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**SITE-WIDE CERCLA QUALITY ASSURANCE
PROJECT PLAN (SCQAPJP) MEETING**

08/07/91

**DOE-1944-91
DOE-FSO/USEPA
3
LETTER**



Department of Energy

Fernald Site Office
P.O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 738-6319

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AUG 07 1991
DOE-1944-91

Ms. Catherine A. McCord
Remedial Project Director
U. S. Environmental Protection Agency
Region V - 5HR-12
230 South Dearborn Street
Chicago, IL 60604

Dear Ms. McCord:

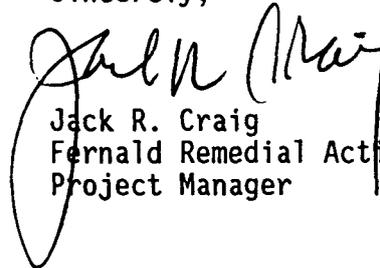
SITE-WIDE CERCLA QUALITY ASSURANCE PROJECT PLAN (SCQAPjP) MEETING

Enclosed are minutes/notes prepared from the meeting held on July 18, 1991. Also enclosed is the rationale for modifying U. S. EPA analytical support levels nomenclature for the Fernald Site.

Your review of this material is requested prior to the SCQAPjP meeting scheduled for August 19, 1991.

If you have any questions, please contact Oba Vincent at FTS 774-6937.

Sincerely,


Jack R. Craig
Fernald Remedial Action
Project Manager

FSO:Vincent

Enclosures: As stated

cc w/encls.:

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J. J. Fiore, EM-42, GTN
K. A. Hayes, EM-424, GTN
G. E. Mitchell, OEPA-Dayton
T. Schneider, OEPA-Dayton
K. Davidson, OEPA-Columbus
J. A. Saric, USEPA-V, 5HR-12
M. Butler, USEPA-V, 5CS-TUB-3
J. Benetti, USEPA-V, 5AR-26
E. Schuessler, PRC
L. August, GeoTrans
R. L. Glenn, Parsons
W. H. Britton, WEMCO
H. F. Daugherty, WEMCO
S. W. Coyle, WEMCO
J. D. Wood, ASI
AR Files
Attendees

cc w/o encls.:

C. R. Holmes, USEPA-HQ
W. E. Muno, USEPA-V, 5HR-13
D. A. Ullrich, USEPA-V, 5H-12
D. R. Schregardus, OEPA-Columbus

LIST OF ATTENDEES
SITE-WIDE CERCLA QUALITY ASSURANCE PROJECT PLAN MEETING
PALMER HOUSE - CHICAGO, IL
JULY 18, 1991

<u>NAME</u>	<u>AFFILIATION</u>	<u>TELEPHONE #</u>
Joseph Lojek	WEMCO	(513) 738-6749
Kathleen Shingledecker	Nuclear Group	(513) 738-6019
Brinley Varchol	WEMCO	(513) 738-6919
Harriet Richardson	WEMCO	(513) 738-6609
Donald Brice	WEMCO	(513) 738-9033
Rick Bardo	WEMCO	(513) 738-8488
Thomas Dugan	WEMCO	(513) 738-6224
G. P. Chada	Quantum Mechanics	(412) 391-3399
Kevin M. Burns	OEPA/DERR	(614) 644-2299
Larry Sexton	ASI	(513) 738-3100
Oba L. Vincent	DOE/FSO	(513) 738-6937
Brad Wright	DOE/HQ	(513) 233-8158
John F. Falkenbury	OTS/Weston	(301) 353-1281
Tom Schneider	OEPA	(513) 285-6357
Jack R. Craig	DOE/FSO	(513) 738-6159
Andrea Futrell	OEPA	(513) 285-6357
Cheng Wen Tsai	USEPA/OAS	(312) 886-6220
Kevin Bolger	USEPA/ESD	(312) 353-7712
David Payne	USEPA	(312) 353-8303
Duane Kruse	Weston/ESAT	(312) 353-8303
Carsten Falkenberg	Weston/ESAT	(312) 353-2903
Jim Saric	USEPA	(312) 886-0992

July 31, 1991

NOTES FROM THE JULY 18, 1991 DOE/USEPA TECHNICAL PRE-QAPJP MEETING.

