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Department of Energy

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MAY 01 1998
DOE-0736-98

Mr. James A. Saric, Remedial Project Manager
U.S. Environmental Protection Agency
Region V-SRF-5J
77 West Jackson Boulevard
Chicago, IL 60604-3590

Mr. Tom Schneider, Project Manager
Ohio Environmental Protection Agency
401 East 5th Street
Dayton, OH 45402-2911

Dear Mr. Saric and Mr. Schneider:

TRANSMITTAL OF RESPONSES TO U.S. ENVIRONMENTAL PROTECTION AGENCY AND OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE SITEWIDE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT QUALITY ASSURANCE PROJECT PLAN, REVISION 1

Reference(s): 1. Letter, J. Saric to J. Reising, "U.S. EPA Revised SCQ Comments", dated January 29, 1998.

2. Letter, T. Schneider to J. Reising, "DOE-FEMP Comments Draft Sitewide CQA Plan", dated November 13, 1997.

This letter serves to submit Department of Energy (DOE) responses to your comments on the Sitewide Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ) received in references 1 and 2. The DOE responses and actions are provided in Enclosure 1, while Enclosure 2 provides recently identified correction and additions to Section D.12.2.4 of the SCQ.

A revised SCQ document in final form will be submitted for your approval once concurrence on DOE's responses to comments is received.

Recycled and Recyclable

If you have any questions, please contact Joe Neyer at 513-648-3178 or Robert Janke at 513-648-3124.

Sincerely,

Johnny Reising

FEMP:Neyer

Johnny W. Reising
Fernald Remedial Action
Project Manager

Enclosures: As Stated

cc w/encs:

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ATTACHMENT I

RESPONSES TO U.S. & OEPA COMMENTS ON THE DRAFT SITEWIDE CERCLA QUALITY ASSURANCE PROJECT PLAN

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERNALD, OHIO

APRIL 1998

U.S. DEPARTMENT OF ENERGY
FERNALD AREA OFFICE

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RESPONSES TO U.S. EPA COMMENTS ON THE DRAFT SITEWIDE CERCLA QUALITY ASSURANCE PROJECT PLAN

Specific Comments

1. DOE Response Comment #: 4/98-1
Commenting Organization: U.S. EPA Commentor: Saric
Section #: Not Applicable (NA) Page #: NA Line #: NA
DOE Response #4 Original Specific Comment #: 4

Comment: The original general comment requests that the "Sitewide CERCLA Quality Assurance Project Plan" (SCQ) include a discussion of sampling procedures for both radiological air particulate monitoring and direct radiation monitoring. The U.S. Department of Energy's (DOE) response to this comment is generally acceptable. However, the response does not indicate that Section 6.4.5 of the SCQ will be revised to specifically address the high-volume air samples that will be collected to demonstrate compliance with National Emission Standards for Hazardous Air Pollutants, Subpart H.
Section 6.4.5 should be revised to incorporate the information presented in the first two paragraphs of new Section K.6.5.1.

Response: We agree with the comment. Section 6.4.5 should be revised to address this sampling activity.

Action: Section 6.4.5 was revised as follows:

6.4.5 Radiological Air Particulate Monitoring

The FEMP radiological air particulate monitoring program is designed to provide a continual assessment of the collective emissions accompanying multiple concurrent remediation projects at the FEMP and provide necessary "early warning" feedback regarding the cumulative sitewide effectiveness of project-specific emission controls relative to the health protective NESHAP standard of 10 mrem.

Environmental high volume air monitoring, at a minimum, shall be adequate to provide a direct measure of the environmental conditions resulting from the full range of planned remedial activities at the FEMP and therefore provide a reliable, accurate assessment of dose received by off-site receptors via the air pathway. Additionally, this program will demonstrate compliance with DOE Order 5400.5 and the provisions of the Clean Air Act, 40 CFR 61, Subpart H (NESHAP).

The program design is based on taking direct measurements of airborne radionuclide concentrations in the environment at or near potential receptor locations. A network of high-volume air monitors has been established based on the location of potential off-site receptors and in consideration of the 16 primary wind rose sectors. The monitoring network encompasses all the current and expected diffuse and point sources at the FEMP. Since the point of compliance under NESHAP Subpart H is the receptor location, monitoring locations are designated at the FEMP property boundary in wind rose sectors where potential receptors are located immediately adjacent to the property boundary. DOE guidance (DOE 1991) and EPA siting criteria (40 CFR 58, Appendix E) were considered when selecting these locations.

The potential exists for exposure to air particulates from past and present releases directly from the facility and from resuspension of materials following deposition. Since particulate activity is primarily due to uranium, thorium and their progeny, particulate air sampling is important to the environmental surveillance program at

FEMP for monitoring compliance with dose limits. Performance requirements for the design of air monitoring systems are included in Appendix K.6.5.

2. DOE Response Comment #: 4/98-2
Commenting Organization: U.S. EPA Commentor: Saric
Section #: NA Page #: NA Line #: NA
DOE Response #5 Original Specific Comment #: 5
Comment: The original general comment requests clarification of requirements for gaseous matrix samples. The response to this comment and the proposed revisions to the SCQ are acceptable with the following three exceptions.

