

**TECHNICAL REVIEW OF
RCRA FACILITY INVESTIGATION
AND CORRECTIVE MEASURES
WORK PLAN
SITES 5-7, 10, 13, 14, 18, & 21**

**RCRA CORRECTIVE ACTION OVERSIGHT
U.S. NAVAL STATION ROOSEVELT ROADS
CEIBA, PUERTO RICO**

Work Assignment: R02031

**Prepared for:
U.S. Environmental Protection Agency**

Contract: 68-W9-0003

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Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
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Work Assignment No.:	R02031
EPA Region:	II
EPA Site/Facility I.D. No.:	PR2170027203
Contract No.:	68-W9-0003 (TES-6)
TRC Document No.:	NY-R31.RP2
TRC Project No.:	1-635-340-2-2000-0
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Date Prepared:	August 21, 1992

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1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) has requested TRC Environmental Corporation (TRC) to provide RCRA Facility Investigation (RFI) compliance oversight for the U.S. Naval Station (NAVSTA) Roosevelt Roads, located in Ceiba, Puerto Rico. The oversight is being carried out under EPA Contract No. 68-W9-0003 (TES 6), Work Assignment No. R02031.

EPA requested TRC to review the draft documents prepared by Baker Environmental, Inc., of Coraopolis, Pennsylvania, on behalf of the Navy. This report presents the results of the review of the following documents:

- Draft Work Plan, Remedial Investigation, U.S. Naval Station Roosevelt Roads, Puerto Rico, April 27, 1991;
- Draft Sampling and Analysis Plan, Part I: Field Sampling Plan, U.S. Naval Station Roosevelt Roads, Puerto Rico, April 27, 1992;
- Draft Sampling and Analysis Plan, Part II: Quality Assurance Project Plan, U.S. Naval Station Roosevelt Roads, Puerto Rico, April 27, 1992; and
- Draft Health and Safety Plan, U.S. Naval Station Roosevelt Roads, Puerto Rico, April 27, 1992.

1.1 Background

NAVSTA Roosevelt Roads is located on the east coast of Puerto Rico in the municipality of Ceiba, approximately 33 miles southeast of the capital city of San Juan. The primary mission of NAVSTA Roosevelt Roads is to provide full support for Atlantic Fleet weapons training and development activities. The review completed by TRC focuses on eight of the areas located within the NAVSTA Roosevelt Roads facility:

- Site 5 - Army Cremator Disposal Site
- Site 6 - Langley Drive Disposal Site
- Site 7 - Station Landfill
- Site 10 - Building 25 Storage Area
- Site 13 - Tanks 212-217
- Site 14 - Ensenada Honda Shoreline and Mangroves

- Site 18 - Building 128, Pest Control Shop, and Surrounding Area
- Site 21 - Building 121, Old Pesticide Storage Building

Three other sites on the facility (the Quebrada Disposal site, the Mangrove Disposal site, and the IRNFA/MAF-4 Disposal site, all on Vieques Island) were eliminated from consideration in this review per the instructions of EPA. It was noted by TRC that the Work Plan consistently refers to ten sites being investigated under the RI, although, including the Vieques Island sites, there are in fact eleven.

1.2 Objectives and Scope of Review

The objectives of this review are to assist EPA in determining whether the facility's draft Work Plan has been developed in compliance with the appropriate guidance, and to evaluate whether the proposed investigations will adequately characterize the physical and chemical features of each site, and support the full development of a Health Effects Assessment (HEA) and Corrective Measures Study (CMS) for the sites. TRC also reviewed the risk assessment, quality assurance, community relations, remedial alternative development, and health and safety sections of the Work Plan documents to verify that the procedures outlined in the Work Plan with respect to these activities are appropriate to this project.

It is important to mention that, as directed by EPA, this review was conducted under the RCRA program despite the fact that the Navy has developed its Work Plan using the format and terminology consistent with that specified under the CERCLA program. For this reason TRC focused its review on compliance using the appropriate RCRA guidance; however, CERCLA guidance was also used in reviewing the risk assessment and corrective measures (e.g. alternative development) portions of the Work Plan. This was done because in many aspects of the RFI/CMS process, the RFI guidance defers to the CERCLA guidance, or the CERCLA guidance was more comprehensive in these areas, and because the Navy prepared the reports using CERCLA guidance.

TRC reviewed the Remedial Investigation/Feasibility Study (RI/FS) Work Plan and supporting documents for compliance with the RCRA requirements outlined in 40 CFR 264 Subpart S (Federal Register 7/27/90) and the *Interim Final RCRA Facility Investigation (RFI) Guidance* (EPA 530/SW-89-031, OSWER Directive 9502.00-6D, May 1989). The following documents were also used to complete this review:

- *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*. EPA 540/G-89/005, OSWER Directive 9355.3-01 October 1988.
- *CERCLA Region II QA Manual*, EPA, Revision 1, October 1989.

- *A Compendium of Superfund Field Operations Methods*, EPA 540/P-87/001.
- *Risk Assessment Guidance for Superfund, Volume I*, Office of Emergency and Remedial Response, EPA, 1989.
- *Risk Assessment Guidance for Superfund, Volume I, Supplemental Guidance: Standard Default Exposure Factors, Interim Final*, Office of Emergency and Remedial Response, EPA, 1991.
- *Dermal Exposure Assessment: Principles and Applications (Interim Report)*. Office of Research and Development, EPA 600/8-9/011B, January 1992
- *Supplemental Guidance to RAGS: Calculating the Concentration Term*, EPA Publication 92B5.7-081, May 1992.
- *Handbook of Remedial Action at Waste Disposal Sites. Office of Emergency and Remedial Response*, EPA, Washington, DC, EPA/625/6-085/006, October 1989.
- *Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites*, EPA 540/P-91/001, February 1991.
- Data Requirements for Remedial Action Technology Selection, prepared for EPA by Alliance Technologies Corporation, September 1986.
- *Risk Assessment Guidance for Superfund, Volume II-Environmental Evaluation Manual (Part B)*, Interim Final, December 1989, EPA Office of Emergency and Remedial Response.
- *Supplemental Risk Assessment Guidance for the Superfund Program, Part 2-- Guidance for Ecological Risk Assessments*, Draft Final, June 1989, EPA Office of Emergency and Remedial Response.
- *Ecological Assessment of Hazardous Waste Sites: A Field and Laboratory Reference*, March 1989, EPA Environmental Research Laboratory, Corvallis, Oregon.

The following additional regulations and/or guidance documents were utilized to review the Health and Safety Plan (HASP):

- 29 CFR 1910, *Federal Register*, Vol. 54, no. 42, March 6, 1989, Hazardous Waste Operations and Emergency Response (OSHA).

- U.S. Department of Health and Human Services, *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, (NIOSH/OSHA/USCG/EPA), 1985.
- EPA, *Standard Operating Safety Guide*, 1988.
- *NIOSH Pocket Guide to Chemical Hazards*, U.S. Department of Health and Human Services, June 1990.
- ACGIH, *1991-1992 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices*, 1991.

Additional background documents were reviewed to provide a comprehensive understanding of the history and nature of contamination. These documents include:

- *Initial Assessment Study of Naval Station Roosevelt Roads, Puerto Rico*. NEESA 13-051. Naval Energy and Environmental Support Activity, Port Hueneme, CA. September 1984; and
- *Phase II RCRA Facility Assessment of the U.S. Naval Station Roosevelt Roads Facility, Roosevelt Roads, Puerto Rico*. EPA ID No. PR2170027203. Prepared for the EPA, Region II, New York, NY. November 1988.

1.3 Report Organization

This report is divided into six sections. Section 1.0 establishes the scope and methodology for this review. Sections 2.0 through 5.0 provide TRC's review of the RI/FS Work Plan, Field Sampling Plan (FSP), Quality Assurance Project Plan (QAPjP), and Health and Safety Plan (HASP), respectively. Each of these sections presents general comments and page-specific comments on the review document. TRC's Summary and Conclusions for the review are provided in Section 6.0.

2.0 REVIEW OF THE REMEDIAL INVESTIGATION DRAFT WORK PLAN

Based on TRC's review of the Draft RI/FS Work Plan for the NAVSTA Roosevelt Roads, TRC has determined that this Work Plan does not satisfy the requirements of an RI/FS Work Plan as defined under CERCLA, nor does the Work Plan provide for a comprehensive investigation to satisfy the RCRA approach to environmental investigation and cleanup. The Work Plan does not effectively: (1) evaluate existing physical and chemical data available for the study areas; (2) establish conceptual models which fully outline all potential sources, pathways, and receptors; (3) define data gaps with respect to contaminant distribution and site hydrogeology; (4) identify potentially applicable remedial alternatives for the data requirements and technology evaluation; (5) formulate up-to-date comprehensive approaches to risk assessment and feasibility study development; and (6) provide for the conduct of investigations at each

site which are comprehensive enough to fully determine the nature and extent of contamination and the physical features (e.g. topography, hydrology, etc.) of each site as required to support remedial action. These major issues are outlined below in Section 2.1. Page-specific comments follow in Section 2.2.

The Work Plan is deficient in the following areas:

- The project scoping is not adequate.
- The sampling programs will not fully define site contamination.
- Data required to support remedial action(s) are not defined.

2.1 General Comments

- The Work Plan should provide some information on current land uses and waste disposal practices as well as general on-going site activities.
- The Work Plan should clarify why not all sites are targeted for further investigation in the RI, and why some sites have been dropped from the RI.
- As stated in the RFI Section 2.2.1.1., a detailed map showing clearly labeled property lines, adjacent properties usage, topography, surface drainage, hazardous waste storage areas, etc. must be included in the Work Plan.

In general, the site maps showing the proposed sampling locations do not provide enough detail as to the setting of each site. Some of the maps are confusing and difficult to interpret.

- In Section 3 of the Work Plan, the names and types of the waste materials present at each site should be identified. The text broadly describes the disposed wastes as "industrial refuse" and "general base refuse." The Work Plan needs to be more specific as to what types of waste are on the site. The quantity of hazardous materials, if available, should also be presented. This information is stated in the Initial Assessment Study (IAS).

No discussion of results of any geophysical or electromagnetic surveys is presented in the Work Plan. If such a survey has not been done, it is highly recommended, as many types of wastes can thus be located and their extent defined.