The DOE/USEPA Meeting was called to order by Oba Vincent/DOE at 09:05 CDT. Developing the Site Wide QAPJP (SWQ) generated the need for this meeting. The following summarizes the discussions related to this meeting agenda. The meeting agenda is Attachment #1. A meeting roster (See Attachment #2) was distributed.

1. Review of relevant events transpiring since the last meeting of Thursday, June 27, 1991 was limited to two items:
 - a. EPA committed to provide comments on Revision 3.0 of the RI/FS QAPJP by August 5, 1991.
 - b. EPA raised a concern that the use of Roy F. Weston, Inc. Consulting Engineers, (Weston) by DOE may be a potential conflict of interest in this project since Weston performs approximately \$900,000. business with Westinghouse Corporate, Pittsburgh, PA. Acknowledging this, EPA decided that Weston would remain as consultant to EPA for laboratory audits relative to this project since any replacement would create an untenable delay and that certain precautions would be applied to USEPA Weston contracts to avoid the appearance of a conflict of interest.

In that vein, Region V EPA indicated that EPA Headquarters was advised of the potential conflict of interest. In response, EPA Headquarters requested EPA auditors to apply an additional level of scrutiny and review to Weston's contracts and work products performed under EPA contract. Further, EPA advised DOE to request that Westinghouse Corporate perform a similar level of review to Weston's contracts and work product to prevent the appearance of a conflict of interest.

DOE agreed to request Westinghouse Corporate intensify auditing Weston contracts.

2. Tom Schneider/OEPA requested that Kevin Burns OEPA/DERR be added to the cc list for all SWQ correspondence and meeting notes. DOE agreed to this request.
3. B. D. Varchol (Brinley) briefly reviewed site history and the need for a SWQ. The site's degree of complexity demonstrated by an organization chart prompted the strategy for developing an SWQ.

Brinley stated:

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- a. The SWQ will be the first site wide document applicable to all organizations. The site wide document is used by all personnel on the site including WMCO, DOE and their subcontractors.
- b. The goals of the SWQ are to establish levels of data quality and confidence for all site sampling and analysis, set minimum requirements for all site sampling procedures, identify all site sampling programs and contain the laboratory services contract requirements.

Brinley concluded with an introduction of the SWQ core team members.

4. H. E. Richardson (Harriet) described the hierarchy of site documents and the role of the SWQ in that model. Harriet discussed the use of the SWQ.

Jim Saric/EPA wanted to know the number of Work Plans to be driven by the SWQ. Since the number of Site Work Plans is difficult to establish, Harriet focused on the use of the SWQ to establish data quality and confidence, sampling procedures and laboratory services for all Site Work Plans, and differed the answer to a later meeting.

Harriet offered that the SWQ replaces a larger number of project specific work plan QAPjP's thereby providing EPA with one document to review. This point is important because of the duplication of all site sampling dictating similarity in all project specific work plan QAPjPs.

Jim Saric/EPA advised that treatability studies may require an addendum to the SWQ. Harriet agreed.

DOE, EPA and OEPA agreed on the approach and use of the SWQ.

5. D. A. Brice distributed a handout that contained the SWQ objectives and the checklist from USEPA Guidance "Final Standard for Quality Assurance Documents". Don informed the group that the SWQ will:
 - a. Eliminate the need for individual QAPjPs for each operable unit and each stage of the FMPC remediation, reducing the time frame for completion and review of tasks.
 - b. Contain the basic requirements for all programs and relevant procedures, establishing a framework within which to scope and perform work.
 - c. Eliminate overlap and insure consistent data for application to any program or phase of the remedial process.

d. Develop program goals to eliminate any sampling duplication.

The agency (C. Tsai) expressed a concern that the SWQ would not function as intended, saying that another DOE facility (later identified as Mound) had tried a similar process and failed to successfully implement it. However, other agency personnel (J. Saric, D. Payne) indicated that the idea of a SWQ has merit and discussions continued.

