UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

JUN 30 1987

Commander
Western Division
Naval Facilities Engineering Command
Attention: Louise Lew, Code 1142E
P. O. Box 727
San Bruno, CA 94066

Dear Ms. Lew,

The purpose of this letter is to re-state what was discussed during our meeting June 19, 1987, and to submit EPA's comments regarding Alemeda Naval Air Station's Installation Assessment Study (IAS), the Verification Step Report, and the Verification/Confirmation Step Work Plan (Attachment 1).

Alameda Naval Air Station, the Regional Water Quality Control Board (RWQCB), the Department of Health Services (DHS), and EPA met to discuss the regulatory agencies' concerns regarding the base's hazardous waste investigation. The following comments were made:

1. A thorough investigation of underground storage tanks and sewers on base needs to be made.

2. The base needs to investigate any possible sources of radioactive releases. EPA and RWQCB are concerned about Tritium levels in bay muds. EPA is under the impression that the Navy had a permit to release Tritium until 1978 near Piers 1 and 2, the rock jetty, and the seaplane lagoon. Has an investigation regarding Tritium in the sediments been initiated?

3. All quality assurance/quality control (QA/QC) procedures implemented to ensure precision, accuracy, completeness of data collected during the investigation should be documented. The QA/QC procedures should be consistent with the EPA Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans (December 29, 1980) which is enclosed for your information (Attachment 2)

4. EPA, RWQCB, DHS stressed the importance of a thorough investigation and cautioned the base to fully document any individual site being excluded from futher investigation.

Overall, Alameda Naval Air Station is making a good first cut at identifying the contamination on site and EPA looks forward to working with the base on a successful site investigation. If you have any questions regarding EPA's comments please call me at (415)974-7537.

Sincerely,

Nancy Woo
Remedial Project Manager

cc: Randy Cate, NAS Alameda
Don Cox, DHS
Ken Theisen, RWQCB

Attachment 1

EPA Comments Regarding Alameda Naval Air Station 6/29/87

In reviewing background documentation to the Work Plan to determine the adequacy of the study plan for the four sites, general comments on the IAS and the Verification Step, have been developed relating to other areas of potential contamination. The following comments are only general in nature, since the specific scope of this review centers around the Work Plan for the Characterization Step.

INITIAL ASSESSMENT STUDY

In the IAS, the selection of potential sites of contamination at NAS Alameda was based on limited data. Each site was evaluated using the Confirmation Study Ranking System (CSRS) (page 1-5). The specific criteria that was used in this elimination process is not presented in the IAS. The final conclusion of the IAS is that there are 12 sites at Alameda that are considered significant findings. Of these, 7 are recommended for further study. However, there are many sites described in Chapter 6 of the IAS which could be areas of significant contamination. Since definitive information has not been presented on the elimination of sites, it is not possible to be certain that these are the only sites that are potentially contaminated. Sufficient criteria should be provided to justify the exclusion of potentially contaminated sites from further investigation. This criteria should be based upon site specific data that definitively shows that there is not a significant problem related to hazardous materials.

Many areas where contamination and/or spills could have occurred are listed below. This list was developed from information presented in Chapters 6 and 3 of the IAS. Although there may be appropriate rational for not studying these sites further, this was not presented in the IAS.

Page 6-1. At the Aircraft Intermediate Maintenance Department, Building 41, aircraft engine parts were repaired. Several waste products were developed as shown in Table 6-1. These waste were stored on site prior to disposal. As of 1981, there were 100 barrels stored there with unknown contents, of which only 19 were left as of 1983 still requiring identification prior to disposal. A paint stripping tank is also located on site. The potential for exists for spills and leaks at this site.

Page 6-3. Due to the use of the site for air operations, problems such as fuel spills, fuel dumps prior to emergency landings, and occasional crashes have the potential for site contamination.

Page 6-4. Two service stations are located on-site. A gas spill was reported at Building 459, one of the stations. The source of the problem was eliminated, but the surrounding contaminated soils were not removed. Potential soil contamination remains.

Page 6-8. On-site pest control operations were centered in Building 114. After use, equipment was rinsed off in the area of the building, the waste water running into the storm sewer system. Although no spills were reported, the possibility of site contamination exists.

Page 6-10. The Naval Air Rework Facility (NARF), conducts operations such as electroplating, paint stripping, chroming, painting, cleaning, and engine testing "in more than a dozen buildings at NAS Alameda." Of the potential sites of contamination associated with these operations, only one, Building 360 has been recommended for further study, and two others, Buildings 5 and 410 are described in minimal detail. Potential for contamination exists at all of the sites and the sewer and industrial waste drains leading from them.