- The development of a feasibility study (or Corrective Measures Study under RCRA) requires that accurate volume estimates of contaminated material requiring treatment be obtained from the remedial investigation to enable accurate sizing of process equipment, determination of flow rates and length of

clean-up times. The only way to formulate accurate volume estimates is through a comprehensive field program consisting typically of geophysical investigations and aerial photo reviews to define size(s) of potential source areas, and field screening and sampling and laboratory analysis to define extent of contamination. The field investigation tasks outlined in the sampling plans provided in this Work Plan are not extensive enough to achieve this level of source and/or contaminant characterization. The document presents only a limited list of parameters for analysis, not to mention a relatively limited number of samples.

- The Work Plan proposes surface soil samples at most sites, but should also propose additional subsurface soil samples near the soil-water table interface. Also, the Work Plan should specify whether the surface samples will be collected from the ground surface or just below it.
- Although the proposed sampling locations are noted in the Work Plan, there is no section where the rationale for these locations is described. It is recommended that a table be prepared to summarize the sample locations and rationale.

The Work Plan does not discuss past sampling and analyses results or any identified extent of contamination, and lacks any information or analytical data from existing monitoring wells and/or soil borings. The Work Plan should present this information (to whatever extent it is available) as it dictates the rationale behind the proposed sampling. The Work Plan particularly needs to explain why all environmental media of concern are not being sampled at all sites. Past sampling information should be included in the sampling location/rationale table.

- The Work Plan states that, at certain sites, samples will be obtained at the same locations where they were previously obtained. This seems redundant unless the intention is to verify previous results, rather than obtaining additional data to characterize the area.

Also, the proposed laboratory analyses are referred to using such terms as VOCs, BNAs, metals, etc. The Work Plan needs to identify specific analytical constituents, methods, and associated detection limits.

- The number of background samples (four sets of ground water, surface water, sediment and soil samples for the entire facility) is limited. A set of background samples for each site should be considered. The specific metals analyses for background samples need to be specified. One ~~a~~ set of background data for metals is considered sufficient for all sites.

- The discussion of ground water behavior (Section 2.3.5) at the Naval Station is severely deficient. All aquifers under the site areas must be identified and their relationships to surrounding formations/deposits and other aquifers must be described; direction of ground water flow at the various site areas must be established before any study of contaminant fate and transport can be made. If the above information is not known, the ground water monitoring well installation program at the Naval Station will need to be expanded so that this ground water data can be collected. It is recommended that a minimum of three ground water monitoring wells be installed at each site.

The extent of hydrogeologic information and data gaps for the sites is unclear. The Work Plan needs to specify this information and indicate what steps will be taken to characterize the aquifer(s) at the sites. This may require aquifer pumping tests, tidal studies, gradient determination, etc. Regardless, characterization of the hydrogeology should be thorough enough to support the feasibility study.

- Direct hydraulic parameter measurements, such as hydraulic conductivity and permeability, are not proposed in the Work Plan. These aquifer measurements are needed to determine contaminant migration rates.
- The Work Plan does not specify if the ground water samples obtained for metals analysis will be filtered or unfiltered. This needs to be clarified. The Work Plan should also include provisions for collecting such basic ground water parameters as pH, redox potential (Eh), temperature, turbidity, and conductivity.
- An assessment of threatened and endangered flora on the sites must be done before clearing of vegetation can take place. It must also be established that vegetated areas scheduled for clearing are not nesting or breeding sites for any threatened or endangered animals prior to the start of work. The Work Plan must evaluate in more detail the ecological impact of manually or mechanically clearing vegetation at sites where it may cause an access problem.
- RI/FS guidance (EPA 1988) requires that an assessment of potential areas of archaeological and/or historical interest be performed at the site areas. Possible use of the station area by indigenous peoples or early colonizers should be investigated. Also, station activities may themselves be of historical interest.
- The Work Plan does not formulate any preliminary remedial alternatives for the eight sites or identify the data needed to evaluate them, as required by the CERCLA RI/FS guidance (EPA 1988) *prior* to the formulation of the RI sampling plan. Data needs required to support the development of remedial alternatives are therefore, not addressed in the site-specific sampling plans.

In completing this review, TRC identified a number of potential remedial alternatives that may apply to each site(s) and the data needs required to support a complete evaluation of the various remediation technologies associated with each alternative. These potentially applicable remedial alternatives and the data needs are presented in Table 1. It is recommended that provisions to collect these data be incorporated into the Work Plan. In some cases, there was not enough information to suggest preliminary remedial alternatives for the site(s). It is recommended that a limited investigation be initiated at these (as required in the RI/FS Guidance, EPA 1988) to gather enough preliminary data to accurately scope out potential remedial alternatives and data needs for these sites.

Although it is not necessary to develop a concrete plan for performing alternative development and/or site remediation, it is necessary that the contractors formulate a general approach to the development of remedial alternatives (including preliminary alternatives and technologies) which can be expanded or altered depending on the information that is gained throughout the site characterization and the treatability investigations. It is imperative that this Work Plan consider the remedial alternatives such that the necessary data can be collected so that during the course of the RI the remedial alternatives can be further developed and refined.

Treatability testing is initiated when detailed data on technology effectiveness are obtained. The RI and FS should be performed in an interactive fashion so as to obtain all of the necessary information which can be used in the final selection of treatability technology(ies). The Naval Station Work Plan has not been developed in this manner, and thus is deemed to be inadequate in supporting FS development. The information needed to support an FS includes a determination of the vertical and lateral extent of contamination which is important in defining the full volume contaminated material which requires containment, treatment, and/or management. The depth to ground water, ground water flow patterns, geological characteristics, soil characteristics (e.g., soil grain size distribution) are often important in determining the effectiveness of a remedial alternative. The topographical features of the site also aid in selection because of their effect on economic and technological factors affecting implementability. It is also important to have an understanding of waste characteristics and the results of any previous sampling so as to have a better understanding of what type of contamination exists at each site. Additional information necessary might include Biological Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Dissolved Oxygen (DO), Total Organic Carbon content (TOC), Eh, and pH.

TABLE 1. REMEDIAL ALTERNATIVES FOR EACH SITE AT THE NAVAL STATION ROOSEVELT ROADS, PUERTO RICO

Site	Remediation Alternative	Data Requirements
Quebrada Disposal Site, Mangrove Disposal Site, Army Cremator Disposal Site, Langley Disposal Site, Station Landfill	capping	extent of contamination, ground water table, availability of cover, material, soil characteristics, climate (precipitation), land use
	excavation/removal	moisture content, solids content, nature and extent of contamination, geological characteristics, climate
	incineration	waste characteristics
	biological treatment	biochemical oxygen demand (BOD), dissolved oxygen (DO), pH nutrients
	solidification/stabilization	soil properties, waste characteristics, waste constituents, pH, climate
	disposal in secure landfill	volume, waste characteristics, RCRA requirements
	soil washing	grain size distribution, TOC, volume
	soil venting	soil porosity, bulk density, TOC, soil classification, pilot testing, conductivity, water level

TABLE 1. (CONTINUED)		
Site	Remediation Alternative	Data Requirements
	slurry walls	site accessibility, topography, depth to impermeable layer seismic history, heterogeneity of subsurface, soil conditions, ground water depth, soil chemistry, waste chemistry
Building 25 Storage Area Building 128 (Pest Control Shop) Building 121 (Pesticides/ Metals)	excavation removal	nature and extent of contamination
Tanks 212-217	tank removal tank filling	nature and extent of contamination
Ensenda Honda Shoreline and Mangrove	not enough information to suggest a remedial alternative	limited preliminary investigation

Two additional guidance documents need to be consulted and incorporated into the baseline risk assessment methodology presented in the Work Plan:

- *Dermal Exposure Assessment: Principles and Applications, Interim Report*, EPA 600/8-9/011B January 1992.
- *Supplemental Guidance to RAGS: Calculating the Concentration Term*, EPA Publication 92B5.7-081 May 1992.

Use of the arithmetic average concentration and its associated upper confidence limit to estimate the concentration term as described in the EPA's *Supplemental Guidance to RAGS* document needs to be reflected in the Work Plan.

2.2 Page-Specific Comments

2.2.1 Site Background and Physical Setting

p. 2-2, ¶2

The text states that if the data obtained during the Remedial Investigation (RI) are indicative of a need for site remediation and cleanup then a feasibility study (FS) will be performed in order to evaluate remediation alternatives. When the appropriate remedial alternative is selected a draft Record of Decision (ROD) will be issued.

This approach is inconsistent with the CERCLA RI/FS guidance (EPA 1988) which states that the RI and FS should be performed concurrently so as to obtain the required data, to develop and evaluate several remedial alternatives, and critique the results so as to determine the most appropriate remediation technology. According to Section 2.0 of the CERCLA RI/FS guidance, the scoping process of the RI/FS should be discussed fully in the Work Plan to include at a minimum:

- an evaluation of existing site data;
- development of a conceptual site model;
- determination of the need for and implementation of limited studies;
- development of preliminary remedial alternatives;
- validation of the need for treatability studies;
- identification of initial project/operable units which are likely to meet the response scenarios and remedial action alternatives;
- initiation of potential Federal/State applicable and relevant and appropriate requirements (ARARs) identification;
- identification of data needs;
- design data collection program; and
- preparation of project plans.

The selection of a remedial alternative is an iterative process of evaluating several alternatives during the course of the RI/FS such that the most beneficial alternative is selected.