Don illuminated the group to areas of departure from the standard RI/FS QAPJP. Those differences are;

The Standard RI/FS QAPJP has 16 elements, including title page and table of contents. The SWQ will have 18 elements. The SWQ is designed from the existing EPA approved RI/FS QAPJP with 18 elements. This is the result of incorporating both EPA (QAMS-005) and DOE (NQA-1) requirements into the document design.

The agency responded (J. Saric, K. Bolger) that they would prefer the SWQ follow EPA RI/FS boilerplate format as close as possible. The concern was that all EPA requested information be present in a readily accessible style.

The resolution was that when the SWQ format would depart from the boilerplate format, but that all of the information required by EPA guidance would be included and easily identifiable.

The background of the SWQ would not be as specific as some RI/FS QAPJP background sections. This is due to the complexity of the site and the volume of previous information generated. Sources of background information would be clearly referenced.

The agency (J. Saric, K. Bolger, D. Payne) responded that they would prefer great detail on background so that a person with little knowledge of the site and limited access to background materials could understand the history of the site and the rationale for actions.

The resolution was that the SWQ will contain a synopsis of past site activities, materials used and wastes generated, investigations conducted, and present knowledge on the distribution of contaminants. Summary tables of past investigations and contaminants of concern may be used.

Page 2, Attachment 2, Section 3 Project Description, bullets 3 to end. This was described as a major departure from the RI/FS QAPJP format.

Because the SWQ is intended as a site-wide document with control over a wide variety of programs and projects, including all of the individual project descriptions, the document would become too unwieldy to use. Therefore, information usually included as part of the project description will be included in individual program/project work and sampling plans.

The SWQ will include some of the programmatic controls included in Quality Assurance Program Plans. However, the emphasis of the document is on technical and administrative quality control of actual work activities. Therefore, the document is more a project plan than a program plan. The main departure is that one plan will be used across several projects.

After some discussion concerning specifics in implementing such a plan, the agency (J. Saric, D. Payne, K. Bolger) agreed that the approach would reduce the review load and help ensure consistency between programs. There was some concern expressed that future work may not all fit within the SWQ. It was emphasized by WMCO that certain elements of individual project work plans would include quality elements differing from the SWQ, and these would have to be reviewed on an individual basis. The inclusion of these elements would be a requirement for generation of work and sampling plans specifically stated in the SWQ.

The resolution was that the SWQ should be prepared as planned, and that future sampling work plans should identify quality elements not included in the SWQ.

The individual laboratories used by the FMPC would not be listed in the SWQ. Rather, a process for laboratory services procurement would be included and EPA approved laboratories would be listed in an attachment to the SWQ. Labs would be used as soon as they satisfactorily demonstrated the capability to perform Fernald analyses. EPA approval would come after the labs were on line.

The agency (D. Payne) stated that the reason for listing labs in the QAPjP was to insure that some thought had gone into the procurement of a lab. J. Saric emphasized that work performed by a lab between the time of Fernald approval and EPA approval would be considered at risk.

The resolution was that the requirements for laboratory procurement would be included in the SWQ and a list of currently approved labs would be included as an attachment to the new SWQ.

Basic requirements for sampling and analysis tasks will be included in the SWQ.

Additional requirements will be included in sampling work plans, referencing the SWQ wherever possible. Analytical procedures will be appropriately referenced, and variations in procedures will be controlled by laboratory services agreements.

The agency (J. Saric, D. Payne, K. Bolger) indicated concurrence with this plan.

6. Harriet Richardson discussed the history, and subsequent Data Quality Objective (DQO) development and applications to the SWQ.

Harriet reviewed the Sampling Activity Summaries (SAS), the DQO Environmental Media Boxes.

G. Chada (George) reviewed the "Summary of Analytical Levels Appropriate to Data Use" developed for the FMPC DQOs.

The discussion focused on the difficulty in adapting radiochemistry to the standard laboratory understanding of EPA's Contract Laboratory Program Levels 1 through 5.

George posed that defensible, validatable radiochemical data require defined performance criteria substantially different from organic/inorganic performance criteria for quality control, reproducibility and comparability as defined in the CLP Scope of Work. This dichotomy is amplified in defined parameters designating Levels 3 and 4.