Page 6-23. Building 360 contained plating, painting, paint stripping, and cleaning shops. However, only the area associated with the plating operations is recommended for further study. Potential for contamination from spills exists in other areas.

Page 6-27. In Buildings 400 and 530, missile rework operations were conducted. These operations included parts cleaning, paint stripping, painting, fabrication of parts. Waste waters from these buildings were discharged to the industrial waste collection facility. Potential contamination of the buildings and sewer systems exists.

Page 6-29. Mercury spills occurred in Building 14 and there are recorded spills from some of the 27 manometers on base

along with other mercury containing devices. Mercury wastes (approximately 4,000 gallons) have been disposed of at the landfill and possibly through the waste collections system. Possible contamination at these sites exists and the associated waste collection drains.

Page 6-29. An estimated 300,000 gallons of waste petroleum products are generated at the site annually. These wastes are stored throughout the NARF or prior to 1972 disposed of in landfills or in the sewer system. Potential for contamination exists at the storage areas and in the sewer systems.

Page 6-30. Rags containing PCB's were routinely used in paint stripping shops and these along with contaminated gloves and clothing were collected in barrels and landfilled. The quantities of these items were "significant." Potential for PCB contamination exists at these locations.

Page 6-32. Bottom sediments in the area of the piers are contaminated by ship wastes.

Page 6-34. The Defense Property Disposal Office has handled PCB's in the past along with other hazardous wastes. Site contamination in the storage area is a potential.

Page 6-36. Building 114 housed a steam cleaning shop, paint shop, pesticides shop and general maintenance shop. Wastes were discharge directly into the sewer system until in the early 1970's when a separator pit was constructed. The pit is not working adequately as of 1983. Contamination in the building and the separator pit is possible.

Page 6-43. Ship maintenance operations were conducted by the Supervisor of Shipbuilding, Conversion, and Repair. Wastes such as cleaning solvents, paints, primers, asbestos and miscellaneous ship wastes were generated. Some of these wastes went to the West Beach Landfill and some were dumped into the bay.

Page 6-49. Fifteen separator pits were used throughout the site to intercept wastewater flow. Potential for contamination from leaks exists.

Page 6-67. Prior to 1974, industrial wastewaters were discharged to the wastewater collection system and in some instances the storm drains. Potential for contamination from leaks exists.

Page 6-77. Three industrial pretreatment facilities were constructed. Potential for contamination from leaks exists.

Page 3-2. Further study on potential contamination of the estuary where approximately 30,000 gallons of waste per day was discharged has been eliminated. This elimination is based upon qualitative judgement without actual analysis of the sediments, aquatic biota, etc., in the estuary.

Page 3-3. No further study of contamination of the piers area, fuel lines, oil refinery and fire training area has been recommended. This recommendation is not based upon data but rather a qualitative rational. If these sites are potentially contaminated, site specific data should be collected to show that the problem is not significant.

Other general areas which could present hazardous conditions and should be evaluated are listed below.

Underground Storage Tanks

There are two service stations and one 24,000-gallon and seven 12,000-gallon fuel oil tanks associated with the power plant at Alameda. Area 97 which stores AVGAS has been identified as a significant problem and will be studied further. There is no specific information concerning the integrity, monitoring, or testing of any of these other tanks. Current state law calls for monitoring the integrity of underground tanks.

PCB's

There is no discussion of a PCB replacement program for this installation. Current practices for any dielectric fluids removed from services should be identified and evaluated for potential release to the environment. Past practices have been described for several sites throughout NAS which consisted of storage and then disposal at one of the landfills. It should be shown that all PCB storage areas and areas of potential contamination have been identified at NAS.

VERIFICATION STUDY

The comments on this study concern the rational presented for limiting future studies to four of the seven previously identified sites.

Buildings 301 and 389

Page 4-6. Justification should be provided showing that the soil sampling plan was adequate to detect potential contamination. By identifying sample locations visually, could potentially contaminated areas be overlooked? Would a sampling plan based upon a more statistical approach have been more verifiable?

Page 4-7. If soil samples were taken after digging through pavement, 2 to 6 inches of baserock and concrete debris to get to the soil, how can soil sample locations be based upon visual location?

Page 4-8. It states on this page that soil samples were taken where there was exposed soil rather than pavement. This conflicts with the above statements and should be clarified.

Cans (C-2) Area

Page 4-8. The rational for using only one well to detect ground water contamination must be provided. Information must be provided which demonstrates that a single well provides sufficient evidence.