First, the response includes revised text ("Specific requirements and guidelines are stated in Appendix K.6.2.4.") that is to be inserted on SCQ Page 6-11, Line 17. The revised text should be inserted on Line 27 of Page 6-11 instead.

Second, Item B.1 of revised Section K.6.2.4 in the response states that the 95 percent upper confidence limit of spiked data for radon alpha track-etch detectors divided by the mean of that data will be used as the test statistic for overall precision. Item B.2 of revised Section K.6.2.4 then provides equations for detailed precision checks using the standard deviation of the spiked data divided by the mean as the test statistic, The SCQ should be revised either to clarify the fact that two different test statistics are to be used as precision criteria or to correct the erroneous text if only one statistic is to be used.

Third, DOE's response includes new material on alpha track-etch detectors to be inserted in Table G-2 as "Criterion: 59." The final entry in Table G-2 is currently Criterion 59, so the new material on alpha track-etch detectors should be designated as Criterion 60. In addition, Tables G-1 and G-2 in Appendix G contain parallel entries, but DOE's response does not indicate that information of alpha track-etch detectors will be added to Table G-1. Appropriate information on alpha track-etch detectors should also be added to Table G-1 as Criterion 60.

First Response: We agree with the comment.
First Action: The text has been changed as suggested.
Second Response: We agree with the comment. The proposed text gave the erroneous impression that two tests were to be used.
Second Action: Section K.6.2.4.B.2 was changed as follows to confirm that the statistical methodology is consistent:

B. The following process will be used to evaluate replicate data usability by identifying outliers and suspect data points under specific screening conditions. Data will be evaluated using exposure information (pCi/L-days) from data collected in the field, as well as, data from detectors exposed to known radon concentrations (spike samples). This information will be used to assess the variability, precision, and accuracy with known exposures approximate of environmental conditions. The process is five-fold.

1. The precision of the spike data is evaluated for the maximum acceptable variance (this laboratory data represents highest relative error value that will be tolerated for the variability of the field data). This value is found by taking the 95 percent Confidence Interval value (a value two standard deviations from the mean) of the spiked cup exposure data, dividing this number by the mean exposure of the spiked cups, and expressing the final number as a percent.

2. The above determined value is used for comparison at each detector location to assess acceptable field data precision at that location. If the relative error of the exposure data from a location is greater than what is determined to be acceptable based on spiked data, then data points are excluded according to the screening criteria listed below:

		Field Data Control Data		95% Relative Error (based on 95% confidence interval values of spiked data)
(a)	IF	$\frac{\lvert \text{Max. Value - Avg. Value} \rvert}{\text{Average Value}}$	$\leq$	$\frac{\text{2 Std. Dev. of Spikes}}{\text{Mean Value of Spikes}}$
	AND IF	$\frac{\lvert \text{Max. Value - Avg. Value} \rvert}{\text{Average Value}}$	$\geq$	$\frac{\text{2 Std. Dev. of Spikes}}{\text{Mean Value of Spikes}}$
	THEN average all data from location.			
(b)	IF	$\frac{\lvert \text{Max. Value - Avg. Value} \rvert}{\text{Average Value}}$	$\leq$	$\frac{\text{2 Std. Dev. of Spikes}}{\text{Mean Value of Spikes}}$
	AND IF	$\frac{\lvert \text{Max. Value - Avg. Value} \rvert}{\text{Average Value}}$	$\geq$	$\frac{\text{2 Std. Dev. of Spikes}}{\text{Mean Value of Spikes}}$
	THEN average data from two higher data points.			
(c)	IF	$\frac{\lvert \text{Max. Value - Avg. Value} \rvert}{\text{Average Value}}$	$\leq$	$\frac{\text{2 Std. Dev. of Spikes}}{\text{Mean Value of Spikes}}$
	AND IF	$\frac{\lvert \text{Max. Value - Avg. Value} \rvert}{\text{Average Value}}$	$\geq$	$\frac{\text{2 Std. Dev. of Spikes}}{\text{Mean Value of Spikes}}$
	THEN average all data from two lower data points.			
(d)	IF	$\frac{\lvert \text{Max. Value - Avg. Value} \rvert}{\text{Average Value}}$	$\leq$	$\frac{\text{2 Std. Dev. of Spikes}}{\text{Mean Value of Spikes}}$
	AND IF	$\frac{\lvert \text{Max. Value - Avg. Value} \rvert}{\text{Average Value}}$	$\geq$	$\frac{\text{2 Std. Dev. of Spikes}}{\text{Mean Value of Spikes}}$
	THEN record highest value if within historical range and/or reasonable based on process knowledge.			

Third Response: We agree with the comment.
Third Action: The reference has been changed as suggested.