Further, standard laboratory auditing procedures for inorganics/organics, as defined by the CLP Scope of Work, would be untenable for radionuclide analysis.

With these understandings, George suggested Levels A through E, with clearly defined performance criteria, to replace 1 through 5 for FMPC chemical analysis.

EPA (D. Payne, K. Bolger) presented pro and con arguments for resolving this issue, then accepted a suggestion from DOE (O. Vincent) to review a position paper presenting the FMPC reasoning. The paper will be prepared and presented to DOE by July 23, 1991 for transmittal to EPA for review.

A previous commitment in the afternoon for K. Bolger/EPA required an agenda adjustment. Since K. Bolger contributes to the laboratory and QA sections of the SWQ; the afternoon's agenda discussion of the Laboratory Services Contract was moved to the morning.

7. G. Chada requested that EPA consider the prudent use of SW 846 for specific analyte analysis.

Using increased laboratory control standards and very well defined laboratory protocol for analysis, SW 846 analysis will serve as CLP equivalence for specific analyte analysis. This will reduce the burden on finite lab capacity, improve quality control, decrease turn-around time, and set standards for data comparability and reproducibility.

George also suggested that a data validation and verification program would accompany this strategy for implementing SW 846 analysis.

The Master Laboratory Contract in Section 9 (proposed) of the SWQ would contain the level of specificity and detail to manage these programs.

EPA (K. Bolger, D. Payne) concurred.

The meeting adjourned for lunch at 12:15 PM. The meeting attendees returned from lunch at 1:15 PM.

8. DOE (O. Vincent) suggested that the next working meeting of the SWQ group meet in Dayton, Ohio on August 19, 1991 at 10:00 AM.

EPA suggested that the meeting be held in the Southwest District Office of OEPA, located at 40 South Main Street in Dayton, Ohio. OEPA (T. Schneider) offered the use of a conference room at those offices that would accommodate approximately twenty (20) members of the SWQ group. DOE (O. Vincent) accepted the invitation and tentatively scheduled the next meeting for Monday, August 19, 1991, at 10:00 AM in the Southwest District Offices of OEPA located at 40 South Main Street, Dayton, Ohio.

These plans depend on the availability of travel funds for EPA Region V personnel. If the funds are not available, then the meeting will be rescheduled for Chicago, IL. EPA (J. Saric) will advise on the availability of these funds to confirm this meeting.

9. H. Richardson presented the development and application of DQOs for site sampling activities. Included with a handout were DQO preparation guidance, DQO Summary Forms, Sample DQOs, and Sampling Activity Summaries developed by the Sampling Activity Summary/Data Quality Objective (SAS/DQO) Group.

DQOs were founded on the D. Neptune Guidance using case examples for soils media sampling for superfund sites. FMPC expanded this application to each matrix and further developed a method of statistical evaluation of sampling procedures and data confidence.

EPA (J. Saric and D. Payne) agreed with the DQO format and posed that Neptune's approach was tantamount to agency policy. Further, EPA (C. Tsai) agreed to review the submission and Rick Bardo's paper and comment if required.

R. Bardo presented his position paper on applying statistical analysis to site media sampling in each environmental media matrix based on D. Neptune's recent "Hazardous Materials Control" article "Quantitative Decision". Bardo's expansion of the Neptune method and suggested differences were presented to the group.

EPA (D. Payne) question that the beta and alpha errors were reversed in Bardo's position paper. Bardo explained that since CERCLA assumes that media are contaminated that false negatives become false positives and vice versa.

Therefore, alpha and beta errors are reversed to accommodate the CERCLA assumption.

EPA (D. Payne) agreed with Bardo's postulation.

10. DOE (O. Vincent) advised EPA that two (2) labs Ecotek, Atlanta, GA and DataChem, Salt Lake City, UT would be added to the requested list. The number of acceptable labs remains at four (4) with a number of labs requested as additions.

EPA (D. Payne) requested a list of labs. DOE (O. Vincent) agreed to provide the list.

DOE (O. Vincent) explained that Ecotek would perform organic analysis and Datachem inorganic analysis in support of remedial design work scheduled by Parsons.