Page 4-8. Justification should be provided showing that the soil sampling plan was adequate to detect potential contamination. By identifying sample locations visually, could potentially contaminated areas be overlooked? Would a sampling plan based upon a more statistical approach have been more verifiable?

Page 4-10. The well located in the Cans area showed a 24 percent LEL. This potential contamination was not addressed any further in the study. The rational for not studying this any further must be provided.

Seaplane Lagoon

Page 4-17. Provide documentation supporting the adequacy of the sampling density (10 samples in a 110 acres) in the seaplane lagoon.

Page 4-18. Waste streams into the lagoon include: electroplating, heat treatment, cleaning, stripping, photo lab wastes, engine overhaul wastes, paint booth, aircraft service wastes, conditioning equipment backwash, and equipment washing, cleaning and overhaul wastes (IAS page 6-75). In addition, AVGAS may have migrated into the lagoon (IAS page 6-8). However, the only contaminants evaluated were PCB's and 17 metals. The rational for limiting the analyses to only these contaminants must be provided. It should be shown that the analyses conducted were representative of the potential contamination by the identified waste streams.

Page 4-19. A comparison is made between the samples taken in the lagoon and samples taken by the U.S. Army Corps of Engineers in the area outside of the lagoon. A statement is made that "On this basis, no additional investigation of Seaplane Lagoon appear necessary." Is the intention to conclude that since the lagoon sediments aren't significantly

more contaminated than the bay sediments that the lagoon is not significantly contaminated and therefore no further study is needed? If this is so, this rational is not appropriate. A decision of significant contamination should be based upon the characteristics of the lagoon.

SPECIFIC COMMENTS

The following comments relate directly to the Characterization Step - Work Plan. Review of the Work Plan was conducted under several major constraints. These are listed below.

1. The Work Plan was developed on data and observations which were very limited in scope. It can be expected that as detailed information is collected, approaches in the site characterization efforts will be adapted to fit the actual site conditions. Specific references to this possibility in the Work Plan are noted below.

2. There are several background documents referenced in the Work Plan (page 4, Introduction) which were not made available during this review. Therefore it is not possible to review the Work Plan within the framework of all available data on the sites. The missing references are:

   Harding Lawson Associates; (November 1980), "Basis of Design, for Solid Wastes Disposal", NAS-Alameda Contract No. N62474-80-C-9053.

   _____; (May 1980), "Sanitary Landfill Closure Plan", NAS-Alameda Contract No. N62474-80-C-9053.

   _____; (October 1983), "Confirmation Study, Sanitary Landfill, Alameda Naval Air Station, California".

   _____; (February 1982), Solid Wastes Disposal System, Contract P183 NAS-Alameda, California. C1-C9 set of 10 plans.

   _____; (March 1978), "Final Submittal, Sanitary Landfill Site Study", NAS-Alameda, California, Contract N62474-76-C-7543.

   Kennedy Engineers; (January 1980), "Final Report Subsurface Fuel Contamination Study for United States Navy", NAS, Alameda, Califoria, Contract N62474-79-C-5320.

3. Concurrent with the development of the Work Plan, significant corrective action activities have occurred at the West Beach Landfill and Area No. 97. Since documentation has not been provided on the nature of these activities, it is not possible to review the Work Plan with an understanding of what effect these site changes have had or will have on the Work Plan.

Specific comments on the Work Plan follow for each of the four sites proposed for further study.

1943 - 1946 Disposal Area (Page I.1 - I.2)

The proposed and existing well locations are all on the west side of the disposal site. Since it appears that disposal of waste occurred throughout the site, monitoring information should probably be collected at areas distributed across the area. Additionally, it is proposed to prepare a potentiometric map for only the west side of the area. It is uncertain how potential migration to the north towards Oakland Harbor will be detected if there aren't any wells in this area. The rational for well location should be described. Specific well construction plans should be provided showing the depth of the wells or how well depth will be determined in the field. Sufficient information should be provided to show that the entire site is being adequately investigated and all potential routes of contaminant migration will be detected by the proposed plan.

Monitoring for the effects of tidal influences has been proposed. Specific information on the approach that will be used to determine these effects should be provided. Given the complex distribution of sands, gravels and muds, how will the monitoring be conducted to ensure that these effects are characterized for all potential migration paths from the site. It should be shown that all seasonal variations can be detected by monitoring for only two quarters versus a year.

A commitment to conduct the investigation of tidal effects at the beginning of the well monitoring program must be provided. If there is an effect, then the well monitoring program across the affected area should be standardized to a particular tide level.