3. DOE Response Comment #: 4/98-3
Commenting Organization: U.S. EPA — Commentor: Saric
Section #: 1.3 — Page #: 1-5 — Line #: 30-32
Original DOE Response #13 — Original Specific Comment #: 3
Comment: The original specific comment requests that the SCQ cite current U.S. Environmental Protection Agency (U.S. EPA) requirements for quality management plans and quality assurance project plans (QAPP). The response to this comment cites current U.S. EPA QAPP requirements as "USEPA 1994f." The citation should be changed to "USEPA 1994e" in order to make it consistent with the response to Original Specific Comment 1.

Response: We agree with the comment.
Action: The reference has been changed as suggested.

4. DOE Response Comment #: 4/98-4
Commenting Organization: U.S. EPA Commentor: Saric
Section #: 3.3.1 Page #: 3-5 Line #: 47
DOE Response #18 Original Specific Comment #: 8
Comment: The original specific comment requests that the SCQ cite current U.S. EPA guidance on data quality objectives (DQO). The response to this comment cites current U.S. EPA DQO guidance as "USEPA 1994e." The citation should be changed to "USEPA 1994f" in order to make it consistent with the response to Original Specific Comment 1.
Response: We agree with the comment.
Action: The reference has been changed as suggested.

5. DOE Response Comment #: 4/98-5
Commenting Organization: U.S. EPA Commentor: Saric
Section #: 6.2.4.1 Page #: 6-5 Line #: 38
DOE Response #28 Original Specific Comment #: 18
Comment: The original specific comment requests that the SCQ include quality criteria for acute toxicity analysis. The response to this comment notes that this analysis is no longer required but that it may be required in the future. The text of the SCQ should be revised to explain why acute toxicity analysis is no longer required.
Response: Comment noted.
Action: The following paragraphs were added to Section 6.2.4.1 (original page 6-5, line 39):

"Laboratories conducting acute toxicity testing (or any other biomonitoring testing) for the FEMP must perform those tests in accordance with "Reporting and Testing Guidance for Biomonitoring Required by the OEPA." Each laboratory must develop their procedures, including quality control procedures, in accordance with this manual and submit those procedures to OEPA for approval.

The NPDES permit requires bimonthly testing for a period of one year. Provided that no acute effect is observed in any of the tests, the testing may cease after the first year. The FEMP began conducting acute toxicity testing on the wastewater effluent and at a point in the Great Miami River approximately 20 feet downstream from the FEMP discharge in January 1996 and completed the testing in November 1996. No acute effects were observed, so additional testing was not warranted in accordance with the current NPDES permit."

6. DOE Response Comment #: 4/98-6
Commenting Organization: U.S. EPA Commentor: Saric
Section #: 9.4.1 Page #: 9-2 Line #: 27-28
DOE Response #35 Original Specific Comment #: 25
Comment: The original specific comment states that because radiochemical analytical methods are specified for thorium and uranium in the SCQ, such methods should also be specified for other isotopes of concern. The response indicates disagreement with this comment and states that the Fernald Environmental Management Project (FEMP) has adopted a performance-based approach and that because of variability in analytical methods, specific analytical protocols need not be specified. The performance-based approach is appropriate, but it is not clear why any radiochemical analytical methods are specified in the SCQ. The response should be revised to clarify this matter.

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Response: Perhaps the confusion concerning this issue arises from the use of the imprecise term "radiochemical" analysis. Table G-2 contains typical "wet chemistry" methods for the measurement of FEMP contaminants of concern based on the physical aspects of those elements, including some that happen to be radioactive. Criterion 47 is the use of x-ray fluorescence to measure the metals uranium and thorium. Criteria 48 and 49 are colorimetric methods for the measurement of low level thorium and uranium. Criterion 50 is a potentiometric titration method that can be used to measure high level uranium concentrations. Criteria 55, 56, and 57 use standard mass spectrometry techniques to identify the metals uranium and thorium.

Tables G-3 and G-4, however, deal with the quantification of various isotopes by measuring their decay energies or spectra. There are no standard methods "wet chemistry" techniques for these measurements.

Action: No change is necessary.

7. DOE Response Comment #: 4/98-7
Commenting Organization: U.S. EPA Commentor: Saric
Section #: A Page #: A-17 to A-23 Line #: NA
DOE Response #41 Original Specific Comment #: 31

Comment: The original specific comment states that Table 6-1 of SCQ Appendix A lists analytes that are not also listed in Table G-1 and requests that Table 6-1 be thoroughly checked and revised to provide sample container, preservation, and holding time requirements for project-specific analytes only. The response to this comment indicates that the extraneous analytes in Table 6-1 were used as parameters for the remedial investigation and feasibility study, that they will not be analyzed for on a regular basis, and that they are being retained in Table 6-1 in the event that they are needed. The response also states that if an analytical method not specified in Table G-1 is needed, the method's selection will be justified in the project specific plan. Table 6-1 should be revised to include this information in a footnote.

Response: We agree with the comment.

Action: The following footnote has been added to Table 6-1.

11. Table 6-1 specifies sample preservation and container requirements for analytes that are regularly collected, as well as certain analytes that were historically sampled and/or may be sampled in the future. All analytes must be tested with methods identified in Appendix G, unless another the selection of another method has been justified in the PSP.