- p. 2-5, ¶2 & 3 The text describes the site geology in this section (2.3.3, Geology). This section needs to be greatly expanded. All rock types named should be identified by group, member, formation name, and should be described (i.e., are formations fractured, vuggy, vesicular, faulted, etc.). The Daguao Formation and Figuera Lava should be described by rock type. The location of the Pena Pobre Fault Zone should be depicted on a map, and it should be stated whether or not this fault is active. A geologic cross-section of the site should be presented here. Based on this presentation, field investigation tasks should be formulated to address the data gaps noted in the understanding of site geology.
- p. 2-7, ¶2 The text describes the surface drainage of the site. A map showing the surface drainage and land features discussed here should be included. Surface drainage must be considered when determining sample locations as the RI must evaluate all potential pathways of contaminant migration.
- p. 2-7, ¶4 The text describes the site subsurface to a depth of less than 30 meters, and mentions some upgradient offsite wells. A cross-sectional map identifying all known or suspected water-bearing lithologic units (aquifers), including unconsolidated deposits, should be constructed, if possible, based on existing information. The potential extent of ground water contamination on the site cannot be assessed without this information. The wells mentioned in this paragraph should be described at greater length and the geologic material the wells were screened in and their distance from the shoreline should also be provided.
- p. 2-8, ¶2 The text discusses the saltwater interface at the site shoreline. The location of the saltwater interface, and the aquifer(s) in which it occurs, should be identified.
- p. 2-8, ¶6 The text discusses pasture use and irrigation on the site. Irrigated areas, and the spacing and size of the ditches, should be shown on site maps. Also, there is mention of cultivated lawns being present throughout the base. It should be determined if there is frequent pesticide use on these lawns, as such use must be reflected in the sampling and analysis program formulated for the base.

2.2.2 Sites 5-7, 10, 13, 14, 18, & 21 - Background

2.2.2.1 Site 5 - Army Cremator Disposal Site

p. 3-2, ¶3 The text states that the site was used from the early 1950s to the early 1960s, and that no endangered species have been identified at this site. The IAS states that there are endangered species at Site 5. This discrepancy should be addressed as it may affect remedial activities at the site.

2.2.2.2 Site 13 - Tanks 212-217

p. 3-3, ¶4 The text states that "The tanks were constructed in 1948 for the storage of AVGAS..." It is not clear whether the tanks being discussed are above-ground or underground storage tanks. The first sentence of this site section should include the above information as well as the number and size of the tanks and their composition.

2.2.2.3 Sites 18 and 21 - Pest Control Shop (Building 128) and Surrounding Area, and Old Pesticide Storage Building (Building 121)

p. 3-4, ¶5 The text discusses pesticide spillage, application, and storage on Sites 18 and 21. Pesticide types should be named, both by brand name and chemical name when possible. The analytical program formulated for the RI must reflect, as closely as possible, the specific chemicals which may have been deposited at the site.

2.2.3 Work Plan Rationale

p. 4-1, ¶1 The text lists two specific RI objectives: the creation of a conceptual site model and the determination of need for interim mitigation actions. The objectives stated in the Work Plan are incomplete. As stated in the CERCLA RI/FS Guidance (EPA 1988) the RI must be comprehensive enough to support an informed risk management decision regarding which remedy appears to be most appropriate. Therefore, RI/FS work plans should also include the evaluation of existing data, development of a conceptual site model, identification of initial project/operable unit response scenarios, identification remedial action objectives, identification of potential Federal and State ARARs, identification of Data Quality Objectives (DQOs) and preparation of project plans. The only way to assure the conduct of a comprehensive RI field program is to effectively scope out the sampling program during the Work Plan stage.

2.2.4 Task Plan

p. 5-2, ¶4

The text states that this Work Plan will include an "initial evaluation." The Work Plan's initial evaluation should determine the types and volumes of wastes present, the potential pathways of contaminant migration, preliminary public health and environmental impacts, and the preliminary identification of remedial response objectives and remedial action alternatives. These elements are not currently included.

p. 5.10, Table 5-2 The table lists the number of "soil" samples to be collected. The table should specify whether soil samples are subsurface or surface soil samples.

The proposed analyses for samples collected at each site are presented in the table but not discussed in the text. The Work Plan must discuss the proposed analyses and the rationale for selection of these analyses.

The table shows that samples from Site 5, the Army Cremator Disposal Area, will be analyzed only for volatile organic compounds (VOCs), base neutral acid extractable compounds (BNAs), and metals. Samples collected from Site 5 should also be analyzed for polychlorinated biphenyls (PCBs) and pesticides. Due to the previous use of Site 5 as a municipal and industrial waste disposal area, it is not possible to eliminate pesticides and PCBs as potential contaminants. Also, the Work Plan must indicate what compounds are included under the categories of VOCs, BNAs, and metals.

The table shows that ground water and sediment samples from Site 6, the Langley Drive Disposal Site, will be analyzed for full target compound list (TCL) and Target Analyte List (TAL) components, while surface water samples will be analyzed for lead only. The previous use of Site 6 as a refuse and industrial waste disposal area means that many other contaminants, in addition to lead, may be present in the site's surface water and should be analyzed for in surface water samples collected from the site. The rationale behind sampling for lead only needs to be explained.

The table shows that subsurface soil samples from Site 13, Tanks 212-217, will be tested for total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and xylenes (BTEX), and lead only, although ground water and surface soil samples will be analyzed for VOCs, BNAs, and metals. The Work Plan should provide

justification for not evaluating Site 13 subsurface soil samples for *AVGAS* VOCs (other than BTEX) and metals (other than lead). Compounds tested for in surface soils should be tested for in subsurface soils to determine whether any contaminants have migrated vertically from the surface into the subsurface.

The table shows that samples from Sites 18 and 21, the Pest Control Shop (Building 128) and Surrounding Area and the Old Pesticide Storage (Building 121), will be analyzed for metals and pesticides only. Samples collected from Sites 18 and 21 should *maybe @ site* also be analyzed for semi-volatile organic compounds, as these are often associated with the carriers used to apply pesticides.

p. 5-28, ¶1

The Work Plan discusses taking samples from the soil borings at depths from 0 to 8 feet. The text should explain the reasoning for the selection of the eight-foot depth and discuss whether sampling is continuous to that depth. Note that the only way to effectively characterize source material (and evaluate exposures) is to collect samples at the ground surface, from within the zone of contamination, and also from beneath the depth of suspected contamination (to verify the vertical limit of contamination).

p. 5.30, ¶ 1

The text states that a "comparison of data to relevant standards and criteria, when available, will also be provided." This approach is not adequate. An initial ARARs analysis (including a comparison of existing data to ARARs) should have occurred prior to Work Plan preparation to evaluate current exceedances and to develop site-specific DQOs for the sampling programs.

2.2.4.1 Task Plan, Site 5 - Army Cremator Disposal Site

p. 5-14, ¶2

The text states that ten surface soil samples will be collected at this site, "primarily in areas of stressed vegetation." The actual locations of the cremator and disposal areas are unknown; therefore, the Work Plan should clarify how the location of the disposal area and the vertical and lateral extent of contamination will be determined. The text should clarify how the exact locations will be determined prior to sampling.

The text states that ten surface soil samples will be collected. Surface water, ground water, sediment, and contaminated biota are presented as "environmental concerns" on Page 3-2, ¶3. In addition, future exposure to ground water and subsurface soils appears to be a possibility. Considering the above, it needs to be

explained why only surface soil samples will be collected from this site.

p. 5-15,
Figure 5-3

From the figure it appears that there is a crest of a hill in the middle of this site. The text should discuss the reasoning in sampling on only one side of the site.

2.2.4.2 Task Plan, Site 6 - Langley Drive Disposal Site

p. 5-14, ¶4

The text states that one ground water and three surface water/sediment samples will be collected. However, one ground water sample is not considered adequate for an RI field program. Paragraph 4 on Page 3-2 states that human receptors are expected to be exposed to contaminated biota and site soils. It needs to be explained why no soil samples are to be collected from Site 6, and why exposure to soils is not being evaluated in the risk assessment.

It should also be clarified as to what samples will be collected: three surface water *or* sediment samples, or three surface water *and* three sediment samples. If the latter is the case, list surface water and sediment samples separately throughout the Sampling and Analysis Plan (SAP).

p. 5-16,
Figure 5-4

There is an area designated as "Open Ground (Hydraulic Fill)" to the east of the vegetative overgrowth. The text should clarify the significance of this area with respect to contamination.

2.2.4.3 Task Plan, Site 7 - Station Landfill

p. 5-17, ¶2

The text states that eight ground water, twenty surface soil, and four surface sediment samples will be collected. Contact with surface waters and consumption of contaminated biota are presented as potential exposure routes in Section 3.6, Page 3-3, ¶2, but no sampling of these is proposed. This needs to be explained or modified.

In addition, exposure to subsurface soils appears to be a possible future exposure scenario. The Work Plan must justify why no subsurface soils are to be collected and/or include subsurface soil sampling in the field program.

p. 5-17, ¶3

The text states that twenty surface soil samples will be collected from the landfill. The RI of the landfill must be designed to collect all pertinent data required to formulate remedial alternatives with respect to landfills. For instance, the lateral and vertical extent of

fill material, landfill disposal patterns, topography and drainage, depths to ground water, and potential confining layers all must be determined during the RI, in addition to establishing the nature and extent of contamination. Reference should be made to the *Guidance for Conducting Remedial Investigations/Feasibility Studies for CERCLA Municipal Landfill Sites* (EPA/540/P-91/001) (EPA 1991) for a complete list of data requirements for remedial action at landfill sites. All of these requirements must be addressed during the RI.

2.2.4.4 Task Plan, Site 10 - Building 25 Storage Area

p. 5-17, ¶5 The text states that thirty surface soil samples will be collected. Ground water is listed as a potential environmental concern and inhalation of particulates is listed as a potential exposure pathway on page 3-3, ¶4. The Work Plan must provide an explanation as to why no ground water samples are to be collected or it should be modified to include collection of such samples.

2.2.4.5 Task Plan, Site 13 - Tanks 212 to 217

p. 5-17, ¶7
& p. 5-22, ¶2-3 The text states that subsurface soil boring samples, surface soil samples, and ground water samples will be collected. Surface water and sediment are listed as expected environmental concerns on page 3-3, ¶5. The Work Plan needs to be explained why no samples from these media are to be collected. In addition, ingestion of contaminated biota and vapors are also listed as potential exposure routes. The Work Plan must be modified to address the specific concerns within the sampling program.

p. 5-22, ¶1 The text states that subsurface soil samples will be selected for collection on the basis of "evidence of contamination, saturation, etc." It is important to collect samples from below the bottom of the tank and at background locations so as to determine if these tanks have leaked.

p. 5-22, ¶3 The text states that three new monitoring wells will be installed but provides no information on how deep the wells will be or where they will be screened. This information needs to be included so that the effectiveness of the wells in measuring contamination may be evaluated. In addition, the criteria and rationale used for placing wells and determining screen depths must be presented in the Work Plan in order to evaluate how effective they will be in obtaining information on stratigraphy and aquifer properties.