Area 97 (Page II.1 - II.2)

As construction activities are reviewed and work progresses in Area 97, any additions or modifications to the Work Plan or detailing of specific activities in the Work Plan should be submitted for review.

The number of existing wells in the area appears to be uncertain at this time due to site construction activities. When the status of the existing wells is determined, the adequacy of their condition and locations should be provided to the reviewer. The number of wells that are used in the monitoring program should be shown to be adequate to detect all potential migration paths from the site.

The plan for soil sampling should be provided in greater detail. The spacing of the "high" density versus the "low" density sampling plan or the parameters being used must be provided. The spacing in the various areas of study as outlined on page 2 must be defined or the criteria used to determine the spacing be provided. The sampling plan must shown to be adequately spaced to detect areas contaminated by the AVGAS.

The approach to be used for monitoring in the vadose zone must be outlined and the adequacy of the proposed plan demonstrated.

In the IAS (page 6-8), the potential for migration of the AVGAS for up to a mile was determined. The rational for limiting the current study to the area shown in Figure 3 must be provided.

Building 360 (Page III.1 - III.2)

The plan for soil sampling should be provided in greater detail. The spacing in the various areas of study as outlined in the plan must be defined or the criteria used to determine the spacing provided. The sampling plan must shown to be adequately spaced to detect contaminated areas.

What methods will be used to survey the the sewers and drains leading away from the building?

Some of the areas where it is planned to conduct soil sampling may require deep soil sampling techniques, i.e., along the sewer lines. If deep samples are to be taken, the sampling method must be described.

West Beach Landfill (Page IV.1 - IV.5)

Significant construction activity has occurred at the West Beach Landfill. The status of the fill and monitoring activities is uncertain at this time. As the Characterization Study develops in response to collection of site information, the revised and/or more detailed Work Plans should be submitted for review. Revision and/or development of plans for ground water and soils information is uncertain at this time depending upon site conditions.

As information is collected on the status of the wetland and how it affects the study of the landfill, information must be submitted for review.

Additional detail should be provided on the plans for development of the ground water monitoring plan. Information should be provided on how the depth of the wells will be selected and that this depth is adequate to detect any potential migration paths. Given the complex geology of the site, location of wells must be adequate to detect movement through the more permeable sand layers. The rational that will be used for well location should be provided.

A plan for determination of tidal effects must be provided.

On page 1, it is stated that "it must be assumed that these wells were installed as a part of an approved monitoring plan." Sufficient details on the construction of all monitoring wells to be used in the characterization study should be provided. These wells should be shown to be adequately designed and constructed to detect migration of contaminants.

Under Item D, reference is made to measuring the water depth in wells on three occasions. However, quarterly monitoring and monthly monitoring is referenced elsewhere. This inconsistency should be clarified.

The approach to be used for monitoring in the vadose zone must be outlined and the adequacy of the proposed plan demonstrated.

It is stated in Item E that wells should be placed outside of areas of tidal influence. How will this area be determined. By leaving this outside of the area of investigation, will potential paths for contaminant migration be overlooked?

Information on the actual permeability of the cover on the landfill should be determined. Data collected on the cover, both permeability and depth, should be shown to be adequate to fully characterize the condition of the cover.

Field and Laboratory Procedures Sampling Protocol

Detailed procedures for sample identification, chain-of-custody, document control, and quality assurance/quality control during the collection and handling of samples must be provided.

Throughout this section, techniques which "should" be used are identified. The procedures to be used must be identified in detail and a commitment provided that they will be used.

Attachment #2

INTERIM GUIDELINES AND SPECIFICATIONS FOR PREPARING QUALITY ASSURANCE PROJECT PLANS

QAMS-005/80

Office of Monitoring Systems and Quality Assurance
Office of Research and Development
United States Environmental Protection Agency
Washington, D.C. 20460

December 29, 1980

ACKNOWLEDGEMENTS

This document has been prepared by the Quality Assurance Management Staff of the Office of Research and Development in cooperation with Systems, Science and Software of San Diego, California. We gratefully acknowledge the assistance of Mr. Darryl von Lehmden of the Environmental Monitoring and Systems Laboratory of Research Triangle Park, North Carolina. The assistance of the Agency's Quality Assurance Officers in reviewing the document and providing comments during its generation is also gratefully acknowledged.

DISCLAIMER

Mention of trade names or commercial products does not constitute EPA endorsement or recommendation for use.