8. DOE Response Comment #: 4/98-8
Commenting Organization: U.S. EPA Commentor: Saric
Section #: A Page #: A-17 to A-23 Line #: NA
DOE Response #42 Original Specific Comment #: 32

Comment: Bullets 5 through 7 of the original specific comment request additional sample container, preservation, and holding time requirements for elemental and total phosphorus analyses. The response to this comment states that neither Method 365 of "Methods for Chemical Analysis of Water and Wastes" nor 40 CFR 163.3, Table 2, requires the sample containers, preservatives, and holding times requested in the comment. However, Standard Method 4500-P, which is listed in Table G-1 as Method 4500-E, states that samples that will be stored for long periods of time should be 1) preserved with 40 milligrams (mg) of mercuric chloride for every liter of sample and 2) frozen at or below -10° C. Because samples collected for total phosphorus analysis will be stored for 28 days, the table should be revised to reflect the Standard

Method 4500-P requirements.

Response: We agree with the comment. The sampling and storage specifications for this method state that HgCl must be added if dissolved phosphorous forms are to be differentiated. However, this method (4500-P E) is used only for analysis of total phosphorous at the FEMP. Therefore we must include the method requirement that "if total phosphorus alone is to be determined, add 1 mL conc HCl/L or freeze without any additions."

Action: The following changes and footnote were added to Table 6-1 of Appendix A.

Phosphorus, total [c,f]	1-liter polyethylene[2] with polyethylene or polyethylene-lined closure	H_2SO_4 to pH <2, or 1 mL conc. HCl/L[12], Cool[6]	28 days	G or C

12. If method 4500-P E is to be used to determine total phosphorus, add 1 mL concentrated HCl or freeze at or below -10°C without any additions.

9. DOE Response Comment #: 4/98-9
Commenting Organization: U.S. EPA Commentor: Saric
Section #: Table G-2 Page #: G-8 and G-44 Line #: NA
DOE Response #66 Original Specific Comment #: 56

Comment: The original specific comment requests that Table G-2 present QA/QC criteria for analytical support level (ASL) C and D analyses. The response to this comment states that listing of these criteria is unnecessary because the U.S. EPA Contract Laboratory Program (CLP) statements of work (SOW) include the criteria. However, the CLP SOWs are limited and include only analyte classes 1, 2, 3, 9, 10, 11, 12, 13, and 27. Therefore, the table should be revised to include QA/QC criteria for ASLs C and D for analyte classes 4 through 8, 14 through 26, and 28 through 54.

Response: The original comment stated: "Criteria for ASLs C and D, which are needed for certification of the site as meeting final remediation levels, should be included." Many of the methods listed in Table G-2 will not be used for certification. We have provided ASL C & D acceptance criteria only for those methods for which those ASLs have been, or are likely to be, requested by the projects.

The Certification Design Letter or Integrated Remedial Design Package for each certification unit will specify which contaminants of concern (COCs) will be certified. To date, ASL C & D criteria are listed in the SCQ for all the area-specific COCs identified for the certification of Area 1, Phase 1. If any additional COCs that are identified for subsequent certification units do not have ASL C & D laboratory acceptance criteria identified in the SCQ (all radiological analyses currently have these criteria specified), DOE will propose acceptable limits based upon the needs of the project. Factors such as the final remediation level for the COCs, sample matrices, and other relevant factors will be considered. These criteria would then be reviewed by U.S. EPA. Approved criteria will then be incorporated into the SCQ and be documented in all appropriate project-specific plans.

It is important to remember that the ASL B acceptance criteria in Table G-2 are sufficiently robust to provide reliable data. These criteria are significantly more stringent than those in SW-846 and other approved methods. In many cases, these criteria were derived from EPA validation criteria. Field QC samples, laboratory QC samples, laboratory data deliverables, and validation may all be requested at ASL C & D for current methods.

Action: Section 2.3.4.E (page 2-24, line 40) was changed as follows:
During remediation, certification samples will be analyzed at ASL D, unless otherwise specified in the approved Integrated Remedial Design, Certification Design Letter, or agency-approved project-specific plan. If ASL D acceptance criteria are not specified in Appendix G for a contaminant of concern that must be certified, ASL D acceptance criteria shall be developed according to the specific needs of the project, taking into consideration the Final Remediation Levels, sample matrices, and any other relevant factors. Upon agency approval, these criteria will be documented in the project-specific plans for all applicable areas.

The following footnote was added to Table G-1 in Appendix G:

12 If ASL D acceptance criteria are not specified for a contaminant of concern that must be certified, ASL D acceptance criteria shall be developed according to the specific needs of the project, taking into consideration the Final Remediation Levels, sample matrices, and any other relevant factors.