EPA (J. Saric) advised that data from these labs would be at risk until audited by EPA. EPA (D. Payne) further advised, that the schedule for EPA lab audits was three (3) to four (4) months.

To assist FSO in qualifying these labs EPA (D. Payne) suggested using QA soil samples prepared by the EMSL Lab in Las Vegas, NV for special emission spectroscopy, and graphite furnace AA analysis.

11. The question of whether the other 4 volumes of the RI/FS Work Plan should be updated as site-wide documents was raised by D. Brice.

EPA (J. Saric) said that EPA did not think that this step was necessary. The Work Plan was required for the RI/FS under the FFCA. The document is continually being updated as new tasks are identified. The Community Relations Plan, Health and Safety Plan, and Data Management Plan have already been approved by EPA for the RI/FS. No objection was voiced to updating the Data Management Plan and the Health and Safety Plan as site-wide documents, if DOE decides to do so.

12. The role of the regulators, OEPA/EPA, within the SWQ process was defined as the meeting progressed. EPA will provide technical assistance and make available through, RPM J. Saric, QA and Lab personnel to answer questions that may arise as the SWQ is developed.

DOE (O. Vincent) requested any model QAPjP Guidance OEPA may have developed. OEPA (A. Futrell) advised that a new group, RCRA Corrective Action Group, may have QAPjP guidance documents. If so, they will be made available for this effort.

13. DOE (O. Vincent) suggested that the next meeting will concentrate on specific technical difficulties related to developing the SWQ and the issue of the "Summary of Analytical Levels Appropriate to Data Use" developed for the DQOs.

EPA (J. Saric) agreed to these agenda items.

The next meeting will be an informal working meeting with specific agenda items offered ten (10) working days before the meeting to EPA for review and selection of the correct meeting attendees.

14. The meeting adjourned at 2:15 PM.

AGENDA FOR EPA MEETING JULY 18, 1991 (Pg. 1 of 2)

- 9:00-9:05
OV Introduction by DOE. (5 minutes)
- 9:05-9:15
BV Discussion of site history focusing on the need for a FMPC site wide QAPJP (SWQ). (10 minutes)
- development and diversity of site activities
 - need for one SWQ to guide all germane sampling and analysis activities
- 9:15-9:25
HR Discussion of hierarchy of site documents. (10 minutes)
- FMPC policies
 - FMPC procedures
 - quality assurance
 - site remediation
- 9:25-10:25
DB and KS Review of SWQ format. (60 minutes)
- format
 - combination of RCRA and CERCLA boiler plates
- 10:25-10:40 Break
- 10:40-11:40
HR Development of Data Quality Objectives (DQOs). (60 minutes)
- application as site wide management tool
 - FMPC development process
 - levels of data confidence
- 11:40-12:45 Lunch
- 12:45-1:45
DB Discussion of draft SWQ sections and draft DQOs. (60 minutes)
- 1:45-2:45
TD Discussion of Laboratory Services Contract. (60 minutes)
- SW-846
 - CLP/CLP equivalent
 - levels of data confidence
 - data verification/validation
 - laboratory performance criteria and qualifications
- 2:45-3:00 Break
- 3:00-3:20
DB Genericizing, up grading and/or fitting the remaining RI/FS Work Plan elements for site wide use. (20 minutes)
- sampling plan
 - data management plan
 - community relations plan
 - work plan
 - health and safety plan

AGENDA FOR EPA MEETING JULY 18, 1991 (Pg. 2 of 2)

3:20-4:20

BV

Discussion of regulator feedback. (60 minutes)

- input to development of SWQ and revisions
- technical input to SWQ (format, procedures and technical requirements)
- role of USEPA Region V
- role of OEPA
- plan for next meeting

4:20

OV

Closure of Meeting

Attendance Roster
DOE/USEPA Technical Pre-QAPjP Meeting
Palmer House, Chicago, IL