ABSTRACT

The Agency-wide quality assurance policy stipulates that every monitoring and measurement project must have a written and approved Quality Assurance (QA) Project Plan. A QA Project Plan is a written document, which presents, in specific terms, the policies, organization (where applicable), objectives, functional activities, and specific QA and quality control (QC) activities designed to achieve the data quality goals of a specific project(s) or continuing operation(s). The QA Project Plan is required for each specific project or continuing operation (or group of similar projects or continuing operations). The QA Project Plan will be prepared by the responsible Program Office, Regional Office, Laboratory, contractor, grantee, or other organization.

This document describes the sixteen elements which must be considered for inclusion in all Quality Assurance Project Plans, and establishes criteria for plan preparation, review and approval. All QA Project Plans must describe procedures which will be used to document and report precision, accuracy and completeness of environmental measurements.

CONTENTS

1.0 INTRODUCTION

Environmental Protection Agency (EPA) policy requires participation by all EPA regional offices, program offices, EPA laboratories and States in a centrally-managed quality assurance (QA) program as stated in the Administrator's Memorandum of May 30, 1979. This requirement applies to all environmental monitoring and measurement efforts mandated or supported by EPA through regulations, grants, contracts, or other formalized means not currently covered by regulation. The responsibility for developing, coordinating and directing the implementation of this program has been delegated to the Office of Research and Development (ORD), which has established the Quality Assurance Management Staff (QAMS) for this purpose.

Each office or laboratory generating data has the responsibility to implement minimum procedures which assure that precision, accuracy, completeness, and representativeness of its data are known and documented. In addition, an organization should specify the quality levels which data must meet in order to be acceptable. To ensure that this responsibility is met uniformly across the Agency, each EPA Office or Laboratory must have a written QA Project Plan covering each monitoring or measurement activity within its purview.

2.0 DEFINITION, PURPOSE AND SCOPE

2.1 Definition

QA Project Plans are written documents, one for each specific project or continuing operation (or group of similar projects or continuing operations), to be prepared by the responsible Program Office, Regional Office, Laboratory, Contractor, Grantee, or other organization. The QA Project Plan presents, in specific terms, the policies, organization, objectives, functional activities, and specific QA and quality control (QC) activities designed to achieve the data quality goals of the specific project(s) or continuing operation(s). Other terms useful in understanding this document are defined in Appendix A.

2.2 Purpose

This document (1) presents guidelines and specifications that describe the 16 essential elements of a QA Project Plan, (2) recommends the format to be followed, and (3) specifies how plans will be reviewed and approved.

2.3 Scope

The mandatory QA program covers all environmentally-related measurements. Environmentally-related measurements are defined as all field and laboratory investigations that generate data. These include (1) the measurement of chemical, physical, or biological parameters in

SECTION 2.0 – DEFINITION, PURPOSE AND SCOPE

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INTERIM GUIDELINES AND SPECIFICATIONS FOR PREPARING QUALITY ASSURANCE PROJECT PLANS

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3.0 PLAN PREPARATION AND RESPONSIBILITIES

3.1 Document Control

All Quality Assurance Project Plans must be prepared using a document control format consisting of information placed in the upper right-hand corner of each document page:

- Section Number
- Revision Number
- Date (of revision)
- Page

3.2 Elements of QA Project Plan

Each of the sixteen items listed below must be considered for inclusion in each QA Project Plan:

(1) Title page with provision for approval signatures

(2) Table of contents

(3) Project description

(4) Project organization and responsibility

(5) QA objectives for measurement data in terms of precision, accuracy, completeness, representativeness and comparability

(6) Sampling procedures

SECTION 3.0 – PLAN PREPARATION AND RESPONSIBILITIES

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Extramural Projects - Each Project Officer working in close coordination with the QA Officer has the responsibility to see that a written QA Project Plan is prepared by the extramural organization for each project involving environmental measurements. The elements of the QA Project Plan must be separately identified from any general plan normally prepared for the project (see caveat presented in Section 6). The Project Officer and the QA Officer must ensure that each extramural project plan contains procedures to document and report precision, accuracy and completeness of all data generated.

4.0 PLAN REVIEW, APPROVAL AND DISTRIBUTION

Intramural Projects - Each QA Project Plan must be approved by the Project officer's immediate supervisor and the QA Officer. Completion of reviews and approvals is shown by signatures on the title page of the plan. Environmental measurements may not be initiated until the QA Project Plan has received the necessary approvals, unless emergency response is necessary. A copy of the approved QA Project Plan will be distributed by the Project Officer to each person who has a major responsibility for the quality of measurement data.