10. DOE Response Comment #: 4/98-10
Commenting Organization: U.S. EPA Commentor: Saric
Section #: Table G-3 Page #: G-45 and G-46 Line #: NA
DOE Response #71 Original Specific Comment #: 61

Comment: The original specific comment requests that uranium-233 be designated as an isotope of concern at FEMP and that associated detection limits and highest allowable minimum detectable concentrations be included in the SCQ. DOE rejected this comment because uranium-233 is not identified as a contaminant of concern in the signed record of decision for FEMP. However, based on recent sample analytical data for thorium waste streams at FEMP, uranium-233 contamination is probably present at FEMP. In some wastes, uranium -233 activities approach and even exceed thorium-232 activities. Because some degree of correlation exists between FEMP wastes and environmental contamination at FEMP, designation of uranium-233 as an isotope of concern should be re-evaluated.

As an additional concern, uranium-233 presents an analytical problem because of its relatively high specific activity. If total uranium analysis of a sample was performed by mass spectrometry, for example, small quantities of uranium-233 would probably not be detected, even if this isotope was present at high activity levels. In performance of isotopic uranium analysis, it is difficult to discern uranium-233 from uranium-234 because they exhibit similar alpha energies. Thorium-232 was used in the DOE complex as a fertile material for production of uranium-233. Uranium-233 was produced by subjecting thorium-232 to a neutron field within reactors. As a result of solvent extraction, a good deal of uranium-233 was removed from the thorium along with other impurities, and the thorium was then recycled to be used again. However, some uranium-233 remained in the thorium. Because uranium-233 is associated with thorium, the SCQ should be revised to include isotopic uranium analysis of samples collected from areas that exhibit elevated thorium activity levels. Because uranium-233 and uranium-234 would both be detected as uranium-234 in an alpha spectrometry analysis, high uranium-233 and uranium-234 activities relative to the uranium-238 activities present should be considered an indicator of potential uranium-233 contamination.

Response: Thorium raffinate contaminated with U-233 from Hanford processing of irradiated material was shipped to NLO at the FMPC in the time period from June 1973 to

November 1978. The Hanford shipping papers show an average of 5.638 ppm U-233 (on a bulk volume basis) or an average of 13.05 ppm U-233 on a contaminated Th basis). The Hanford "recycle" thorium was not purified at FMPC because of its low economic value. All of the solution was stabilized in the Pilot Plant by precipitation with ammonia to form a gel of thorium hydroxide. The supernate from this processing would have been transferred to the Plant 8 General Sump area where it would have mixed with other liquid effluents. In Plant 8 these liquids would have been treated with lime to precipitate solids and then filtered. The filtered sump cake would have been discharged to the Waste Pits, and the filtrate would have been discharged to the Great Miami River through MH-175.

Although no direct U-233 data exist for liquid effluent discharges, it can be seen from the original concentration data that U-233 would be a very minor contaminant. No airborne discharges would have resulted from all of the processing because the steps involved only liquids and solids without heating or drying steps. The thorium hydroxide gel is also not readily dispersible. All of the thorium hydroxide gel is currently contained in 1336 containers which are in shipping boxes awaiting disposition to the Nevada Test Site. The FEMP MC&A records show no other receipts of "recycle" thorium.

Additionally, we maintain that any new contaminants should be specified through some vehicle other than the SCQ, such as Remedial Action Work Plans or Project-Specific Plans. As the CERCLA Quality Assurance Project Plan, the SCQ properly specifies QA/QC requirements for work that is required in Remedial Action Work Plans and other similar documents. The SCQ is not authorized to expand the scope of work for any project.

Action: On a case-by-case basis, the need to sample for U-233 will be evaluated and documented in the project-specific plans for those areas where process knowledge indicates this is necessary. Analytical requirements would then be documented in the appropriate data quality objectives.

11. DOE Response Comment #: 4/98-11
Commenting Organization: U.S. EPA — Commentor: Saric
Section #: K.6.1 — Page #: K-39 — Line #: 34-38
DOE Response #80 — Original Specific Comment #: 70

Comment: The original specific comment requests that Appendix G be revised to identify analytical methods for three parameters descried in Appendix K: total uranium, thorium-230, and particulate matter in stack gas samples. The response to this comment is generally acceptable. However, DOE's response indicates that information on particulate matter will be added to Tables G-1 and G-2 as Criterion 59. Both tables currently contain 59 criteria, and DOE's response to Original General Comment 5 will result in addition of one criterion (presumably Criterion 60) to the tables. Therefore, the information on particulate matter should probably be added to Tables G-1 and G-2 as Criterion 61.

Response: We agree with the comment.

Action: The analysis of air particulate matter has been added to Tables G-1 and G-2 as Criterion 61.

12. DOE Response Comment #: 4/98-12
Commenting Organization: U.S. EPA — Commentor: Finkelberg
Section #: Signature Page — Page #: Signature Page — Line #: NA
DOE Response #89 — Original Specific Comment #: I

Comment: Page 54 is missing from the submitted document. I assume, that the response to this comment is part of the missing page; therefore, the comment is not addressed.

Response: The commentor is correct. The response to the original comment concerning the signature page was as follows.