2.2.4.6 Task Plan, Site 14 - Ensenada Honda Shoreline and Mangroves

- p. 5-22, ¶4 The text states that twelve surface water/sediment samples will be collected to "provide site-wide environmental data." Apparently there was a major open water spill of 210,000 gallons of marine diesel fuel in 1981. The environmental effects due to this spill have most likely been greatly affected by tidal conditions, weather, and ocean currents. Therefore, it is questionable as to whether this problem can be adequately addressed through the RI process. A comprehensive investigation and cleanup program which reviews all past activities taken to restore the site, and involves all associated State, Federal and Local agencies is required.

2.2.4.7 Task Plan, Site 18 - Building 128, Pest Control Shop and Surrounding Area

- p. 5-22, ¶ 6 The text states that sediment samples will be collected, but does not say how many. Table 5.2 states that six surface water and sediment samples will be collected. The number of samples that will be collected and the rationale for collection should be included in this section.
- p. 5-22, ¶7 The text states that soil boring samples will be collected. An explanation should be given as to why ground water and surface water will not be evaluated at this site.

2.2.5 Baseline Risk Assessment

The methodology presented for conducting the baseline risk assessment often does not follow EPA guidance and outlines in appropriate use of some methodologies. In some instances the methodology does not address potentially significant exposure pathways and may introduce a liberal bias into the assessment.

- p. 6-4, ¶2 The text describes criteria to be used in evaluating contaminants under the risk assessment. Common laboratory contaminants (acetone, phthalate esters, etc.) will be addressed if concentrations are ten times greater than the corresponding blanks; non-laboratory contaminants will be evaluated if they are present in concentrations five times greater than the laboratory blank. All additional methods which will be used to identify chemicals of potential concern, such as frequency of detection, toxicity, and concentration, need to be described in Section 6.1.3 of this Work Plan.
- p. 6-3, ¶4 The text states that the arithmetic or geometric mean and the upper 95 percent confidence limit of that mean will be used in the summary of potential chemical data. As per the EPA guidance

listed in the introductory section (EPA, May 1992), an estimate of the arithmetic mean should be used to estimate exposure. The methods used to select means and determine upper 95% confidence limit values should be presented in terms which agree with this EPA guidance.

- p. 6-4, ¶5 The text states "The identification of potential exposure pathways at the nine sites...." There is a discrepancy between the nine sites referred to in this paragraph and the ten sites referred to in Table 5-2 (Page 5-10). If one of the sites listed on Table 5-2 will not be evaluated in the risk assessment, the site should be identified and an explanation given.
- p. 6-5, ¶3 & 4 The text states that recreational fishermen may potentially be exposed to chemicals at the NAVSTA Roosevelt Roads. Commercial and subsistence fishermen in the Naval Station area may be thus exposed as well (and at potentially greater levels). This has not been addressed in the Work Plan.
- p. 6-6, ¶1 The text shows sediment exposure pathways to exist through dermal contact and ingestion of shellfish. The Work Plan should explain why direct ingestion of sediments is not considered an exposure pathway although direct ingestion of soils (Page 6-5, ¶4) is considered.
- p. 6-6, ¶3 The text states that exposure point concentration means, if log-normally distributed, will be based on the geometric mean rather than the arithmetic mean. A geometric mean may not be appropriate for use in determining exposure point concentrations. Refer to the EPA guidance (EPA, May 1992) referenced above.
- p. 6-7, ¶1 The text shows that the Integrated Risk Information System (IRIS) will be used as a source for toxicity values, along with the Health Effects Assessment Summary Tables (HEAST). The Work Plan should state that IRIS is the primary source for toxicity criteria and that HEAST will be referenced as a secondary source only when criteria are not available in IRIS.
- p. 6-7, ¶2 The text states that, for some chemicals, toxicity values (i.e., reference doses) may have to be derived if the principal references (IRIS and HEAST) do not contain the required information. Due to the potential uncertainty associated with the sources used to derive toxicity values, it is not appropriate for the contractor to derive toxicity values for use in the risk assessment. In accordance with

EPA guidance, the EPA Environmental Criteria and Assessment Office (ECAO) should be contacted for interim toxicity values when values are not available in IRIS or HEAST. The potential risk from chemicals without criteria should be discussed qualitatively in the risk assessment so as not to imply an inappropriate degree of certainty.

p. 6-7, ¶3

The text states that quantitative risk estimates based on the reasonable maximum exposures to the site contaminants will be calculated, and that potential carcinogenic risks will be evaluated separately from potential non-carcinogenic effects. The text should note that medium-specific risk estimates for all exposure routes evaluated will be developed. The cumulative risk for each receptor should also be calculated. Finally, it needs to be noted that potential exposure by a receptor to multiple sites will be evaluated and presented.

2.2.6 Ecological Risk Assessment

p. 6-11, ¶2

The Work Plan states that a criterion for the selection of chemicals of concern will be the availability of toxicological information for selected target species. The exclusion of contaminants based on this criterion may result in an understatement of risk to ecological receptors. This criterion for the selection of chemicals of concern should be deleted.

p. 6-12, ¶3

The Work Plan lists factors that will be considered in determining the designation of habitats which warrant "special attention." It is unclear what this description means and what additional analyses (if any) will be conducted in the risk assessment to evaluate these areas. The designation and subsequent additional procedure(s) used in assessing risk to these sites need to be clarified.

p. 6-13, ¶3

The text states that exposure points will be described after potential contaminant migration pathways and affected habitats have been defined and potential target receptors identified. The identification of chemical concentrations that will be used in evaluating the contaminant exposure and risk to ecological receptors is not provided in the Work Plan. The mean and maximum detected chemical concentrations are most applicable for use in the estimation of exposure point concentrations.

p. 6-13, ¶4

The text describes how exposure potential will be estimated. This paragraph describing the estimation of exposure is unclear. Further

clarification should be provided regarding the estimation of exposure doses for target species for each exposure pathway.

p. 6-14, ¶1

The text states that toxicities of the contaminants of concern will be assessed by using ambient water quality criteria (AWQC) and, if possible, Sediment Quality Criteria (SQC) for aquatic life, terrestrial wildlife, and vegetation where relevant. AWQC and SQC are proposed to be utilized to assess contaminant toxicity to aquatic life, vegetation, and terrestrial wildlife. It is unclear what SQC will be used and how water and sediment criteria will assess risk to terrestrial wildlife and vegetation. These issues need to be clarified.

2.2.7 Community Relations

p. 7-1, ¶2

For the first bullet, the second sentence should read, "The questionnaire will be modified to obtain relevant information concerning the site history and previous site activities, and to identify key community concerns regarding the site."

The second sentence should read, "Baker will also schedule interviews, provide logistical support, and determine the number of interviews required to meet the project objectives."

The last sentence should read, "It is estimated that approximately twenty interviews will be conducted."

p. 7-1, ¶4

The first sentence should read, "Baker will assist the PWO/PAO by identifying key local residents and officials, current and former Navy employees knowledgeable with the areas of concern, and other interested individuals and groups who have expressed concerns regarding the site."

p. 7-2, ¶1

For the second bullet, in addition to the elements listed, the Community Relations Plan (CRP) should also include a community profile.

p. 7-2, ¶1

For the seventh bullet, the CRP should not include the "mailing list" but a list of officials, key contacts, and interested parties (i.e. elected officials, state and federal officials, community organizations, and media). EPA Community Relations guidance suggests not including the names and addresses of private citizens in the CRP. These names should only be on the mailing list (PB-17 of OSWER Directive 9230-0-3B).

3.0 REVIEW OF THE DRAFT SAMPLING AND ANALYSIS PLAN, PART I: FIELD SAMPLING PLAN, REMEDIAL INVESTIGATION

3.1 General Comments

- The Draft Field Sampling Plan (FSP) does not show that an adequate conceptual model of the site has been developed. This needs to be done in order to demonstrate an understanding of potential contaminant sources, transport pathways, and dispersion patterns in order to develop a FSP which will achieve the goals of the RI. Site-specific contaminants of concern and ARARs have not been identified. No estimates of the three-dimensional extent of potentially contaminated material are presented.
- The maps presented in the FSP are inadequate and insufficiently detailed. The report should include a map of the island of Puerto Rico, indicating the location of the NAVSTA Roosevelt Roads, and a topographic map of the station area. All individual site maps should identify the buildings and roads shown, as well as all swampy/marshy areas, open water bodies and drainage ditches/gullies (both permanent and ephemeral or seasonal), and current land uses and site activities.
- It was stated in the Work Plan (Page 5-3) that the FSP would include, for each site, a description of the site background and sampling objectives. The FSP does not, but should, include this information on a site-by-site basis. Sampling objectives should address not only the number of samples to be taken and parameters to be tested, but also the rationale and the purpose of the sampling.
- Most of the soil sampling locations selected are slated for surface soil collection (with a trowel) only. Such a soil sampling program will not define the three-dimensional distribution of contaminated material on the site. Justification for the absence of significant subsurface soil sampling needs to be provided, or else the sampling program must be expanded to include more soil borings.
- Few monitoring wells exist or are scheduled to be installed on the site. Justification for the limited number of wells in the sampling program needs to be provided that will demonstrate that existing wells will be sufficient to characterize ground water flow and aquifer properties on the site. Otherwise, additional wells need to be installed to adequately define the hydrogeology.

3.2 Page-Specific Comments

- p. 2-19, ¶4 The text states that the sampling and field activity procedures employed during the RI investigation are based on Navy CLEAN Standard Operating Procedures (SOPs). The Navy CLEAN SOP

must meet the standards presented by CERCLA guidelines. Where Navy and CERCLA SOPs differ, the CERCLA SOP must be followed.

p. 2-27, ¶1

The text describes the collection of surface soil samples without discussing VOC sample collection or compositing. The sampling procedure does not conform to EPA Guidance (EPA 1922). The 40 ml vials for VOC analysis should be collected immediately, after which the required amount of samples are transferred via stainless steel spoon/trowel to a decontaminated stainless steel bowl, mixed thoroughly (composited), and placed in the appropriate sample containers.

p. 2-33, ¶2

The text lists metals analysis methods without indicating what specific compound is being analyzed. Metals, Total Petroleum Hydrocarbons (TPH), and Total Organic Halogens (TOH) are listed under the TCL heading. Metals analyses need to be listed by compound. Metals, TPH, and TOX, are not on the TCL. The analyses list should be corrected.