Extramural Projects - Each QA Project Plan must be approved by the funding organization's Project Officer and the QA Officer. In addition, the extramural organization's Project Manager and responsible QA official must review and approve the QA Project Plan. Completion of reviews and approvals is shown by signatures on the title page of the plan. Environmental measurements may not be initiated until the QA Project Plan has received the necessary approvals. A copy of the approved QA Project Plan will be distributed by the extramural organization's Project Director to each person who has a major responsiblity for the quality of the measurement data.

5.0 PLAN CONTENT REQUIREMENTS

The sixteen (16) essential elements described in this section must be considered and addressed in each QA Project Plan. If a particular element is not relevant to the project under consideration, a brief explanation of why the element is not relevant must be included. EPA-approved reference, equivalent or alternative methods must be used and their corresponding Agency-approved guidelines must be applied wherever they are available and applicable.

It is Agency policy that precision and accuracy of data shall be assessed routinely and reported on all environmental monitoring and measurement data. Therefore, specific procedures to assess precision and accuracy on a routine basis during the project must be described in each QA Project Plan. Procedures to assess data quality are being developed by QAMS and the Environmental Monitoring Systems Support Laboratories. Additional guidance can be obtained from QA handbooks for air, water biological, and radiation measurements (References 1, 2, 3, 12, 17, and 18).

The following subsections provide specific guidance pertinent to each of the 16 components which must be considered for inclusion in every QA Project Plan.

SECTION 5.0 – PLAN CONTENT REQUIREMENTS

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INTERIM GUIDELINES AND SPECIFICATIONS FOR PREPARING QUALITY ASSURANCE PROJECT PLANS

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At the end of the Table of Contents, list the QAO and all other individuals receiving official copies of the QA Project Plan and any subsequent revisions.

5.3 Project Description

Provide a general description of the project, including the experimental design. This description may be brief but must have sufficient detail to allow those individuals responsible for review and approval of the QA Project Plan to perform their task. Where appropriate, include the following:

- Flow diagrams, tables and charts.
- Dates anticipated for start and completion.
- Intended end use of acquired data.

5.4 Project Organization and Responsibility

Include a table or chart showing the project organization and line authority. List the key individuals, including the QAO, who are responsible for ensuring the collection of valid measurement data and the routine assessment of measurement systems for precision and accuracy.

SECTION 5.0 – PLAN CONTENT REQUIREMENTS

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INTERIM GUIDELINES AND SPECIFICATIONS
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Table 1

EXAMPLE OF FORMAT TO SUMMARIZE PRECISION, ACCURACY AND COMPLETENESS OBJECTIVES

Measurement Parameter (Method)	Reference	Experimental Conditions	Precision, Std. Dev.	Accuracy	Completeness
NO_2 (Chemiluminescent)	EPA 650/4-75-011 February 1975	Atmospheric samples spiked with NO_2 as needed	<±10%	±5%	90%
SO_2 (24 hr) (Pararosaniline)	EPA 650/4-74-027 December 1973	Synthetic atmosphere	<±20%	±15%	90%
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INTERIM GUIDELINES AND SPECIFICATIONS FOR PREPARING QUALITY ASSURANCE PROJECT PLANS

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A. Field Sampling Operations:

- Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters, and absorbing reagents).

- Procedures and forms for recording the exact location and specific considerations associated with sample acquisition.

- Documentation of specific sample preservation method.

- Pre-prepared sample labels containing all information necessary for effective sample tracking. Figure 1 illustrates a typical sample label applicable to this purpose.

- Standardized field tracking reporting forms to establish sample custody in the field prior to shipment. Figure 2 presents a typical sample of a field tracking report form.

B. Laboratory Operations:

- Identification of responsible party to act as sample custodian at the laboratory facility authorized to sign for incoming field samples, obtain documents of shipment (e.g., bill of lading number or mail receipt), and verify the data entered onto the sample custody records.

- Provision for a laboratory sample custody log consisting of serially numbered standard lab-tracking report sheets. A typical sample of a standardized lab-tracking report form is shown in Figure 3.

SECTION 5.0 – PLAN CONTENT REQUIREMENTS

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INTERIM GUIDELINES AND SPECIFICATIONS FOR PREPARING QUALITY ASSURANCE PROJECT PLANS

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W/O No. _____ Page____

FIELD TRACKING REPORT: _____-_____
(LOC-SN)

FIELD SAMPLE CODE (FSC)	BRIEF DESCRIPTION	DATE	TIME(s)	SAMPLER

Figure 2. Sample of Field Tracking Report Form

SECTION 5.0 – PLAN CONTENT REQUIREMENTS

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- Specification of laboratory sample custody procedures for sample handling, storage and dispersement for analysis.