Action: The signature page shall include the following:

Department of Energy, Fernald Environmental Management Project, Director

Department of Energy, Fernald Environmental Management Project, Remedial Action Project Manager

Department of Energy, Fernald Environmental Management Project, Quality Assurance Officer

U.S. Environmental Protection Agency, Region V Remedial Project Manager

U.S. Environmental Protection Agency, Region V Quality Assurance Reviewer

Fluor Daniel Fernald, President

Fluor Daniel Fernald, Environmental Restoration and Waste Management Functional Area Manager

Fluor Daniel Fernald, Quality Assurance Functional Area Manager

13. DOE Response Comment #: 4/98-13
Commenting Organization: U.S. EPA Commentor: Finkelberg
Section #: 4.1.2 Page #: 4-56 Line #: NA
DOE Response #103 Original Specific Comment #: V.4

Comment: The comment is not adequately addressed. Section K.5.4.E.1 should be revised to specify that the soil MS/MSD samples require no extra volume for VOCs or extractable organics.

Response: Comment noted.

Action: Section K.5.4.E.1 (former page K-34, lines 23-26) has been changed as follows:

"When the DQO requires laboratory matrix spike/matrix spike duplicates, collect a ~~triple volume~~ sample every twentieth sample, or every sampling round, whichever is more frequent. Unless otherwise specified in the PSP, matrix spike/matrix spike duplicate samples require no extra volume for VOCs or extractable organics. These samples shall be collected and handled in the same manner as the other samples."

14. DOE Response Comment #: 4/98-14
Commenting Organization: U.S. EPA Commentor: Finkelberg
Section #: 7.1.3 Page #: 7-3 Line #: 47
DOE Response #106 Original Specific Comment #: VII.1

Comment: The example of numbering system should specify how the Field QC samples will be identified. How a nine-digit number will identify different sample matrix, the location, etc.?

Response: The nine-digit number is a system-generated sequential number that serves to link all the sample attributes stored in the relational database. These nine digits alone are not intended to provide information concerning sample location, matrix, or QC usage. This data, as well as other information, are entered into the FACTS database during

sample scheduling (when the numbers are assigned) and after the samples have been collected (e.g., from the chain of custody record and from sample collection logs). The nine-digit number allows any or all of this sample-specific information to be retrieved. As an additional note, field QC samples are treated the same as any other sample. They do not receive special numbers that might draw attention to their intended use or otherwise cause them to receive special treatment.

Action: No action required. This information is provided in Section F.4.1.

RESPONSES TO OEPA COMMENTS ON THE DRAFT SITEWIDE CERCLA QUALITY ASSURANCE PROJECT PLAN

Specific Comments

15. DOE Response Comment #: 4/98-15
Commenting Organization: OEPA — Commentor: OFFO
Section #: 6.5 — Page #: 6-13 — Line #: 3-36
DOE Response #: 133 — Original Specific Comment #: 18

Comment: OEPA disagrees with your response. Again, the IEMP points out there are no "regulatory drivers" enforcing the collection of this type of biological sampling. More importantly, there are several years of data which justify discontinuing the monitoring of milk, fish, grass, and soil (refer to IEMP: Section: 7.4.2, Pages: 7-4 - 7-6). For example, total uranium concentrations in milk samples were found to be insignificant. OEPA believes that the years of data should be enough justification to omit the biological monitoring from the SCQ. As the IEMP explains, evaluating primary pathways will provide the information necessary to determine any impacts to the environment from site remediation. Any potential effects upon primary pathways will be cause for reevaluating the secondary and tertiary pathways (i.e., milk, meat, fish, etc.). If biological monitoring would ever be needed again at Fernald, this section could be added as an addendum to the SCQ.

Response: We agree with the comment. The requirements for sampling milk, fish, grass, soil, game, and meat are no longer needed in the SCQ. Biological sampling is only conducted for produce.

Actions: Section 6.5 (former page 6-13, line 27 through page 6-14, line 32) has been revised as follows:

6.5 BIOLOGICAL SAMPLING

Biological sampling is conducted at the FEMP to evaluate radiological parameters (e.g., uranium) in farm and garden produce. Similar sampling for milk, fish, game, meat, and grass have been discontinued. Basic requirements for collecting samples of farm and garden produce are provided in Appendix K.7. Target analytes have been identified based on onsite contaminants of concern and are specified in the FEMP Integrated Environmental Monitoring Plan (IEMP). Analytical methodologies shall be adapted from current USEPA procedures.

Section K.7 (former pages K-50, line 43 through page K-52, line 50) has been revised as follows:

K.7 BIOLOGICAL SAMPLING

Biological sampling is conducted at the FEMP to evaluate radiological parameters (e.g., uranium) in selected produce.

K.7.1 Produce Sampling

The following are requirements for collecting samples of farm and garden produce.

A. For offsite properties, obtain permission from property owner and arrange a date and time to collect samples.

B. Complete the sampling prior to fall harvest.

C. Select samples from locations that have not been recently disturbed.

D. Obtain appropriate sample equipment, containers, and preservatives as specified in Table 6-1 (Appendix A) or in PSPs.

E. At a given farm garden, select samples of the same produce type from six locations, if available, and combine them into one sample.

F. Document sample collection activities in a bound field log book or on the daily log form and complete the request for sample analysis and chain of custody records.

G. Handle samples as specified in Section 7 and send samples to designated sample receiving group or laboratory for testing.