Thursday, July 18, 1991

Name:	Affiliation:	Telephone Number:
J. M. Lojek	WMCO	513-738-6749
K. Shingledecker	Nuclear Group	513-738-6019
B. D. Varchol	WMCO	513-738-6919
H. E. Richardson	WMCO	513-738-6609
D. A. Brice	WMCO	513-738-9033
R. Bardo	WMCO	513-738-8488
T. A. Dugan	WMCO	513-738-6224
G. P. Chada	Quantum Mechanics Corp.	412-471-3399
K. McBurns	OEPA/DERR	614-644-2299
L. Sexton	ASI	513-738-3100
O. L. Vincent	DOE	513-738-6937
B. Wright	DOE-HQ	FTS 233-8158
J. F. Falkenbury	OTS/Weston	301-353-1281
T. Schneider	OEPA	513-285-6357
J. C. Craig	DOE	513-738-6159
A. Futrell	OEPA	513-285-6357
Cheng Wen Tsai	EPA/QAS	312-886-6220
K. B. Bolger	EPA/ESD	312-353-7712
D. R. Payne	EPA	312-886-1970
D. Kruse	Weston/ESAT	312-353-8303
Carsten Falkenburg	Weston/ESAT	312-353-2903
J. Saric	EPA	FTS/312-886-0992
K. Khamha	EPA/TSU	312-353-2663

**SUGGESTED STRATEGIES FOR RADIOCHEMICAL AND RADIOLOGIC ANALYTICAL SERVICES
FOR THE FERNALD SITE.**

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**RATIONALE FOR MODIFYING U. S. EPA ANALYTICAL SUPPORT LEVELS (ASLs) NOMENCLATURE
TO INCLUDE RADIOCHEMICAL AND RADIOLOGICAL MEASUREMENTS
FOR THE FERNALD SITE.**

1.0 INTRODUCTION:

This document supports four (4) contentions.

1. Radiochemical data gathered by established, verifiable, comparable, and reproducible methods can meet or exceed similar US EPA defined criteria for Analytical Support Levels (ASLs) 3, 4, and 5.
2. Similarly, radiological measurements generated using established and reproducible methods performed in typically lesser controlled environments (i.e. field surveillance) may be captured in modes that meet or exceed typical ASL Level 1 and 2 requirements.
3. Performance criteria (Data Quality Objectives, DQOs) will be developed for radiochemical analyses that:
 - * assures analytical method completeness;
 - * will define raw data packages to ascertain data quality;
 - * reveals work plan, program or data failures and defects; and
 - * generates information required for a radiochemical data validation programs to meet or exceed approved validation programs for ASL levels 3, 4, and 5 inorganic/organic measurements.
4. Radiochemical data, gathered in all the modes described above, should be allowed to support CERCLA activities including Remedial Investigations and/or Feasibility Studies (RI/FS).

2.0 DISCUSSION:

National Priority List (NPL) Site investigations rely on U. S. EPA Contract Laboratory Program Data Quality Levels 4 and 5 standards to define acceptable, defensible, and validatable data in order to achieve site remediation.

U. S. EPA's Contract Laboratory Program omits radionuclide measurements from the chemical genera listed within the scope-of-work for data quality Level 4. These radiochemical analyses are typically assigned to Level 5; the data quality level reserved for unique analysis, analytical method research and development or other special analytical services.

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Further, typical NPL sites that infrequently conduct radiochemistry may relegate all radionuclide measurements to ASL Level 5. At present, there are NPL Sites with major radiochemical contamination that will require routine radioanalytical measurement. Practical use of other ASLs for radiological measurements is clearly required for the prudent use of finite laboratory services.

Therefore, the solution to this problem lies in modifying the nomenclature associated with ASL Levels. New nomenclature that relates to clearly defined data levels that equal or exceed EPA's current ASLs will allow radiological measurements to enjoy the same level of acceptability that inorganic and organic analyses enjoy.

The following is an outline of performance criteria for radiological analysis equivalent to current U. S. EPA's ASLs.

3.0 RADIOLOGICAL PROGRAM OUTLINE:

Radiological measurements at the Fernald Site is neither uncommon nor atypical. They are routine, clearly understood and performed daily in varied analytical field and laboratory method permutations. These measurements yield defensible, intelligible data that equal or exceed reproducibility, and comparability standards for organic or inorganic analyses relative to ASLs 1 through 4. Further, these analyses are subject to laboratory and field QA/QC regimes that insure certainty and validity.