Additional guidelines useful in establishing a sample custody procedure are given in Section 2.0.6 of Reference 2, and Section 3.0.3 of Reference 3, and References 13 and 14.

5.8 Calibration Procedures and Frequency

Include calibration procedures and information:

- For each major measurement parameter, including all pollutant measurement systems, reference the applicable standard operating procedure (SOP) or provide a written description of the calibration procedure(s) to be used.
- List the frequency planned for recalibration.
- List the calibration standards to be used and their sources(s), including traceability procedures.

5.9 Analytical Procedures

For each measurement parameter, including all pollutant measurement systems, reference the applicable standard operating procedure (SOP) or provide a written description of the analytical procedure(s) to be used. Officially approved EPA procedures will be used when available. For convenience in preparing the QA Project Plan, Elements 6, 8 and 9 may be combined (e.g., Sections 5.6, 5.8 and 5.9).

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- Blanks
- Internal standards
- Zero and span gases
- Quality control samples
- Surrogate samples
- Calibration standards and devices
- Reagent checks

Additional information and specific guidance can be found in References 17 and 18.

5.12 Performance and System Audits

Each project plan must describe the internal and external performance and systems audits which will be required to monitor the capability and performance of the total measurement system(s).

The systems audit consists of evaluation of all components of the measurement systems to determine their proper selection and use. This audit includes a careful evaluation of both field and laboratory quality control procedures. Systems audits are normally performed prior to or shortly after systems are operational; however, such audits should be performed on a regularly scheduled basis during the lifetime of the project or continuing operation. The on-site systems

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Environmental Monitoring Systems Laboratory
Research Triangle Park, NC 27711
Attention: Dr. Thomas R. Hauser, Director

Environmental Monitoring and Support Laboratory
26 W. St. Clair Street
Cincinnati, OH 45268
Attention: Mr. Robert L. Booth, Director

Environmental Monitoring Systems Laboratory
P.O. Box 15027
Las Vegas, NV 89114
Attention: Mr. Glen Schwitzer, Director

5.13 Preventive Maintenance

The following types of preventive maintenance items should be considered and addressed in the QA Project Plan:

- A schedule of important preventive maintenance tasks that must be carried out to minimize downtime of the measurement systems.
- A list of any critical spare parts that should be on hand to minimize downtime.

5.14 Specific Routine Procedures Used to Assess Data Precision, Accuracy and Completeness

It is Agency policy that precision and accuracy of data must be routinely assessed for all environmental monitoring and measurement data. Therefore, specific procedures to assess precision and accuracy on a routine basis on the project must be described in each QA Project Plan.

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- Confidence limits
- Testing for outliers

Recommended guidelines and procedures to assess data precision, accuracy and completeness are being developed.

5.15 Corrective Action

Corrective action procedures must be described for each project which include the following elements:

- The predetermined limits for data acceptability beyond which corrective action is required.
- Procedures for corrective action.
- For each measurement system, identify the responsible individual for initiating the corrective action and also the individual responsible for approving the corrective action, if necessary.

Corrective actions may also be initiated as a result of other QA activities, including:

(1) Performance audits

(2) Systems audits

(3) Laboratory/interfield comparison studies

(4) QA Program audits conducted by QAMS

A formal corrective action program is more difficult to define for these QA activities in advance and may be defined as the need arises.

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6.0 QUALITY ASSURANCE PROJECT PLANS VERSUS PROJECT WORK PLANS

This document provides guidance for the preparation of QA Project Plans and describes 16 components which must be included. Historically, most project managers have routinely included the majority of these 16 elements in their project work plans. In practice, it is frequently difficult to separate important quality assurance and quality control functions and to isolate these functions from technical performance activities. For those projects where this is the case, it is not deemed necessary to replicate the narrative in the Quality Assurance Project Plan section.

In instances where specific QA/QC protocols are addressed as an integral part of the technical work plan, it is only necessary to cite the page number and location in the work plan in the specific subsection designated for this purpose.

It must be stressed, however, that whenever this approach is used a "QA Project Plan locator page" must be inserted into the project work plan immediately following the table of contents. This locator page must list each of the items required for the QA Project Plan and state the section and pages in the project plan where the item is described. If a QA Project Plan item is not applicable to the work plan in question, the words "not applicable" should be inserted next to the appropriate component on the locator page and the reason why this component is not applicable should be briefly stated in the appropriate subsection in the QA Project Plan proper.