16. DOE Response Comment #: 4/98-16
Commenting Organization: OEPA Commentor: OFFO
Section #: 6.7 Page #: 6-19 Line #: 22
DOE Response #134 Original Specific Comment #: 19
Comment: DOE's response is not quite true. Drinking water is still collected at Fernald quarterly, and split with OEPA (refer to the IEMP: Section 3.5.2.1: Pages 3-52 & 3-53). Environmental samples are collected from three private wells and sampling is done by request.
Response: We agree with the comment.
Action: On page 6-19, the former Section 6.7.A "Drinking water" has been retained.

The former Section 6.7.B (Natural waters) has been replaced with "Surface water." New sections 6.7.C. "Groundwater" was added and subsequent items were renumbered as necessary.

17. DOE Response Comment #: 4/98-17
Commenting Organization: OEPA Commentor: OFFO
Section #: K.4.3.3.1 Page #: K-21 Line #: 27
DOE Response #166 Original Specific Comment #: 51
Comment: DOE's response agrees with OEPA commentor however, the changes shown does not. To reiterate, VOC samples should be collected into a preserved container to eliminate volatilization. If the sample is collected into a unpreserved container then poured into a preserved vial, as suggested, the transference would cause the VOCs to volatilize.
Response: OEPA's original comment stated that K.4.3.3.1 (the collection of surface water samples for analysis of volatile organic compounds (VOCs) did not agree with the requirements in K.4.2.3.1.C for the collection of groundwater samples for VOC analysis. The commentor's concern, as explained in the reply to DOE's response, is that the transfer of the sample from a primary collection device to the prepreserved container will cause the volatile contaminants of concern to be lost.

However, K.4.2.3.1.A acknowledges the use of a primary collection device ("a stainless steel or teflon bailer") for the collection of VOC samples from monitoring wells. When FEMP sampling personnel collect groundwater VOC samples with a bailer, they do so in a manner which minimizes sample turbulence and volatilization and then transfer the sample directly into the prepreserved sample container.

Similarly, FEMP sampling personnel collect surface water VOC samples directly into prepreserved containers whenever possible. However, in most situations, surface water

must be collected in a bailer, scoop, ladle, or other appropriate primary container and then transferred in a controlled manner to the prepreserved sample container. Environmental conditions such as insufficient water depth, water movement in a stream, or depth to the water surface compromise the samplers' ability to collect the sample directly into the prepreserved sampling container without the potential loss of some or all of the preservative acid. It is even more difficult for the samplers to ensure the formation of a proper meniscus under these conditions.

Careful collection of the surface water with an appropriate primary device and immediate transfer into a prepreserved container in a manner that minimizes turbulence and volatilization often provides a more representative sample than an attempt to collect the surface water directly into a 40-mL VOA vial.

Action: The following changes have been made to Section K.4.3.3.3 (page K-21, lines 27-37) for consistency and clarity:

K.4.3.3.1 Volatile Organic Compounds.

A. If possible, collect samples for VOC analysis directly into prepreserved containers as specified in Table 6-1 (Appendix A).

B. If conditions do not permit the efficient collection of the surface water sample directly into the prepreserved sample container, collect the sample in a stainless steel, teflon, or glass device and transfer the sample directly to the prepreserved container in a manner to minimize turbulence and volatilization of the VOCs.

C. Fill sample vials with a visually apparent meniscus present above the rim of the vial and seal without air bubbles. Avoid excessive overfilling of prepreserved vials.

D. Visually check each vial for air bubbles by inverting and sharply tapping it against the hand. If air bubbles are present, top off the sample vial and recheck it for air bubbles. When no air bubbles are present, place sample in a cooler to obtain a temperature of 4°C, ±2°C.

E. Complete the appropriate field documentation in accordance with Appendix K.9, or as specified in the PSP.

F. Store and/or pack samples for shipping as specified in Section K.10, ensuring that all chain of custody requirements are met.

[Note: Items C, D, E, and F were copied from Section K.4.2.3.1]

18. DOE Response Comment #: 4/98-18
Commenting Organization: OEPA — Commentor: OFFO
Section #: K.5.1 — Page #: K-21 — Line #: 35-39
DOE Response #172 — Original Specific Comment #: 57

Comment: This is incorrect. VOC samples need to be collected into a preserved container to eliminate volatilization. Transferring the sample to one container to another will cause volatilization of the VOCs and the sample will not be representative.

Response: FEMP sampling personnel collect surface soil VOC samples directly into appropriate containers whenever possible. As stated in Section K.5.1.F, some samples may be collected in tubes with liners of teflon or stainless steel, which are then capped and sent to the laboratory for analysis. However, when environmental conditions do not permit

the use of this sampling technique, surface soil samples must be collected with an appropriate primary collection device (such as a trowel or scoop) and then transferred immediately into an appropriate sample container in a manner that minimizes volatilization.

The commentor points out that the imprecise language in K.5.1 implies that samples are transferred between containers. The text should be revised to properly reflect the current responsible practices used at the FEMP in accordance with EPA guidance.

