorganics. However, the Work Plan does not indicate those reference concentrations or how the comparisons will be conducted. For examples, it is not clear whether site concentrations (average or maximum) will be directly compared to reference concentration or whether statistical comparisons will be performed. If statistical comparisons will be performed, the Work Plan should identify the statistical tests that will be used in the risk assessment. The Work Plan should be modified to provide further detail regarding the proposed comparisons between site and reference concentrations.

Response:

Concur. A full risk assessment section has been added to the work plan. Section 4.2.1 of this section presents the following information regarding the screening procedures that will be used to identify compounds to be further evaluated:

- Site concentrations that will be used for comparison purposes (i.e., the maximum detected concentration)
- Concentrations that will be used as screening values for identifying compounds of potential concern (i.e., background concentrations for inorganics, soil screening levels for all compounds detected in soil, and risk-based concentrations for compounds detected in groundwater)
- Statistical approach that will be used to calculate concentrations of COPCs (i.e., 95% Upper Confidence Limit)

Comment 34:

The Work Plan indicates that as a second screening step, inorganic constituents above reference levels and all organic constituents, will be compared to “conservative default concentrations protective of human and ecological receptors.” However, the Work Plan does not identify these concentrations. The Work Plan should be modified to identify both the nature and source of the health-based screening criteria that will be used in the risk assessment.

Response:

See response to General Comment #33.

Comment 35:

Section 5.2, Page 5-2

The Work Plan indicates that the risk assessment will include an evaluation of demographic data and will identify potential receptors and exposure pathways under current conditions. The Work Plan should be modified to include a discussion of the site and surrounding land-use, potential groundwater utilization, if any, and potential receptors and exposure pathways for

evaluation in the risk assessment. The Work Plan should identify the scenarios through which current and future workers, trespassers, residents, or other relevant receptors may come into contact with soil, groundwater, surface water, or sediment in the vicinity of the site. The site conceptual model provided in Section 3.0, Figure 3-1, does not provide an adequate level of detail regarding potential human exposures at the site.

Response:

Information necessary for developing a conceptual site model is presently unavailable (e.g., current and future of the site and surrounding properties, relative locations and activity patterns of human populations, groundwater and surface water use). A conceptual model will be developed during the RFI based on the site-specific information

Comment 36:

The Work Plan indicates that the toxicity assessment section of the risk assessment will include a qualitative evaluation of adverse effects of the chemicals of potential concern and a quantitative estimate of the relationship between exposure and severity or probability of effect. The Work Plan should be modified to identify the nature of the toxicity criteria and the hierarchy of data sources proposed for use in the risk assessment.

Response:

Concur. The hierarchy of data sources to be used in the toxicity assessment has been incorporated into Section 4.2.3 of this work plan

Comment 37:

The Work Plan indicates that total noncancer and cancer risks to hypothetical receptors will be quantified in the risk assessment. Since individuals may be exposed through multiple exposure pathways, the Work Plan should be modified to indicate how cumulative risks will be addressed in the risk assessment. In addition, where hazard index (HI) values exceed 1, the Work Plan should indicate that this will be recalculated based on target organ or critical effect to better assess whether noncarcinogenic effects to specific target organs or endpoints might occur.

Response:

Concur. Detailed information regarding the methodology that will be used to characterize risks potentially related to the site has been incorporated into Section 4.2.4 of this work plan

Comment 38:

The Work Plan indicates that remedial goal options will be calculated for noncarcinogenic and carcinogenic chemicals of concern. The Work Plan should be modified to identify the process used to select chemicals for which cleanup goals will be calculated. In addition, the Work Plan

should reference the guidance, or provide the equations, to be used to calculate the cleanup goals. Finally, the Work Plan should identify and provide supporting rationale for any site-specific exposure parameters to be used in calculating clean up goals.

Response:

Concur. Detailed information regarding the methodology that will be used to calculate remedial goal options has been incorporated into Sections 4.2.4.1 and 4.2.5 of this work plan

Comment 39:

Section 5.3, Page 5-3

The Work Plan only provides a very general approach to the ecological risk assessment. The Work Plan should be revised to either include acceptable ecological screening values, or describe the specific steps, benchmarks, and approaches that will be used in selecting contaminants of potential ecological concern (COPEC) and evaluating ecological risks. The Work Plan should state that the EPA process document (USEPA, 1997) will be used in performing the ecological risk assessment at the site.

Response:

An ERA work plan section has been prepared as part of this work plan. It includes specific steps, benchmark sources, and approaches used to select COPECs and evaluate ecological risk. These steps and approaches are derived from EPA's 1997 Process Document.

Comment 40:

The Work Plan does not identify the media or areas of the site that will be screened for ecological risks. The Work Plan should discuss the areas of the site that will be evaluated for potential ecological risks and state that any contaminated soil, surface water, and sediments will be screened for ecological risks.

Response:

As outlined in the EPA Process Document, the screening-level ERA at AFWTF Vieques will focus on areas at the OB/OD facility identified to have potential complete exposure pathways between suspected contaminant sources and ecological receptors. At this point, no portions of the OB/OD site or any site media has been excluded from the screening-level ERA.

Comment 41:

The Work Plan does not specify which toxicity benchmarks will be used to screen for COPEC, whether risks from food chain exposures will be evaluated, or whether cumulative risks will be considered. The Work Plan should be revised to include a table that compares analytical detection limits with potential ecological toxicity benchmarks. The Work Plan should also state that contaminants without benchmarks or those with detection limits higher than

benchmarks will be retained as COPEC. The Work Plan should also identify how both food chain exposures and cumulative risk will be evaluated.