The following outline describes the suggested FSO radiological ASL equivalency demonstration. The suggested ASL nomenclature are A through E, rather than 1 through 5. ASL descriptions and specifications are provided.

LEVEL A:

1. Instruments shall be calibrated initially, after maintenance and periodically on an established, predetermined schedule. Calibration records will be developed and maintained.
2. Calibration will be performed using NIST traceable standards.
3. Calibration checks will be performed at a frequency of every twenty (20) samples or the beginning and end of each measurement series, whichever comes first.
4. Background measurements shall be made at the beginning and end of each series of measurements.

**SUGGESTED STRATEGIES FOR RADIOCHEMICAL AND RADIOLOGIC ANALYTICAL SERVICES
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5. All information related to data acquisition shall be recorded in a bound and controlled field log book or on approved field forms. A description of field log books and/or approved field forms and their use may be found in Section 7 of the Site Wide Quality Assurance Project Plan (QAPJP).

LEVEL B:

1. Instruments shall be calibrated initially, after maintenance and periodically on an established, predetermined schedule. Calibration records will be developed and maintained.
2. Calibration will be performed using NIST traceable standards.
3. Calibration checks will be performed at a frequency of every ten (10) samples or at the beginning and end of each measurement series, whichever comes first.
4. Background measurements shall be made at the beginning and end of each series of measurements.
5. All information related to data acquisition shall be recorded in a bound and controlled field log book and/or on approved field forms. A description of field log books and/or approved field forms and their use may be found in Section 7 of the Site Wide Quality Assurance Project Plan (QAPJP).
6. An additional standard, other than the one specified for calibration checks, will be run at the same frequency as calibration checks as a reference check to insure that measurement of the two standards is consistent.
7. Measurement of reagent blanks, if reagents are used, would also be required at the same frequency specified for Item #3 above. This information will be used to correct results of analyzed field samples.

Note: The strategy for levels A and B is to assure all field instrumentation used to measure radioactivity are properly calibrated and do not have any significant drift in responses over a given period of time.

LEVEL C:

Level C criteria will be developed equivalent to current U. S. EPA ASL 3 requirements for organic and nonradioactive inorganic analyses. This will be accomplished by developing detailed analytical performance and data reporting specifications for radioanalytical laboratories.

SUGGESTED STRATEGIES FOR RADIOCHEMICAL AND RADIOLOGIC ANALYTICAL SERVICES
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These specifications will guide the generation of all necessary information required to review, evaluate, and validate radioanalytical data with the same thoroughness as required for ASL 3 organic and inorganic analyses.

The radioanalytical laboratory performance and data reporting specifications will address the following points:

1. Analytical methods for specific environmental radionuclides pertinent to the Fernald Site. The adequacy of a laboratory's analytical procedures to meet the established performance specifications will be addressed initially during the procurement evaluation process and subsequently, in detail, during on-site audits of potential and selected laboratories.
2. Measurement accuracy requirements; type and frequency of laboratory QC samples for demonstrating compliance to accuracy requirements; type and frequency of customer submitted QC samples for evaluating analytical accuracy; statistical method(s) for evaluating analytical accuracy; acceptance criteria for results of laboratory and customer submitted QC samples for evaluating analytical accuracy.
3. Measurement precision requirements; type and frequency of laboratory QC samples for demonstrating compliance to precision requirements; type and frequency of customer submitted QC samples for evaluating analytical precision; statistical method(s) for evaluating precision of analyses; acceptance criteria for results of laboratory and customer submitted QC samples for evaluating analytical precision.
4. Unique analytical requirements which can affect accuracy or precision such as limits for amounts of isotopic tracers for monitoring chemical recovery and specifications for minimum acceptable tracer/carrier recoveries.
5. Lower limits of detection (LLDs); definition of a priori and a posteriori LLD; LLDs for specific radionuclides in various environmental media; protocol to be used by laboratory to demonstrate ability to meet required a priori LLDs initially and on a continuing basis; methods for evaluating and acceptance criteria for a posteriori LLDs.
6. Requirements for traceability of radionuclide standards.
7. Instrument and detector performance monitoring such as methods and frequency of operational checks for background, calibration, stability, resolution, efficiency. Chemical measurements of uranium will also be addressed.