Action: The following changes were made to Section K.5.1 (page K-29, lines 22-44):

D. If possible, collect surface soil samples for VOC analysis using a direct-push coring tube with a teflon or stainless steel liner. Cap and seal each end of the tube and label properly.

E. If conditions do not permit the collection of VOC samples with a direct-push coring tube, collect the surface soil samples with a trowel, scoop, or other appropriate nonreactive device. Immediately transfer the sampled material directly into the appropriate container specified in Table 6-1 (Appendix A) in a manner to minimize volatilization of the VOCs. Fill the sample container as full as possible to minimize headspace.

F. Collect samples for non-VOC samples with a trowel, scoop, coring device, hammer head logger, or other sampling device as specified in the PSP. The sampling device must be constructed of a material that is inert to the materials collected and the analytes to be measured.

G. Transfer the surface soil samples into the appropriate container as specified in Table 6-1 (Appendix A).

H. Label the samples and complete the chain of custody records, field collection reports, and other required field documentation.

I. Place samples requiring refrigeration (see Table 6-1, Appendix A) in a cooler to obtain a temperature of 4°C, ±2°C.

J. Store and/or pack samples for shipping as specified in Section K.10, ensuring that all chain of custody requirements are met.

19. DOE Response Comment #: 4/98-19
Commenting Organization: OEPA Commentor: OFFO
Section #: 6.4.2.2 Page #: 67 Line #: Para 2, last sentence
DOE Response #125 Original Specific Comment #: 10

Comment: This sentence is not entirely correct. It should be reworded to reflect the following:

The light pulses are converted into an electronic signal by the photomultiplier tube. An electronic signal of sufficient voltage (discrimination) is considered a count. The number of counts is proportional to the activity of the radon present within the CPRD of a known volume. These two factors combine to yield the radon concentration present in the detector over a given time interval.

Response: We agree with the comment and have made the change, with some revision.

Action: The first paragraph of Section 6.4.2.2 (former page 6-11, lines 37-41) was changed as follows:

" . . . Alpha particles generated during the decay of radon and its daughters within the cell interact with the zinc sulfide crystals to produce light pulses. Light pulses are converted into an electronic signal by the photomultiplier tube. Electronic signals of sufficient voltage are recorded as counts. The number of counts detected is ultimately considered proportional to the radon concentration that was present in the air over a given time interval."

ATTACHMENT II

DOE COMMENTS ON THE DRAFT SITEWIDE CERCLA QUALITY ASSURANCE PROJECT PLAN

DOE Change #1

Comment: DOE has recently identified the following corrections and additions that are needed to clarify and strengthen the requirements for the analysis of total uranium via kinetic phosphorescence analysis (also known as pulsed laser phosphorimetry). Because kinetic phosphorescence is more like a standard chemical methodology rather than a radiological method, the method for determining the minimum detection concentration (MDC) has been revised in accordance with the protocols from Standard Methods to ensure more accurate estimation of the MDC. Under the previous requirements, the analyses often lacked an acceptably defined statistical distribution due to the frequency of "zero" results for blanks. Additionally, calibration requirements have been strengthened.

Action: The following changes were made to Appendix D, Section D.12.2.14 (page D-83):

D.12.2.14 Supplemental Requirements for Kinetic Phosphorescence Analysis (KPA): Guidance.

A. Detection limit measurement shall be prepared from a solution at a concentration near the KPA detection limit. The laboratory shall analyze ten or more standard solutions and calculate the standard deviation. The detection limit will be defined as three times this standard deviation.

B. Kinetic phosphorescence systems should be calibrated at a frequency as specified in the laboratory SOW or in the SCQ.

C. Sample concentrations, except those near the minimum detectable concentration, must be bracketed by the concentrations of standards on the calibration curve.

D. If none of the following conditions are met, qualify all associated data as unusable (R); if one or more of the following conditions are not met, qualify all associated data as estimated (J):

Curve correlation coefficiency (R^2) > 0.95
Lifetime is 150-350 micro seconds
Intensity taken after 5th or higher time gate.

This information must be documented in the data packages.

E. If the calibration curve did not cover the range of concentrations for samples analyzed and the calibration curve is not linear ($R^2 < 0.95$), qualify all associated data as unusable (R).

F. If the calibration curve did not cover the full range of concentrations but it is

linear, qualify associated data as estimated (J).

G. The laboratory shall supply the raw data and results of the most recent 3-point calibration verification checks (performed weekly or immediately prior to use, with calibration checks at the extremes and center of the concentration range).

H. If the discrepancy between the measured concentration of any calibration standard and the calibration curve is outside control limits, qualify associated data as estimated (J).

The following changes were made to Appendix G, Table G-4, Criteria 27 and 28 (pages G-73 & G-74):

Title of the analyte was changed from U-Total (Pulsed Laser Phosphorimetry) to U-Total (Kinetic Phosphorescence Analysis) for clarity and consistency.

Footnote 1 was changed as follows:

(1) MDC = 3 (SD) Where SD is the standard deviation of ten or more standards near the KPA detection limit.