The Superfund TCL list is proposed. If analyzing for TCL, the following three CLP-Statement of Work (SOW) documents are recommended in place of SW-846 methodology:

- for TCL-LDL-VOAs: *Superfund Analytical Methods for Low Concentration Water for Organic Analysis*, 6/91 (SAMCO691) for VOA ground water samples to achieve ARAR-Maximum Contaminant Level requirements;
- for TCL-Metals: *USEPA-CLP-SOW for Inorganic Analysis, Multi-Media, Multi-Concentration: Document Number ILM01.0*; and
- for USEPA-CLP-SOW for Organic Analysis, Multi-Media, Multi-Concentration: *Document Number: OLM01.8*.

The use of EPA-approved SW-846 methods or the Methods of Chemical Analysis of Water and Waste (MCAWW: 3/83) methods for TCL testing have two major drawbacks. The SW-846/MCAWW generated data produces deliverables lacking EPA format, and the Quality Assurance/Quality Control (QA/QC) backup of raw data is significantly less than what is normally presented in a TCL-CLP-SOW deliverable package. As such, TCL testing under normal CERCLA-type Region II work requires the CLP-Inorganic/Organic SOWs be used, and not SW-846 or MCAWW

testing procedures. SW-846/MCAWW have their place for the testing of water quality parameters, RCRA Corrective Action Appendix IX constituents, etc., but not TCL parameters. Also, the Region II Data Validation Organic/Inorganic Checklists are structured to be used explicitly with CLP-SOW deliverables, as well as the generic National Functional Guidelines, which are generally used for only Region III to X (inclusive) CLP DQO Level IV data reviews. These would have to be modified to address SW-846 data.

The Navy is proposing the use of EPA 418.1 (Modified) Method 3550 for the analysis of TPH. The recommended analysis for TPH is questionable. For data entering a risk assessment, the data generated from an Infrared (IR) method (TPH), as well as using only BTEX instead of a full TCL-VOA scan is questionable. It is preferable to initiate a TPH/BTEX pre-screening survey to delineate probable Areas Of Concern (AOCs), and then to analyze for TCL-VOAs and TCL-BNs on those (EPA-Contractor) pre-agreed AOCs. Further, when combining a highly reliable/quantified GC/MS TCL-BN database with quantitatively speculative TPH IR data, the co-usage of TPH and GC/MS base-neutral (BN) data is probably not required or very useful. TPH data may also be valuable for subsequent disposal activities, but not during the RI, when CLP level TCL-BN data is being generated. It is recommended that TCL-VOA and TCL-BN data for soil samples for Site No. 13 be used in place of TPH and BTEX.

Note that only TCL-BN are recommended in the semi-volatile fraction. Based on the nature of contaminants, acid-extractables analysis is not recommended, except where paints were utilized and disposed.

The Navy is proposing the use of EPA SW-846 Method 8240 for the analysis of VOCs. The recommended analysis for VOCs by SW-846 8240 is questionable. In general, Practical Quantitation Limits (PQLs) should always be minimally set near ARAR-Maximum Contaminant Levels (MCLs) for aquifers which have the potential future use of being drinking water sources. MCLs for ground water VOC samples entering a baseline risk assessment under a CERCLA Region II Work Assignment, during a RI Phase, would therefore require PQLs at or below the State/EPA Regional MCL levels. The use of SW-846 Method 8240 will probably, "at best," achieve a PQL level of only 10 ug/l (ppb). As an example, the MCL of vinyl chloride is 2 ug/l (ppb), and a PQL of this level can only be achieved utilizing lower detection levels. CERCLA

EPA Region II work for lower detection limits on VOAs involves the use of the CLP-SOW: SAMCO691. This method is similar to the EPA Drinking Water Method 524.2. The currently approved EPA Region II CLP-SAS boilerplate for Lower Detection Limit (LDL) VOAs is enclosed. If LDL-VOAs are utilized, Data Quality Objectives similar to this CLP-SAS should be incorporated into the QAPjP (see Attachment 1).

The Navy is proposing analyzing samples for BTEX by EPA SW846 Method 8020, EPA 602. The value of a BTEX scan when already analyzing tarlike materials with SW-846 Methods 8240 and 8270 is questionable. Tarlike materials are usually high in BTEX and almost always contain polynuclear aromatic hydrocarbons (BN compounds). A TCL-BN scan without BTEX (SW-846 Method 8240) and a lead (SW-846 Method 7421) analysis would be more informative.

p. 2-33, ¶2, &
p. 2-34, ¶1

The text states that analyses will be performed by a laboratory which has met the Naval Energy and Environmental Support Activity (NEESA) 20.2-074B requirements, and that Level C data quality will be provided for all analyses. The NEESA 20.2-074B requirements and Level C data quality should meet CLP data requirements.

p. 2-34, ¶2

The text states that a field blank and an equipment rinsate blank will be collected during each sampling event. Field blanks and equipment rinsate blanks are identical items; therefore, to collect one of each would be collecting duplicate samples. Field/rinsate blanks should be collected at the start of the day, at the rate of one per matrix type per equipment type per concentration per day of sampling. Duplicate samples are collected at the rate of one per 20 samples. It must be stated whether the laboratory will provide trip blanks or if they will be prepared by field personnel; these are collected at the rate of one per day of VOC sampling. Matrix spike/matrix spike duplicates (MS/MSD) must also be included as part of the QA/QC program.

p. 2-34, ¶3

The text states that sampling equipment will be decontaminated by being "thoroughly flushed with copious amounts of water, then further decontaminated with a rinsate, and held in a water-filled container until the next application." This decontamination does not comply with the CERCLA EPA Region II QA Manual of October 1989 procedures, which are correctly presented in SOP F504 at the end of the FSP.

The listed holding times in this section need some clarification. As an example, the VOC analyses section of the FSP should identify the EPA Region II holding times for both the laboratory (Verified Time of Sample Receipt: VTSR: 10 days), *and* the holding time from sample collection (14 days).

Specifically, the data validation procedures for EPA Region II allows 14 days from time of field collection to laboratory analysis for 1:1 HCl preserved VOC water matrix samples. This is indicated in both the National Functional Guidelines (NFG) for Organics (USEPA, 1988), and the SOP No. HW-6, Revision #8 EPA Region II data validation checklist (EPA Region II Organic checklist).

The currently approved field sampling procedure in EPA Region II is to utilize 1:1 HCl and not concentrated HCl. It is recommended that the FSP include the following EPA Region II 1:1 HCl preservation statement, whenever 1:1 HCl acid preservative is required in their field programs. Further, for cyanide preservation, the currently approved EPA Region II cyanide NaOH preservation statement is also recommended to be included. These two preservation statements are as follows:

- Preservation of VOCs in Water: Adjust the pH of the sample to less than 2 by carefully adding 1:1 HCl drop by drop to required (2) 40-ml VOA sample vials. The number of drops of 1:1 HCL required should be determined on a third portion of sample of equal volume. Cool to 4°C. If effervescence occurs during acid preservation, no 1:1 HCl preservation should be performed. This sample property should be listed on the Chain-of-Custody Record document by the field sampler.
- Cyanide Preservation: Test a drop of sample with potassium iodide-starch test paper (KI-starch paper). A blue color indicates the presence of oxidizing agents and the need for treatment. Add ascorbic acid, a few crystals at a time, until a drop of sample produces no color on the indicator paper. Then add an additional 0.6 g of ascorbic acid for each liter of sample volume. Test a drop of sample on lead acetate paper previously moistened with acetic acid buffer solution. Darkening of the paper indicates the presence of S₂⁻. If S₂⁻ is present, add powdered cadmium carbonate until a drop of treated sample does not darken the test paper and filter the solution before raising the Ph for stabilization. Preserve

samples with 2 ml of 10N NaOH per liter sample (pH \geq 12). Store the samples at 4°C.

As a separate issue, EPA Region II has indicated holding times for soil VOC samples. Again, it is recommended that this be included in the FSP. This statement follows:

Volatiles: Holding Times: Soils: Currently, no soil VOA holding times are listed under the NFG (USEPA, 1988). However, the EPA checklist does indicate 10 days from the time of field collection. Accordingly, since only laboratory VTSRs on Tables 7-1 and 7-2 are listed, the 10-day holding time for soils should be accordingly inserted. Again, it is recommended by EPA Region to list both holding times with the same time period: VTSR (10 days) and from time of field collection (10 days).

p. 2-35, ¶1 The text shows the holding time for soil and water BTEX samples preserved with HCL to be 14 days. The holding time for BTEX samples (water and soils) should be 10 days. Soil samples are *not* preserved with HCL.

p. 2-35, ¶1 The text lists holding time and preservation for EP Toxicity Lead analysis on soils and sediments. The EP Toxicity test is no longer used, unless special permission is given by EPA. It has been replaced by the Toxicity Characteristic Leaching Procedure (TCLP).

3.2.1 Site 5 - Army Cremator Disposal Site

p. 2-5, ¶4 The text states that sampling locations will be primarily in areas of stressed vegetation. Although the FSP focuses the sampling effort on Site 5 in areas of apparently stressed (or recently cleared) vegetation, care must also be taken to provide some sampling coverage of the entire site.

3.2.2 Site 6 - Langley Drive Disposal Site

p. 2-8, Figure 2-4 The figure shows that one monitoring well exists on the site, and none are to be installed. One well is not sufficient to characterize this site, assuming that at least two sides of the area are surrounded by land. At least one upgradient and three downgradient wells should exist/be installed.

3.2.3 Site 7 - Station Landfill

p. 2-9, ¶3 According to Table 2-1, the twenty surface soil and four surface sediment samples which will be collected at Site 7 will be tested for full TCL and TAL. It is suggested that landfill soils be tested by Toxicity Characteristic Leaching Procedure (TCLP). Additionally, subsurface soil samples must be collected. Surface soil samples cannot characterize the contents of a landfill.