Response:

The selected laboratory will be instructed to use methods with the lowest reasonable analytical detection limits so if possible, non-detect concentrations do not exceed respective ecological benchmarks. The ecological benchmarks proposed for the screening level ERA are USEPA's Ecological Screening Values and those parameters lacking a benchmark will be retained as a COPEC. If the screening-level ERA indicates unacceptable risk, food chain exposures and cumulative risk will be addressed in subsequent steps.

Comment 42:

The Work Plan does not discuss the species that may occur at the site, or whether special status species may be exposed to site contaminants. The Work Plan should identify species that may occur at or use the site and identify those that may be ecological receptors. The Work Plan should also state that the potential occurrence of and use by special status species in the vicinity of the site will be evaluated.

Response:

A list of species potentially occurring at AFWTF Vieques has been added.

Comment 43:

Section 6.0, Page 6-1

The Work Plan must specify if approval of the health and safety plan (HASP) by the "Navy authority responsible for EOD safety" is required prior to implementation of the Work Plan. If so, "Navy authority responsible for EOD safety" should be clearly identified, and a schedule for submission of the HASP to that authority included in the Work Plan schedule shown on Figure 2-1.

Response:

This response also applies to Additional Comment #6. The work plan has been modified to specify that Navy approval is required for the HASP; the identity of the Navy authority responsible for EOD safety has been added to the work plan. HASP approval has been added to the project's schedule.

ADDITIONAL EPA COMMENTS
BASELINE INVESTIGATION WORK PLAN

Comment 1:

In order to fully evaluate contaminant impacts resulting from OB/OD hazardous waste activity, as distinguished from possible impacts of munitions-related chemicals (e.g., explosives, explosive by-products, and metals) resulting from weapons training (i.e., intended usage activities), a reference set of soil and groundwater data should also be collected in the live impact area (LIA), and not just at the Laguna Yanuel and Laguna Monte Largo areas as proposed. Furthermore, 40 CFR § 264.601 (a)(3) requires that existing groundwater quality, including other sources of contamination and their cumulative impacts on groundwater, be considered in determining whether or not the OB/OD activities result in unacceptable impacts to human health and the environment. A set of soil and groundwater reference data from LIA areas outside of the area utilized for hazardous waste OB/OD activity is necessary to make that determination.

Response:

Please refer to the response to General Comment #1.

Comment 2:

In Section 1.3.5, the date cited for the 3008(h) Order should be the effective date of January 20, 2000, not September 29, 1999 as stated on page 1-17.

Response:

Noted. The work plan will be appropriately modified.

Comment 3:

For Section 3.2 (page 3-3): The list of explosive anilities to be analyzed under the Baseline Investigation Work Plan should include either all 18 explosive anilities analyzed under the 1999 Hydrogeologic Investigation performed for the Navy by Baker Environmental, Inc. (submitted to EPA on behalf of the Navy on March 16, 2000), or all explosive constituents associated with the waste military munitions listed on pages 1-6 and 1-7 of the Work Plan; or else explain/justify why only 14 explosive constituents are proposed for analysis in the Baseline Investigation Work Plan.

Response:

Please refer to Specific Comment #3.

Comment 4:

For Section 3.2 (page 3-3): The Work Plan states that at each soil boring soil samples will be collected and analyzed only for the intervals 0 to 1 foot below ground surface (bgs) and 8 to 10 feet bgs, justifying this by stating that “the detonation pits in the OD unit are constructed at a depth of 6 to 8 feet [bgs].” Since, it cannot be confirmed whether or not the samples location is within a former “detonation pit”, the Work Plan should be revised to include collection and analysis of soils from each of the five borings at the OD area as well as the five borings at the OB unit areas (refer to Figures 3-3 and 3-4) for the following three additional intervals: 2 to 4 feet bgs, and 6 to 8 feet bgs (in addition to the 0 to 1 foot bgs and 8 to 10 feet bgs intervals already proposed). At the two reference [background] sample locations (Laguna Monte Largo and Laguna Yanuel areas), soil samples may be collected and analyzed only for the intervals 0 to 1 foot bgs and 8 to 10 feet bgs, as proposed; however, for consistency EPA recommends that the Navy also collect and analyze the three additional intervals requested above.

Response:

The work plan has been modified to comply with the comment’s recommendations regarding the baseline samples. The Navy believes that the recommended sample intervals are not appropriate for reference samples, and therefore does not propose their collection.

Comment 5:

For Section 4.0 (Sampling and Analytical Methods and QA/QC Procedures) and Section 4.13 (Data Reduction, Validation, and Reporting): Please cite and utilize the most current edition of EPA Region 2’s “CERCLA Quality Assurance Manual”; rather than the Region IV “Standard Operating Procedures and Quality Assurance Manual”, except for the case of analytes not covered by Region 2’s “CERCLA Quality Assurance Manual”, if any.

Response:

Concur. The work plan has been modified to comply with this comment.

Comment 6:

The Work Plan must specify if approval of the health and safety plan (HASP) by the Navy authority responsible for EOD safety is required prior to implementation of the Work Plan. If so, the Navy authority responsible for EOD safety should be identified in the Work Plan, and a schedule for submission of the HASP to that authority included in the schedule shown in Figure 2-1. Also, the Navy authority responsible for sit access should be identified in the Work Plan, and the procedures necessary to secure site access authorization to implement the Work Plan should be specified.

Response:

Please refer to the response to General Comment #43.