7.0 STANDARD OPERATING PROCEDURES

A large number of laboratory and field operations can be standardized and written as Standard Operating Procedures (SOP). When such procedures are applicable and available, they may be incorporated into the QA Project Plan by reference.

QA Project Plans should provide for the review of all activities which could directly or indirectly influence data quality and the determination of those operations which must be covered by SOP's. Examples are:

- General network design
- Specific sampling site selection
- Sampling and analytical methodology
- Probes, collection devices, storage containers, and sample additives or preservatives
- Special precautions, such as heat, light, reactivity, combustability, and holding times
- Federal reference, equivalent or alternative test procedures
- Instrumentation selection and use
- Calibration and standardization
- Preventive and remedial maintenance
- Replicate sampling
- Blind and spiked samples

SECTION 7.0 – STANDARD OPERATING PROCEDURES

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8.0 SUMMARY

Each intramural and extramural project that involves environmental measurements must have a written and approved QA Project Plan. All 16 items described previously must be considered and addressed. Where an item is not relevant, a brief explanation of why it is not relevant must be included. It is Agency policy that precision and accuracy of data must be routinely assessed and reported on all environmental monitoring and measurement data. Therefore, specific procedures to assess precision and accuracy on a routine basis during the project must be described in each QA Project Plan.

REFERENCES

1. Quality Assurance Handbook for Air Pollution Measurement Systems. Volume I - Principles. EPA-600/9-76-005, March 1976.

2. Quality Assurance Handbook for Air Pollution Measurement Systems. Volume II - Ambient Air Specific Methods. EPA-600/4-77-027a, May 1977.

3. Quality Assurance Handbook for Air Pollution Measurement Systems. Volume III - Stationary Source Specific Methods. EPA-600/4-77-027b, August 1977.

4. Systems Audit Criteria and Procedures for Ambient Air Monitoring Programs. Currently under development and available from address shown in Reference 1 after July 1, 1980.

5. Techniques to Evaluate Laboratory Capability to Conduct Stack Testing.

6. Performance Audit Procedures for Ambient Air Monitoring Programs. Currently under development.

7. Appendix A - Quality Assurance Requirements for State and Local Air Monitoring Stations (SLAMS). Federal Register, Vol. 44, No. 92, pp. 27574-81, May 10, 1979.

8. Appendix B - Quality Assurance Requirements for Prevention of Significant Deterioration (PSD) Air Monitoring, Federal Register. Vol. 44, No. 92, pp. 27582-84, May 10, 1979.

9. Appendix E - Quality Assurance Requirements for Continuous Emission Monitoring Systems (CEMS). To be submitted as a proposed regulation to amend 40 CFR 60.

10. Test Methods for Evaluating Solid Waste - Physical/Chemical Methods. EPA SW-846, 1980.

11. Quality Assurance Guidelines for IERL-CI Project Officers. EPA-600/9-79-046. December 1979.

REFERENCES

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APPENDIX A

GLOSSARY OF TERMS

AUDIT:

A systematic check to determine the quality of operation of some functon or activity. Audits may be of two basic types: (1) performance audits in which quantitative data are independently obtained for comparison with routinely obtained data in a measurement system, or (2) system audits of a qualitative nature that consist of an on-site review of a laboratory's quality assurance system and physical facilities for sampling, calibration, and measurement.

DATA QUALITY:

The totality of features and characteristics of data that bears on its ability to satisfy a given purpose. The characteristics of major importance are accuracy, precision, completeness, representativeness, and comparability. These characteristics are defined as follows:

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ENVIRONMENTALLY RELATED MEASUREMENTS:

A term used to describe essentially all field and laboratory investigations that generate data involving (1) the measurement of chemical, physical, or biological parameters in the environment, (2) the determination of the presence or absence of criteria or priority pollutants in waste streams, (3) assessment of health and ecological effect studies, (4) conduct of clinical and epidemiological investigations, (5) performance of engineering and process evaluations, (6) study of laboratory simulation of environmental events, and (7) study or measurement on pollutant transport and fate, including diffusion models.

PERFORMANCE AUDITS:

Procedures used to determine quantitatively the accuracy of the total measurement system or component parts thereof.

QUALITY ASSURANCE:

The total integrated program for assuring the reliability of monitoring and measurement data. A system for integrating the quality planning, quality assessment, and quality improvement efforts to meet user requirements.

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STANDARD OPERATING PROCEDURE (SOP):

A written document which details an operation, analysis or action whose mechanisms are thoroughly prescribed and which is commonly accepted as the method for performing certain routine or repetitive tasks.