3.2.4 Site 13 - Tanks 212 to 217

p. 2-12 & 2-13, Figures 2-7 & 2-8 The figures show the surface soil and soil boring sample locations. There need to be more soil borings and less surface soil samples collected. In particular, it appears that soil borings should be installed on the east and west sides of Tank 214 and on the northeast side of Tank 215, as well as on the east side of the tanks on Site 13C.

p. 2-14, ¶1-3 The text does not specify the sizes and types of the tanks on the site. The sizes and types (i.e., underground storage tank (UST) or above-ground storage tank (AGST), composition of tanks), contents, and ages of the tanks should be provided. It should also be stated whether the tanks are active or empty, and, if empty, whether they were properly closed.

3.2.5 Site 14 - Ensenada Honda Shoreline and Mangroves

p. 2-14, ¶5 The text states that samples will be collected during the time period between three hours prior to low tide and three hours after. The rationale for collecting samples three hours before and after the expected low tide needs to be provided.

3.2.6 Site 18 - Building 128, Pest Control Shop, and Surrounding Area

p. 2-14, ¶6 The text states that surface water and sediment samples will be collected but does not state how many.

3.2.7 Appendix A - SOPs (Standard Operating Procedures)

SOP F103
Attachment A
p. 5, ¶1 The text states that subsurface soil samples will be collected at intervals of 5 feet. An explanation should be provided as to how this interval will meet the objectives of the RI/FS and whether data of sufficient detail and representativeness will be obtained to define both the chemical concentrations and geologic and hydrogeologic parameters.

SOP F103
Attachment A
p. 5, ¶4

The text states that "...soil removed from the borehole will be piled beneath the drill rig..." and that decontamination wastewater "will not be contained, unless otherwise directed by the Government, and may seep into the ground locally." Drill cuttings should be placed in drums adjacent to the drilling area. Also, decontamination wastewater cannot be allowed to discharge to the ground. All decontamination activities must be performed on a bermed decontamination pad and wastewater must be properly containerized.

SOP F104
p. 2, ¶4

The text states that evacuation of three to five well volumes is recommended during well purging prior to sampling. Evacuation of a minimum of three well volumes and/or until the turbidity of the water is 50 NTUs or less is (unless the well purges dry quickly) *required*.

SOP F104
SOP F104
p. 11, ¶2

The text lists equipment needed to sample monitoring wells, but it Regarding the sample holding times, the text states that "Holding times...are given in NEESA 20.2-047BF." Holding times must also be in accord with the CERCLA QA Manual, 10/89. If there is a discrepancy, the CERCLA QA Manual should be followed.

SOP F301
Attachment A

This attachment consists of a table of required containers, preservatives and holding times for soil and water samples. See comments for Page 2-34, ¶4 and Page 2-35, ¶1 regarding holding times. Also, only polyethylene bottles can be used for the collection of aqueous metals and cyanide samples (omit 'G' from table), and only glass jars can be used to collect soil samples (omit 'P' from table).

SOP F502
p. 2, ¶6

The FSP lists the decontamination procedures used in EPA Regions I-IV. The FSP should follow Region II procedure for decontamination of sampling equipment.

4.0 REVIEW OF THE SAMPLING AND ANALYSIS PLAN PART II: QUALITY ASSURANCE PROJECT PLAN

4.1 General Comments

- Overall, the QAPjP is technically obscure on project-specific QA/QC. There are many references to boilerplate material from EPA documents (i.e., description of Data Quality Objectives); however, little information is given on specific quantitative QA/QC criterion to support the proposed SW-846 methodology, the subsequent data validation procedures to be used against SW-846 data, and corrective actions the laboratory will take if QA/QC problems arise.
- The QAPjP states that the analytes of interest for this program are VOCs, metals, and cyanide, although throughout the QAPjP, there is reference to semi-volatile organics and pesticide/PCBs when describing calibration procedures and frequency and internal quality control checks. All references to analytes other than the analytes of interest must be removed from the QAPjP.
- The QAPjP makes frequent references to NEESA documentation. This documentation should be added to the QAPjP as an appendix.
- Data reduction is not discussed, although the QAPjP includes a section (Section 10) entitled Data Reduction, Validation, and Reporting. According to QAMS-005/80, a data reduction scheme should be planned for collected data and include all equations used to calculate the concentration or value of the measured parameter and reporting units. This must be included in the QAPjP.
- The section (Section 11) concerning trip and method blanks makes no mention of equipment or field blanks. Detailed descriptions of equipment rinsates and field blanks must be provided.

4.2 Page-Specific Comments

p. 5-2, ¶4

It is stated that accuracy will be assessed through the use of spike (matrix) and blank recoveries, and that the goal is recovery between 75 and 125 percent.

The statement is generic. Normally surrogates (spike recoveries) are variable for SW-846 spiking compounds with acceptability outside the normal 75-125% acceptance window. The probable VOC, semi-volatile organic (SVOC), pesticide/PCB, and metal spiking compounds with proposed surrogate windows should be listed in the QAPjP for EPA review/approval. Also, the use of the data should be considered when producing SW-846 data. With an

SW-846 organic data review, the review in EPA Region II is normally a project-specific decision on whether to evaluate the data using the following:

- the EPA (1988) "Functional Guidelines for Evaluating Organic Analyses," Hazardous Site Evaluation Division, February, 1988 document and the EPA (1988) "Functional Guidelines for Evaluating Inorganic Analysis," Hazardous Site Evaluation Division;
- SOP No. HW-6, Revision #8: CLP Organic Data Review and Preliminary Review, "EPA Region II Organic Data Validation Checklist" and the Evaluation of Metals Data for the Contract Laboratory Program (CLP) based on SOW 3/90; SOP Revision XI designed for Superfund SOW Target Compound List (TCL) Organic constituents.

Concerning volatile and semi-volatile organics, rejected data of non-detects occurs only when a spike recovery is less than ten percent, whereas positive results are never rejected, regardless of the spike recovery. EPA Regional considerations, such as which data review procedures will be used, need to be addressed by the QAPjP.

p. 5-4, ¶1

It is indicated that precision will be attained using MS/MSD samples with a relative percent difference (RPD) of 25.

Again, as with the surrogate statement (see comment for Page 5-2), the QAPjP needs to identify the MS/MSD compounds it will utilize, identify acceptance windows, and evaluate these windows based on EPA Region II data validation (review) guidelines (NFG or EPA Region II checklist).

p. 7-1, ¶3

The QAPjP describes laboratory provision of bottles for samples from the RI. The QAPjP must include a description of how the sample containers are prepared. According to EPA Region II, sample containers must meet cleaning and quality control requirements of OSWER Directive #9240.0-05 *Specifications and Obtaining Contaminant-Free Sample Containers*.

p. 7-2, Table 7-1
& Table 7-2

The table shows a summary of containers, preservation, and holding times for water samples. The QAPjP should identify the EPA Region II holding times for both the laboratory (Verified Time of Sample Receipt: VTSR: 10 days), and the holding time from

sample collection (14 days). The holding times presented in Tables 7-1 and 7-2 need to be defined.

Additionally, data validation procedures for EPA Region II allow 14 days for 1:1 HCl preserved VOC water matrix samples (as indicated in both the NFG for Organics (EPA, 1988) and the SOP No. HW-6, Revision No. 8, EPA Region II data validation checklist (EPA checklist).

Current approved sampling methodology in EPA Region II is to utilize 1:1 HCl and not concentrated HCl. It is also recommended that QAPjP include the following EPA Region II HCl preservation statements whenever this 1:1 HCL acid or cyanide NAOH preservation requirements are warranted:

- Preservation of VOCs in Water: Adjust the Ph of the sample to less than 2 by carefully adding 1:1 HCl drop by drop to the required 2 40-ml. VOC sample vials. The number of drops of 1:1 HCl required should be determined on a third portion of sample of equal volume. Cool to 4°C. If effervescence occurs during acid preservation, no 1:1 HCl preservation should be performed. This sample property should be listed on the Chain-of-Custody Record document by the field sampler.
- Cyanide Preservation: Test a drop of sample with potassium iodide-starch test paper (KI-starch paper). A blue color indicates the presence of oxidizing agents and the need for treatment. Add ascorbic acid, a few crystals at a time, until a drop of sample produces no color on the indicator paper. Then add an additional 0.6 grams of ascorbic acid for each liter of sample volume. Test a drop sample on lead acetate paper previously moistened with acetic acid buffer solution. Darkening of the paper indicates the presence of S₂⁻. If S₂⁻ is present, add powdered cadmium carbonate until a drop of treated sample does not darken the test paper and filter the solution before raising the pH for stabilization. Preserve samples with 2 ml of 10N NaOH per liter sample (pH_≥12). Store the samples at 4°C.
- Volatiles - Holding Times for Soils: Currently, no soil VOC holding times are listed under the NFG (EPA, 1988). However, the EPA checklist does indicate 10 days from the time of field collection. Accordingly, since the QAPjP lists only laboratory VTSRs on Tables 7-1 and 7-2, the 10-day

holding time for soils should be accordingly dropped 48 hours to 8 days to allow these extra 48 hours for express courier shipment of samples.

p. 7-4, ¶2 The QAPjP lists information to be included on sample labels by the sampler. The sample label should also identify the analysis requested.

p. 7-7, Figure 7-2 The figure shows a sample chain-of-custody (COC) form of the type to be used in the RI. The COC form presented in Figure 7-2 does not include any space for the sampler to enter the requested analysis. The laboratory cannot perform the analyses required for this project without additional information provided to them. The COC form should provide sufficient information to the laboratory to identify the sample and its requested analyses.

p. 8-2, ¶5 & 6,
& p. 8-3, ¶1-3

In this section (8.2.2, GC/MS System Calibration Procedure), the QAPjP discusses tuning and mass calibration and GC/MS system calibration protocols. In the discussion of the GC/MS system calibration, the QAPjP must ensure and state that for the VOC tuning data, all ion abundances will be normalized to a mass/charge (M/Z) of 95. Also, with the surrogates and MS/MSD criteria, some quantitative acceptance limits by the laboratory should be introduced. For example, QA/QC calibration results of relative response factor (RRFs) < 0.05 or percent relative standard deviation (RSD) < 30% for initial calibration are standard procedures for SW-846 generated data.