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8. Propagation of errors for reporting overall analytical uncertainty.
9. QA/QC to be developed and maintained by support laboratories.
10. Methods for matching QC sample results to field sample results such as the use of "batch" numbers for corresponding field and QC samples.
11. Requirements for participation in external QC programs such as the EPA Las Vegas and DOE-QAP programs.
12. Data reporting requirements including reporting of laboratory QC data with field sample results and frequency and content of other periodic QA/QC reports.

LEVEL D:

Levels D criteria will be developed for radionuclide analyses which will incorporate rigorous QA/QC protocols and documentation equivalent to current U. S. EPA ASL 4 (CLP) requirements for organic and nonradioactive inorganic analyses. This will be accomplished by developing detailed analytical performance and data reporting specifications for radioanalytical laboratories.

These specifications will guide the generation of all necessary information required for legal defensibility and to review, evaluate, and validate radioanalytical data with the same thoroughness as required for ASL 4 (CLP) organic and inorganic analyses.

The radioanalytical laboratory performance and data reporting specifications will address the following points:

1. Analytical methods for specific environmental radionuclides pertinent to the Fernald Site. The adequacy of a laboratory's analytical procedures to meet the established performance specifications will be addressed initially during the procurement evaluation process and subsequently, in detail, during on-site audits of potential and selected laboratories.
2. Measurement accuracy requirements; type and frequency of laboratory QC samples for demonstrating compliance to accuracy requirements; type and frequency of customer submitted QC samples for evaluating analytical accuracy; statistical method(s) for evaluating analytical accuracy; acceptance criteria for results of laboratory and customer submitted QC samples for evaluating analytical accuracy.

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3. Measurement precision requirements; type and frequency of laboratory QC samples for demonstrating compliance to precision requirements; type and frequency of customer submitted QC samples for evaluating analytical precision; statistical method(s) for evaluating precision of analyses; acceptance criteria for results of laboratory and customer submitted QC samples for evaluating analytical precision.
4. Unique analytical requirements which can affect accuracy or precision such as limits for amounts of isotopic tracers for monitoring chemical recovery and specifications for minimum acceptable tracer/carrier recoveries.
5. Lower limits of detection (LLDs); definition of a priori and a posteriori LLD; LLDs for specific radionuclides in various environmental media; protocol to be used by laboratory to demonstrate ability to meet required a priori LLDs initially and on a continuing basis; methods for evaluating and acceptance criteria for a posteriori LLDs.
6. Requirements for traceability of radionuclide standards.
7. Instrument and detector performance monitoring such as methods and frequency of operational checks for background, calibration, stability, resolution, efficiency. Chemical measurements of uranium will also be addressed.
8. Propagation of errors for reporting overall analytical uncertainty.
9. QA/QC to be developed and maintained by support laboratories.
10. Methods for matching QC sample results to field sample results such as the use of "batch" numbers for corresponding field and QC samples.
11. Requirements for participation in external QC programs such as the EPA Las Vegas and DOE-QAP programs.
12. Data reporting requirements including reporting of laboratory QC data with field sample results and frequency and content of other periodic QA/QC reports.

LEVEL E:

Level E radiochemical analysis will conform to traditional Level 5 standards for special analytical services and research and development of analytical methods.



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4.0 CONCLUSION:

The foregoing radiochemical/radiological measurement program integrating the nuances and differences of radiochemistry and radiometrics to the present U. S. EPA ASL structure.

This suggested program addresses each U. S. EPA ASL concern regarding the use of established, verifiable, comparable, and reproducible analytical methods concurrent with the ancillary field and laboratory QA/QC and data validation process to provide the data quality level required to support various CERCLA activities.

In addition to providing clearly defined ASLs for radiometric measurements, this program will:

- * Eliminate confusion when developing analytical scopes of work and validation guidelines for analytes not presently comprehended in ASLs 3 or 4.
- * Provide radiometric laboratory audit performance criteria and standards for US EPA and contract users.
- * Establish the operational and procedural parameters for a DOE Statement of Work for radiometric measurements.
- * Help create a consistent radiometric measurement program for NPL Sites.