Further recommendations when generating SW-846 data to allow proper EPA regional review include these following documentation recommendations:

All documentation or legible copies should be submitted including data sheets with data results, laboratory duplicate and method blank results, QA/QC standards information, raw data, calibration curves, chain of custody reports, sample logs, and sample tracking records. The actual method used from preparation to analysis, the date the sample was analyzed, the date the sample was collected, and the date the sample was received should be noted. It is also recommended that the laboratory provide a complete analysis run log showing all blanks, standards, calibrations, field samples, and all QA/QC samples associated with each batch. The report should include a written narrative

describing any problems encountered in receipt or during analysis and the corrective action utilized (including telephone logs, etc.). The report should be paginated and have a Table of Contents. The report should include cross-referencing the sample identification numbers with the laboratory's sample identification number. Laboratory calculations of standard deviation, percent recovery and relative percentage difference (as appropriate) should be provided for all QC samples. All relevant data (except pH) should be reported in the appropriate units (ug/l, mg/l, ug/kg, mg/kg). The preservation pH of each sample should be verified by the laboratory and reported in the sample log.

The laboratory should supply and state in the QAPjP a detailed example calculation that clearly demonstrates the manner in which initial and final results were derived. Where applicable, each component of calculation must be explained (e.g. if calculation includes a dilution factor, it must be clear where, why, and how each dilution occurred). The laboratory should supply all information required to reproduce, during independent data review, all results reported by the laboratory.

Further, the following additional QA/QC criteria are recommended to be entered into the QAPjP. Specifically, that duplicate, spike and spike duplicate analysis exceeding limit will be re-spiked (as applicable) and re-analyzed once with all results being reported. All positive detections should be associated with an acceptable method/preparation blank or sample concentration (prior to correction or dilution) should be at least ten times the blank concentration. All affected samples should be re-analyzed if these conditions are not met.

Sample concentrations at or exceeding the highest calibration standards will be re-analyzed using a smaller sample or dilution. Alternatively, a new calibration curve may be prepared encompassing a higher concentration range if the laboratory can demonstrate that the calibration curve is linear throughout the expanded range. If the method blank exceeds the control limits, all positive detections, less than ten times the method blank concentration, associated with the method blank should be re-analyzed (this includes a new method blank which meets the prescribed control parameters). If method precision is not met, it is

recommended to re-analyze the sample once more, and it is recommended to report in the case narrative any problems encountered, as well as any corrective actions implemented.

- p. 8-5, ¶4 The QAPjP states that "An acceptable correlation coefficient is less than 0.99 for all systems." It is highly unlikely that any correlation coefficient less than 0.99 would be acceptable for any calibration. Remove "less than" and replace with "greater than."
- p. 8-5, ¶5 Table 9-2 of the QAPjP states that SW-846 Method 9010 is to be used for the analysis of cyanide. The calibration verification presented in Method 9010 does not agree with the calibration verification procedure stated in the QAPjP. Method 9010 does not include an initial calibration followed by a working calibration. A calibration curve as described in Section 7.4 of Method 9010 must be used every time cyanide analysis is performed.
- p. 9-2, Table 9-1 This table presents method performance limits for SW-846 Method 8240. All PQLs should be minimally 10 ug/l (ppb) to reflect the current acceptable PQLs (CRQLs) in the CLP-IFB-Organic SOW OLMO1.8. PQLs in general should be in the same level as drinking water maximum contaminant levels (MCLs). Organic PQLs of 50 ug/l and 100 ug/l are not recommended for any RI/FS study. It is understood that these elevated PQLs are listed for SW-846 Method 8240; however, a maximum PQL of 10 ug/L parts per billion is recommended for all compounds to comply with EPA Region ARAR requirements (i.e., MCLs).
- p. 10-1, ¶1-3 The QAPjP discusses field data logging, data control, and data recording. Concerning field data procedures, it should be noted that the NFGs are normally followed in an EPA region (i.e., Regions III-X inclusive) where no regional data validation procedures have been set up (i.e., unlike Region I Data Validation Worksheets and Region II Checklists for both Organics and Inorganics). It is recommended that the Region II checklists be utilized instead of the NFGs during all CERCLA Region II work for Superfund TCL analyte data review. However, as recommended, the NFGs are acceptable for SW-846 data review, but it is recommended that the QAPjP indicate what *modifications* to NFGs will occur to handle the SW-846 generated data.
- p. 11-1, ¶4 The QAPjP states that trip blanks are prepared with ASTM Type II deionized water. Trip blanks should be prepared with "demonstrated analyte free" water, not deionized water. Demonstrated analyte free water is water which has been analyzed

for all the analytes of interest and documented free of these analytes. "Deionized water" must be replaced with "demonstrated analyte free." It also should be stated that documentation onsite will be available for EPA review.

The definition of a trip blank is not in full compliance with the CERCLA EPA Region II protocols. It is recommended that the definition and usage of the trip blank be utilized from the Region II CERCLA Quality Assurance Manual (EPA, October, 1989, Revision I, Final Copy). The definition is supplied below:

Trip Blank

When sampling for volatile organics, a trip blank, consisting of demonstrated analyte-free water sealed in 40-ml Teflon-lined septum vials, will be sent into the field where sampling is going on. It will be sent at a minimum frequency of one per day when volatile organics in an aqueous matrix are being collected. It must be understood that it is not necessary to take an aqueous trip blank when a non-aqueous medium is being sampled (i.e., solids, soil). Trip blanks will be analyzed for volatile organics only. This procedure is standard for EPA Region II sampling events.

p. 11-4, ¶2

The QAPjP states that "The sample value is not corrected for the blank value unless..." Blank correction is never to be performed by the laboratory. Evaluation of blank contamination effects on reported field sample results is performed during data validation. The statement that the data will be blank corrected must be removed from the QAPjP.

p. 11-7,
Table 11-2

This table shows QA/QC sample frequencies, presents equipment rinsate and field blank frequencies, and specifies that trip blanks are collected "for volatiles only." Trip blanks are for *aqueous* volatiles only, *not* volatiles only. It is recommended that the definition/usage of the rinsate (field) blank be expanded from the USEPA October 1989, Region II CERCLA Guidance Manual:

Rinse field blanks consist of pouring demonstrated analyte-free water over decontaminated sampling equipment as a check that the decontamination procedure has been adequately carried out and that there is no cross-examination of samples occurring due to the equipment itself. Analysis of rinse blanks is performed for all analytes of interest. One blank should be collected for each type of equipment used each day a decontamination event is carried out. It is required that rinse blanks be performed on bowls and pans

used to homogenize samples as well as on any filtration device used on aqueous samples being analyzed for "dissolved" metals. It is permissible to use the same aliquot of water on all equipment associated to a particular sample matrix for analysis of semi-volatile organics, pesticides, PCBs, and inorganics. This rinse must be performed sequentially on all sampling equipment. However, a separate field rinse blank must be collected for each piece of equipment associated to a particular sample matrix which will be analyzed for volatile organics.

The blank should be collected at the beginning of the day prior to the sampling event and that blank must accompany those samples which were taken that day. This is a necessary procedure so that the blank will be associated with the proper samples during data validation. If all samples collected that day are not validated with the field rinse blank sample, it is the contractor's responsibility to ensure the application of the blank's results to the group of samples. It is also the contractor's responsibility to monitor the field rinse blank results over time in order to assess the performance of the sampling team with respect to the adequacy of the decontamination procedure. This will help reduce the number of samples needing reanalysis as well as the number of results being qualified and/or rejected due to contamination of the field rinse blank sample.

p. 14-1, ¶5

It is recommended that the EPA Region II recommended frequency of analysis for method blanks for VOC analyses be used. This should be included in this section and should read: "1 method blank for every 12 hours, for each concentration level (low, medium, high), and each GC/MS system being utilized."

The statement that "a method blank must contain no greater than two (2) times the parameter detection limit for most parameters" is contradictory to the statements made on pages 11-3 and 11-4. For example, it is stated on page 11-3 "If the concentration of the method blank is less than or equal to the detection level, no correction of sample result is performed." The QAPjP must clarify the acceptance limits of method blanks.

5.0 REVIEW OF THE DRAFT HEALTH AND SAFETY PLAN

5.1 General Comments

- The Occupational Safety and Health Administration (OSHA) requires that all facility-specific Health and Safety Plans (HASPs) contain the following elements, at a minimum:
 - (1) A hazard analysis for each site task;
 - (2) training requirements;
 - (3) personal protective equipment (ppe) to be used;
 - (4) medical surveillance requirements;
 - (5) frequency and types of air monitoring;
 - (6) site control measures;
 - (7) decontamination procedures;
 - (8) emergency response plan;
 - (9) confined space entry procedures, if any; and
 - (10) a spill containment program.

Nine of the ten elements were addressed in detail. Element 9 was not addressed in detail due to the belief that confined space entry is not being considered at any of the sites and therefore did not have to be addressed as a site-specific hazard.

5.2 Page-Specific Comments

p. 16, ¶1 The text discusses the security of site boundaries and the establishment of secured perimeters. OSHA regulations under 29 CFR 1910.120(d)(3) mandates use of a site map as an element of the "site control program." There is no such map. In addition, a check-in/check-out plan (command post) needs to be established.

It is not clear if the site is secure from trespassing, and there are no provisions for dealing with unauthorized personnel found on the site.

p. 19, ¶6 The text discusses the effects of heat stress on site personnel. This area is tropical and high heat/humidity can be expected; therefore, heat-related illness is a real possibility. It may be advisable to specify rest intervals on the basis of ambient temperature and humidity conditions so site personnel will be adequately rehydrated, cooled, and rested. It is unwise to rely on self-monitoring to avoid heat stress.

p. 24, ¶2 The HASP states that "Mosquitos...pose a physical threat by injecting live microorganisms into their victim." "Injecting live

microorganisms" implies some disease vector via mosquitos, but the disease is not specified. If there are specific disease(s) to be aware of (malaria, etc.), they should be discussed.

- p. 26, ¶1 The HASP lists the required personal protective equipment needed for Levels D and C. "Chemical resistant" clothing, coveralls, and boots are mentioned several times. The specific types of material used, and their resistance to the known or suspected toxic materials which will potentially be encountered should be stated. An appraisal of the need for other types of protective clothing material, should the clothing used be found to not be fully adequate to prevent permeation by chemicals encountered onsite, should also be included.
- p. 29, ¶1 The HASP states that the personnel in the exclusion zone will remain in constant contact or be visible to the site manager at all times. Since some sites are described as having dense vegetation growth, visual contact may be difficult, and radios may be the only practical means of communication. A better description of provisions for radio communication should be included.
- p. 34, ¶1 The HASP discusses actions to be taken in a medical emergency. Due to the ruggedness of some of the sites, it is possible that it may be difficult to remove an injured person from the dense vegetation/growth at some of the sites. A plan for personnel removal in such situations should be developed.
- p. 38, ¶3 The HASP states that when HNu readings rise to 5 ppm over background for 5 continuous minutes, onsite personnel will change from Level D to Level C. "Five minutes" should be changed "30 seconds."
- p. 38, Table 2 This table shows which monitoring instruments will be used during each RI activity. There is no air monitoring for sediment sampling. Air monitoring should be included as hydrogen sulfide and/or methane may build up under sediments.
- p. 41, ¶3 The HASP describes the actions to be taken in the case of an injury in the Exclusion Zone. It should be stated that for ambulance evacuation, ambulance personnel will be supplied with information on the nature of the illness/injury and MSDS sheets.
- p. 43, ¶2 The HASP describes the actions to be taken in the case of a hazardous substance spill during field activities, but does not specifically discuss disposal of contaminated materials. It should

be stated that any such disposal (and prior containment) will be made in accordance with applicable EPA/DOT regulations for such waste.

p. 1,
Attachment A Attachment A consists of a list of Medical Surveillance Testing Parameters. Medical restrictions should also be listed as a parameter.

p. 6, ¶2,
Attachment D The HASP discusses employer responsibility regarding respiratory protection. Evidence of fit-testing for all personnel onsite should be provided.

5.2.1 Site 13 - Tanks 212-217

p. 10, ¶4 The HASP states that smoking on Site 13 is prohibited. Smoking should be prohibited on all sites, and should be mentioned as a general comment for all sites.

5.2.2 Site 14 - Ensenada Honda Shoreline and Mangroves

p. 11, ¶6 The HASP refers to an "SOP" for protective equipment for site 14. The HASP should specify what SOP is being referred to.

6.0 SUMMARY AND CONCLUSIONS

The documents prepared for the various sites at the Naval Station have significant deficiencies which need to be addressed if the field program is to yield data which are representative of site conditions and adequately characterize the extent of contamination at the various locations.

The Draft Work Plan is deficient in a number of major areas. It does not adequately define the existing data gaps with respect to the contaminants and their distribution in soils and ground water. Consequently, the Work Plan does not develop a strategy which will result in a comprehensive investigation. In turn, the data generated are not likely to be sufficient to support a risk assessment and development of appropriate remediation alternatives. Likewise, since all of the sources, pathways, and receptors are not adequately addressed, there is the possibility that the remedial efforts and risk assessment analysis will not address some significant exposure scenarios and sources of contamination.

It is recommended that the Work Plan scoping be re-evaluated and the investigations at the sites be developed so that they will define the extent of contamination in both soils and ground water; and that they obtain sufficient data on soils and the aquifers to develop effective remedial measures.

The Draft Field Sampling Plan has not adequately identified the site-specific contaminants of concern and ARARs. Nor does it provide a description of site background and sampling objectives. Similarly, there is insufficient subsurface soil sampling and what appears to be an inadequate number of proposed monitoring wells. It is recommended that the sampling objectives be provided in the field sampling plan and that a sufficient number of subsurface soil samples and monitoring wells be provided to fully characterize each of the sites.

Some of the analytical methods are questionable, as they may lead to detection limits which are greater than the ARAR maximum contaminant levels. Methods need to be selected that will achieve detection limits that are close to the relevant standards.

The decontamination procedures listed are incorrect. The correct procedures need to be included in the document. The same is true for some holding times.

The Quality Assurance Project Plan does not discuss data reduction. This item needs to be addressed and included in the QAPjP. In addition, the QAPjP should include a section describing the various types and number of QA/QC blanks to be collected during the field program.

NY-R31.RP2

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ATTACHMENT 1
EPA REGION II BOILERPLATE CLP-SAS

NY-R31.RP2

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RECYCLED PAPER

ENFORCEMENT CONFIDENTIAL

TRC

U.S. ENVIRONMENTAL PROTECTION AGENCY
CLP Sample Management Office
P.O. Box 818 - Alexandria, Virginia 22313
Phone: 703/557-2490 - FTS/557-2490

R
SAS Number

SPECIAL ANALYTICAL SERVICES
Client Request

Regional Transmittal

Telephone Request

- A. EPA Region/Client: Region II/TRC Environmental Corporation
- B. RSCC Representative: Kathy Kinsella
- C. Telephone Number: (908) 549-2749
- D. Date of Request:
- E. Site Name:
Spill I.D:
- F. CERLIS I.D:

Please provide below description of your request for Special Analytical Services under the Contract Laboratory Program. In order to most efficiently obtain laboratory capability for your request, please address the following considerations, if applicable. Incomplete or erroneous information may result in a delay in the processing of your request. Please continue response on additional sheets, or attach supplementary information as needed.

1. General description of analytical service requested:

Analysis of _____ samples for low concentration TCL volatile organics using the "Superfund Analytical Methods for Low Concentration Water for Organic Analysis", 6/91 (SAMC0691).

2. Definition and number of work units involved (specify whether whole samples or fractions; whether organics or inorganics; whether aqueous or soil and sediments; and whether low, medium or high concentration):

_____ samples to be analyzed for Low concentration TCL Volatile compounds.

3. Purpose of analysis (specify whether Superfund - enforcement or remedial action - RCRA, NPDES, etc.):

Superfund, Remedial Investigation.

4. Estimated date(s) of collection:

To be determined, submitted for EPA Technical Review.

5. Estimated date(s) and method of shipment:

To be determined, submitted for EPA Technical Review.

6. Holding Times and number of days analysis and data required after laboratory receipt of samples:

Samples must be extracted within 5 days and analyzed within 14 days of sample collection.

The complete data package containing all the sample delivery groups (SDG) associated with this case must be submitted as one data package in its entirety within thirty-five (35) days from the VTSR of the last sample in this case.

7. Analytical protocol required (attach copy if other than protocol currently used in this program):

"Superfund Analytical Methods for Low Concentration Water for Organics Analysis", 6/91 (SAMLC0691).

8. Special technical instructions (if outside protocol requirements, specify compound names, CAS numbers, detection limits, etc.):

Follow above protocol exactly as written. The maximum number of samples in a Sample Delivery Group (SDG) is 20.

9. Analytical results required (if known, specify format for data sheets, QA/QC reports, Chain-of-Custody documentation, etc.) If not completed, format of results will be left to program discretion.

The SAS package must be equivalent to the CLP RAS format. The laboratory must submit all documentation including the SAS packing lists, chain-of-custody forms, and analytical results on standard CLP forms, as described above for all samples submitted to the laboratory (the data sheets must include the dates the samples were collected, received, and analyzed by the laboratory).

Laboratory duplicates, blanks (method, storage and instrument), laboratory control samples (LCS), and performance evaluation (PE) samples must also be reported on standard CLP RAS forms. All QA/QC information, standards information raw data including laboratory generated standards and sample mass spectra for compounds detected both above and below the detection limit stated in the method and initial and continuing calibration results must be provided.

9. continued...

Initial calibrations, continuing calibration, surrogate recoveries, internal standards of performance, etc. must be reported on standard CLP forms modified for the SAS request.

A written narrative describing problems encountered in receipt or during analysis and corrective action taken (including telephone logs, etc.) must be provided. The report should describe the actual methods used from preparation to analysis. The laboratory shall also provide as part of the written report their initial demonstration of laboratory accuracy and precision. The report shall be paginated. Results shall be reported in ug/l.

10. Other (use additional sheets or attach supplementary information, as needed):

The laboratory must supply a detailed example calculation that clearly demonstrates the manner in which the initial and final result was derived. Where applicable, each component of the calculation must be explained (e.g., if the calculation includes a dilution factor, it must be clear where, why, and how each dilution occurred). The laboratory must supply any and all information required to reproduce, during independent data review, all results reported by the laboratory.

11. Name of sampling/shipping contact:

John Lorenzo, TRC Environmental Corporation
Phone: (908) 563-2211

12. DATA REQUIREMENTS

<u>Parameter</u>	<u>Practical Required Quantitation Limits (ug/l)</u>
All TCL VOCs (exceptions below)	1
Methylene Chloride	2
Acetone	5
2-Butanone	5
4-Methyl-2-Pentanone	5
2-Hexanone	5
Vinyl Acetate	1

13. QC REQUIREMENTS

<u>Audits Required</u>	<u>Frequency of Audits</u>	<u>Limits (Percent/Conc.)</u>
Method Blank	1 every 12 hours beginning w/BFB injection	<CRQL for all analytes including common lab solvents
Laboratory Control Sample (LCS)	1 per 20 samples	Technical accep- tance criteria (see p. VOA D-42 in SAMLC0691)
Performance Evaluation (PE) Sample	1 per 20 samples	Technical accep- tance criteria (see p. VOA D-42 in SAMLC0691)
Surrogate in PE, LCS and samples		80-120% Recovery

14. Action Required if Limits are Exceeded:

Tuning, calibration and method blank requirements must be met before beginning actual sample analysis. Sample specific requirements (surrogate recovery, etc.) that are not met should be noted in the Case Narrative. Samples not meeting requirements should be analyzed one time only.

The laboratory may not submit data from a SDG until the laboratory control sample (LCS) and performance evaluation sample (PES) technical acceptance criteria are met (see pp. VOA D-42 & VOA D-44). If the technical acceptance criteria cannot be met, corrective action must be taken (see pp. VOA D-43 & VOA D-44).

Please return this request to the Sample Management Office as soon as possible to expedite processing of your request for special analytical services. Should you have any questions or need any assistance, please contact your Regional representative at the Sample Management Office.